

1. Electro-Static Discharge (ESD) Test Results

1.1 Test Description

The HBM ESD testing was performed on a THERMOFISHER Mk.2 using the Human Body Module per ANSI/ESDA/JEDEC JS-001-2012. This test is performed for classification only. Class 1A >±250V, Class 1B >±500V, Class 1C >±1000V, Class 2 >±2000V, Class 3A >±4000V and Class 3B >±8000V. A copy of the circuit is shown below:

1.2 Test Circuit & Condition

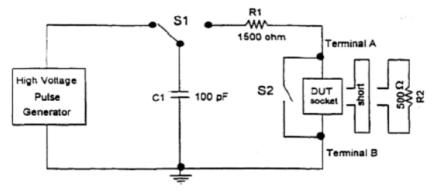


Figure 1 — Typical equivalent HBM ESD circuit

NOTE 1 The performance of any simulator is influenced by its parasitic capacitance and inductance.

NOTE 2 Precautions must be taken in tester design to avoid recharge transients and multiple pulses.

NOTE 3 R2, used for initial equipment qualification and requalification as specified in 3.1, shall be a low inductance, 4000 V, 500 Ω resistor with +/-1% tolerance.

NOTE 4 Stacking of DUT socket adaptors (piggybacking) is allowed only if the waveforms can be verified to meet the specifications in Table 1.

NOTE 5 Reversal of terminals A and B to achieve dual polarity is not permitted.

NOTE 6 $\,$ S2 shall be closed at least 10 milliseconds after the pulse delivery period to ensure the DUT socket is not left in a charged state.

NOTE 7 R1,1500 Ω +/- 1%.

NOTE 8 C1, 100 pF +/- 10% (effective capacitance).

1.3 ESD Data

				Voltage	
Device	Model	S/S	Pins	Passed	Voltage Failed
LTC3636EUFD#TRPBF	HBM	3	All Pins	>±1500V	<±2000V
	Class 1C				



1.4 Test Description

The Machine Model (MM) ESD testing was performed on a THERMOFISHER Mk.2 using the Machine Model Module per JESD22-A115A. **Class A <±200V, Class B >±200V and Class C >±400V**. This test is performed for information only. A copy of the circuit is shown below:

1.5 Test Circuit & Condition

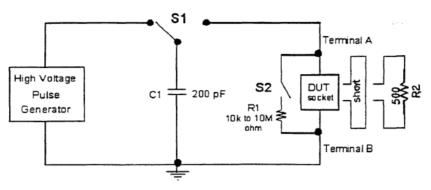


Figure 1 — Typical equivalent MM ESD circuit

NOTES

1 The performance of any simulator is influenced by its parasitic capacitance and inductance.

2 Precautions must be taken in tester design to avoid recharge transients and multiple pulses.

3 R2, used for initial equipment qualification and requalification as specified in 3.1, shall be a low inductance, 1000 volt, 500 ohm resistor with +/-1% tolerance.

4 Stacking of DUT socket adaptors (piggybacking) is allowed only if the waveforms can be verified to meet the specifications in table 1.

5 Reversal of terminal A and B to achieve dual polarity is not permitted.

 $6\,$ S2 should be closed 10 to 100 milliseconds after the pulse delivery period to ensure the DUT socket is not left in a charged state.

7 C1, 200 pF +/- 10%.

1.6 ESD Data

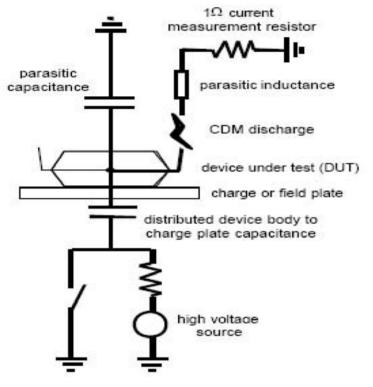
Device	Model	S/S	Pins	Voltage Passed	Voltage Failed
LTC3636EUFD#TRPBF	MM Class	3	Not Applicable		



1.7 Test Description

The Charged Device Model (CDM) ESD testing was performed on a THERMOFISHER RCDM system per ESDA ESD ANSI/ESD S5.3.1-2009. This test is performed for information only. A copy of the circuit is shown below:

1.8 Test Circuit & Condition





1.9 ESD Data

Device	Model	S/S	Pins	Voltage Passed	Voltage Failed
LTC3636EUFD#TRPBF	CDM	3	All Pins	>±2000V	

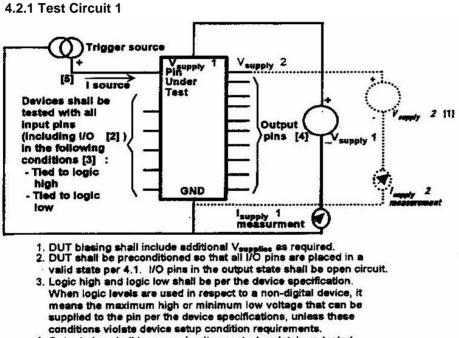


4. Latch-Up Test Results

4.1 Test Description

Latchup Testing was performed at +25°C and +90°C using the LTX Integrated Circuit Test system. The Power Supply pins are biased to the appropriate Datasheet specifications and the individual non-Power Supply pins are tested incrementally while the current is monitored until failure occurs.

4.2 Test Circuit & Condtion



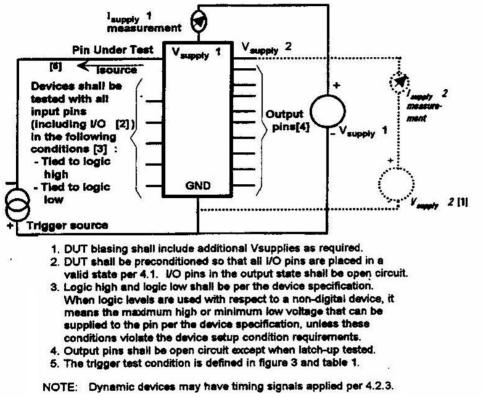
- 4. Output pins shall be open circuit except when latch-up tested.
- 5. The trigger test condition is defined in figure 2 and table 1.

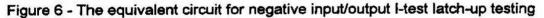
NOTE: Dynamic devices may have timing signals applied per 4.2.3.





4.2.2 Test Circuit 2





4.5 Laton-Op Data					
Device	Mode	Current	Temp	S/S	Results
LTC3636EUFD#TRPBF	CKT1	>±200mA	+25°C	5	PASS
	CKT2	>±200mA	+25°C	5	PASS
	CKT1	>±200mA	+130°C	5	PASS
	CKT2	>±200mA	+130°C	5	PASS

4.3 Latch-Up Data

LTC3636 25C Comparison Data current die versus new die version

_				Curre	ent Die Lo	ot 1						rent Die I	.ot 2					N	lew Die L	ot					
				Std							Std							Std					Lower	Upper	
Item #	DataSheet Description	Count 8381	Mean 601.4	Dev 0.7753	Min 600.0	Max 603.0	CP 2.580	СРК 1.980	Count 9167	Mean 601.4	Dev 0.7797	Min 599.9	Max 603.0	CP 2.565	СРК 1.977	Count 3119	Mean 601.4	Dev 0.7738	Min 599.7	Max 602.9	CP 2.585	СРК 1.991	Limit 594	Limit 606	Unit mV
1 2	VFB1 - Feedback Reference Voltage VFB2 - Feedback Reference Voltage	8381	601.4	0.7755	599.3	602.9	2.560	1.980	9167	601.4	0.7797	599.9	603.0	2.565	1.977	3119	601.4	0.7758	599.7	602.9	2.585	1.991	594	606	mV
2	IFB1 - Feedback Pin Input Current	8381	0.0320	0.7851	0.0	0.1574	413.6	413.2	9167	0.0387	0.7864	0.0	2.063	2.545	264.2	3119	0.1069	0.7846	0.0	1.935	127.1	1.955	-30	30	nA
4	IFB2 - Feedback Pin Input Current	8381	0.0320	0.0242	0.0	0.1374	348.7	348.3	9167	0.0387	0.0378	0.0	1.274	298.8	204.2	3119	0.1003	0.1028	0.0	4.625	97.29	97.08	-30	30	nA
5	tON1 - Minimum On Time	8381	22.07	0.5148	19.62	23.52	340.7	8.374	9167	20.57	0.5521	17.85	22.15	290.0	8.711	3119	21.41	0.1028	18.26	22.76	97.29	7.652	-30	35	nS
6	tON2 - Minimum On Time	8381	21.96	0.4888	19.52	23.46		8.892	9167	20.37	0.5575	17.60	21.98		8.711	3119	21.41	0.6676	18.20	22.70		6.794	┝──┤	35	nS
7	fOSC - Oscillator Frequency, VRT = INTVCC	8381	2.058	0.0828	1.775	2.263	2.416	2.182	9167	2.137	0.1057	1.824	2.357	1.892	1.461	3119	2.100	0.0989	1.819	2.326	2.023	1.685	1.4	2.6	MHz
8	fOSC - Oscillator Frequency, RT = 162k	8381	2.038	0.0828	1.836	2.203		0.9163	9167	2.076	0.1037	1.824	2.223	1.032	0.7574	3119	2.100	0.0983	1.819	2.320	1.018	0.7447	1.4	2.0	MHz
9	fOSC - Oscillator Frequency, RT = 102k fOSC - Oscillator Frequency, RT = 80.6k	8381	4.184	0.1532	3.621	4.494		0.9103	9167	4.139	0.2034	3.592	4.459	0.9832	0.7557	3119	4.138	0.2022	3.595	4.431	0.9893	0.7615	3.4	4.6	MHz
10	ILIM1 - Valley Switch Current Limit	8381	6.613	0.1332	6.238	7.094	1.415	1.385	9167	6.620	0.1411	6.240	7.076	1.418	1.370	3119	6.624	0.1432	6.243	6.978	1.397	1.341	5.4 6	7.2	A
10	ILIM2 - Valley Switch Current Limit	8381	6.607	0.1414	6.229	7.027	1.395	1.378	9167	6.616	0.1411	6.224	7.099	1.414	1.377	3119	6.612	0.1406	6.210	6.972	1.422	1.393	6	7.2	A
12	ISW(LKG) - Switch Leakage Current, VIN = 20V, VRUN = 0V, SW1 = 0V	8381	-0.0264	0.0047	-0.1386	-0.0170	70.19	68.34	9167	-0.0304	0.0063	-0.1490	-0.0173	53.32	51.70	3119	-0.0482	0.0140	-0.2718	-0.0224	22.34	21.26	-1	1	uA
12	ISW(LKG) - Switch Leakage Current, VIN = 20V, VRUN = 0V, SW1 = 0V	8381	0.0204	0.0047	0.0262	0.1028	46.54	42.82	9167	0.0660	0.0003	0.0205	0.0930	42.92	40.08	3119	0.2348	0.0149	0.1486	0.4997	4.591	3.513	-1	1	uA
13	ISW(LKG) - Switch Leakage Current, VIN = 20V, VKON = 0V, SW1 = 20V	8381	0.0733	0.0072	0.0202	0.1028	104.7	99.70	9167	0.0000	0.0078	0.0203	0.0569	96.61	92.62	3119	0.2348	0.0720	0.1480	0.4557	5.106	4.091	-1	1	uA
14	ISW(LKG) - Switch Leakage Current, VIN = 20V, VRUN = 0V, SW2 = 0V	8381	-0.1192	0.0053	-0.1936	-0.1044	63.17	55.64	9167	-0.1177	0.0055	-0.2283	-0.1007	49.26	43.46	3119	-0.1773	0.0287	-0.4926	-0.1356	11.60	9.544	-1	1	uA
16	VIN Overvoltage Lockout Threshold, VIN Falling	8381	21.29	0.1303	20.80	21.70	2.813	2.539	9167	21.31	0.1347	20.80	21.80	2.721	2.498	3119	21.34	0.1293	20.90	21.80	2.836	2.684	20.3	22.5	V
17	INTVCC, VIN = 3.6V, 0mA Load	8381	3.314	0.0447	3.159	3.446	1.492	1.386	9167	3.311	0.0449	3.162	3.440	1.486	1.407	3119	3.310	0.0444	3.176	3.441	1.503	1.429	3.1	3.5	v
18	INTVCC, VIN = 20V, 0mA Load	8381	3.316	0.0447	3.159	3.448	1.490	1.375	9167	3.312	0.0449	3.164	3.439	1.485	1.396	3119	3.311	0.0444	3.179	3.442	1.503	1.418	3.1	3.5	v
19	INTVCC Undervoltage Lockout Threshold INTVCC Rising, VIN = INTVCC	8381	2.687	0.0080	2.660	2.720	1.150	8.892	9167	2.680	0.0088	2.650	2.710	1.105	8.355	3119	2.680	0.0086	2.650	2.710	1.502	8.528	0.1	2.9	v
20	RUN2 Threshold Rising (RUN2 < 1.16V)	8381	0.1074	0.0019	0.1006	0.1156		33.05	9167	0.1137	0.0022	0.1054	0.1231		28.11	3119	0.1097	0.0019	0.1034	0.1181		32.99		0.3	mA
21	RUN2 Threshold Rising (RUN2 > 1.28V)	8381	2.452	0.0583	2.256	2.693		11.15	9167	2.496	0.2313	0.9959	2.772		2.878	3119	2.545	0.0760	1.004	2.783		8.962	0.5		mA
22	RUN2 Threshold Falling (RUN2 > 1.06V)	8381	2.441	0.0585	2.259	2.680		11.07	9167	2.484	0.2310	0.9353	2.773		2.863	3119	2.534	0.0763	1.021	2.777		8.888	0.5		mA
23	RUN2 Threshold Falling (RUN2 < 0.96V)	8381	0.1039	0.0019	0.0975	0.1122		34.46	9167	0.1097	0.0022	0.1026	0.1173		29.23	3119	0.1071	0.0018	0.1014	0.1147		34.87		0.3	mA
24	RUN1 Threshold Rising (RUN1 < 1.16V)	8381	0.1144	0.0020	0.1064	0.1235		31.06	9167	0.1196	0.0023	0.1093	0.1292		26.31	3119	0.1125	0.0019	0.1049	0.1206		32.06		0.3	mA
25	RUN1 Threshold Rising (RUN1 > 1.28V)	8381	2.480	0.0607	2.288	2.818		10.87	9167	2.521	0.2313	1.024	2.806		2.913	3119	2.571	0.0776	1.035	2.797		8.899	0.5		mA
26	RUN1 Threshold Falling (RUN1 > 1.06V)	8381	2.464	0.0599	2.282	2.723		10.93	9167	2.503	0.2311	1.006	2.752		2.889	3119	2.556	0.0770	1.040	2.798		8.902	0.5		mA
27	RUN1 Threshold Falling (RUN1 < 0.96V)	8381	0.1070	0.0019	0.1008	0.1142		33.21	9167	0.1128	0.0022	0.1044	0.1206		28.14	3119	0.1083	0.0019	0.1018	0.1167		33.30		0.3	mA
28	RUN1 Leakage Current, 0V	8381	-0.0179	0.0045	-0.0277	0.1991	222.1	220.8	9167	-0.0195	0.0023	-0.0354	-0.0129	439.0	436.2	3119	-0.0158	0.0043	-0.0327	0.0037	230.1	228.9	-3	3	uA
29	RUN1 Leakage Current, 20V	8381	0.0573	0.0044	0.0073	0.2367	229.3	224.9	9167	0.0449	0.0039	0.0063	0.2295	255.2	251.3	3119	0.1162	0.0170	0.0925	0.1655	58.81	56.53	-3	3	uA
30	RUN2 Leakage Current, 0V	8381	0.0181	0.0046	-0.0005	0.0328	219.1	217.8	9167	0.0364	0.0040	-0.0165	0.0453	248.0	245.0	3119	0.0239	0.0045	0.0068	0.0334	223.2	221.4	-3	3	uA
31	RUN2 Leakage Current, 20V	8381	0.1048	0.0049	0.0769	0.1223	206.2	199.0	9167	0.1296	0.0067	0.1049	0.1585	149.6	143.1	3119	0.1853	0.0391	0.1394	0.3151	25.58	24.00	-3	3	uA
32	PGOOD Good-to-Bad Threshold, VFB1 Rising	8381	8.059	0.3450	6.967	9.000		1.875	9167	7.711	0.3443	6.636	8.994		2.216	3119	7.816	0.3369	6.635	8.999		2.161		10	%
33	PGOOD Good-to-Bad Threshold, VFB1 Falling	8381	-7.276	0.3316	-8.313	-5.989		2.737	9167	-7.102	0.3281	-8.316	-5.666		2.944	3119	-6.565	0.3239	-7.649	-5.645		3.534	-10		%
34	PGOOD Good-to-Bad Threshold, VFB2 Rising	8381	8.046	0.3439	6.639	8.998		1.894	9167	7.710	0.3510	6.303	8.994		2.175	3119	7.856	0.3331	6.639	8.996		2.146		10	%
35	PGOOD Good-to-Bad Threshold, VFB2 Falling	8381	-7.283	0.3274	-8.635	-5.993		2.766	9167	-7.171	0.3325	-8.631	-5.994		2.836	3119	-6.958	0.3294	-7.990	-5.977		3.079	-10		%
36	PGOOD Bad-to-Good Threshold, VFB1 Falling	8381	5.971	0.3307	4.811	7.000		2.995	9167	5.936	0.3341	4.811	7.162		2.929	3119	5.945	0.3274	4.811	6.997		2.998	3		%
37	PGOOD Bad-to-Good Threshold VFB1 Rising	8381	-5.652	0.3218	-6.806	-4.325		2.747	9167	-5.688	0.3214	-6.819	-4.333		2.788	3119	-6.207	0.4291	-7.473	-4.831		2.492		-3	%
38	PGOOD Bad-to-Good Threshold, VFB2 Falling	8381	5.951	0.3290	4.647	7.162		2.990	9167	5.917	0.3397	4.645	7.166		2.862	3119	5.929	0.3210	4.647	6.997		3.042	3		%
39	PGOOD Bad-to-Good Threshold VFB2 Rising	8381	-5.513	0.3179	-6.808	-4.328		2.635	9167	-5.625	0.3243	-6.972	-4.496		2.698	3119	-5.651	0.3125	-6.993	-4.664		2.828		-3	%
40	tPGOOD2 Power Good Filter Time	8381	34.16	1.405	29.47	39.20		3.360	9167	32.33	1.387	26.95	37.94		2.964	3119	33.08	1.288	28.59	37.63		3.386	20		uSec
41	tPGOOD1 Power Good Filter Time	8381	34.27	1.403	28.72	39.83		3.391	9167	32.40	1.399	26.97	38.01		2.955	3119	33.17	1.311	28.34	38.39		3.348	20		uSec
42	tSS1 Internal Soft-Start Time 10% to 90% Rise Time	8381	1010	54.10	843.4	1271		3.021	9167	951.3	53.05	780.8	1192		3.447	3119	986.4	52.31	805.2	1221		3.273		1500	uSec
43	tSS2 Internal Soft-Start Time 10% to 90% Rise Time	8381	990.6	55.43	794.4	1209		3.063	9167	935.0	54.49	756.8	1165		3.456	3119	973.4	53.03	789.8	1182		3.310		1500	uSec
44	VFB1 During Tracking TRACKSS = 0.3V	8381	296.7	3.179	285.3	308.7	1.835	1.754	9167	296.6	3.263	285.3	308.6	1.788	1.698	3119	296.9	3.133	286.2	307.6	1.862	1.800	280	315	mV
45	VFB2 During Tracking TRACKSS = 0.3V	8381	296.8	3.182	286.0	308.2	1.834	1.759	9167	297.0	3.251	285.1	309.4	1.794	1.744	3119	297.3	3.107	285.8	309.4	1.878	1.856	280	315	mV
46	VMODE/SYNC - MODE/SYNC Threshold Voltage, MODE VIH	8381	0.6513	0.0129	0.5998	0.8352		3.852	9167	0.6804	0.0153	0.6227	0.7714		2.613	3119	0.6647	0.0125	0.6271	0.7353		3.606		0.8	mA
47	VMODE/SYNC - MODE/SYNC Threshold Voltage, MODE VIL	8381	1.496	0.0835	1.220	1.828		1.981	9167	1.576	0.0854	1.317	1.966		2.247	3119	1.541	0.0833	1.276	1.851		2.167	1		mA

Note: Run Threshold tests are Go/No Go tests that monitor the supply current

				Curre	nt Die Lo	ot 1					Curre	nt Die Lo	ot 2					Nev	w Die Lo	ot					
				Std							Std							Std					Lower	Upper	\square
Item #	DataSheet Description	Count	Mean	Dev	Min	Max	СР	СРК	Count	Mean	Dev	Min	Max	СР	СРК	Count	Mean	Dev	Min	Max	СР	СРК	Limit	Limit	Unit
1	VFB1 - Feedback Reference Voltage	1024	601.4	0.9108	599.1	604.2	2.196	1.691	1023	601.4	0.9082	598.9	603.7	2.202	1.681	3092	601.5	0.8903	598.8	604.6	2.246	1.690	594	606	mV
2	VFB2 - Feedback Reference Voltage	1024	601.8	0.9098	599.5	604.3	2.198	1.532	1023	601.7	0.9002	597.9	604.1	2.222	1.601	3092	601.8	0.9235	599.2	604.8	2.166	1.534	594	606	mV
20	RUN2 Threshold Rising (RUN2 < 1.16V)	1024	0.1580	0.0024	0.1518	0.1662		19.52	1023	0.1654	0.0029	0.1556	0.1739		15.71	3092	0.1695	0.0026	0.1605	0.1794		16.89		0.3	mA
21	RUN2 Threshold Rising (RUN2 > 1.28V)	1024	1.729	0.1435	1.293	2.175		2.855	1023	1.770	0.1593	1.348	2.260		2.657	3092	1.757	0.1610	1.369	2.253		2.602	0.5		mA
22	RUN2 Threshold Falling (RUN2 > 1.06V)	1024	1.618	0.1524	1.276	2.094		2.445	1023	1.738	0.1588	1.345	2.249		2.599	3092	1.704	0.1553	1.342	2.255		2.583	0.5		mA
23	RUN2 Threshold Falling (RUN2 < 0.96V)	1024	0.1555	0.0024	0.1493	0.1638		20.15	1023	0.1626	0.0028	0.1539	0.1703		16.20	3092	0.1668	0.0025	0.1585	0.1770		17.79		0.3	mA
24	RUN1 Threshold Rising (RUN1 < 1.16V)	1024	0.1717	0.0026	0.1634	0.1806		16.48	1023	0.1796	0.0030	0.1703	0.1886		13.20	3092	0.1816	0.0037	0.1693	0.1935		10.75		0.3	mA
25	RUN1 Threshold Rising (RUN1 > 1.28V)	1024	1.754	0.1430	1.336	2.186		2.923	1023	1.798	0.1591	1.349	2.274		2.719	3092	1.774	0.1620	1.377	2.297		2.622	0.5		mA
26	RUN1 Threshold Falling (RUN1 > 1.06V)	1024	1.638	0.1542	1.286	2.099		2.459	1023	1.760	0.1568	1.346	2.390		2.679	3092	1.724	0.1548	1.376	2.269		2.635	0.5		mA
27	RUN1 Threshold Falling (RUN1 < 0.96V)	1024	0.1633	0.0026	0.1562	0.1730		17.86	1023	0.1705	0.0029	0.1610	0.1788		14.67	3092	0.1742	0.0027	0.1638	0.1844		15.29		0.3	mA

LTC3636 125C Comparison Data current die versus new die version

Note: Run Threshold tests are Go/No Go tests that monitor the supply current

_				Curre	nt Die Lo	ot 1					Curre	nt Die Lo	ot 2					Ne	w Die Lo	ot					
				Std							Std							Std						Upper	
Item #	DataSheet Description	Count	Mean	Dev	Min	Max	СР	СРК	Count	Mean	Dev	Min	Max	СР	СРК	Count	Mean	Dev	Min	Max	СР	СРК	Limit	Limit	Unit
1	VFB1 - Feedback Reference Voltage	1034	599.5	0.8637	597.4	601.7	2.315	2.124	1016	599.7	0.8663	596.3	602.2	2.309	2.179	2927	599.8	0.8440	597.1	602.0	2.370	2.288	594	606	mV
2	VFB2 - Feedback Reference Voltage	1034	599.2	0.8684	596.6	601.6	2.303	1.988	1016	599.4	0.8626	596.6	601.9	2.318	2.090	2927	599.6	0.8518	597.0	601.7	2.348	2.199	594	606	mV
20	RUN2 Threshold Rising (RUN2 < 1.16V)	1034	0.0631	0.0017	0.0568	0.0694		45.3	1016	0.0690	0.0022	0.0611	0.0749		35.6	2927	0.0736	0.0019	0.0665	0.0803		40.6		0.3	mA
21	RUN2 Threshold Rising (RUN2 > 1.28V)	1034	0.7216	0.0217	0.6601	0.8673		3.41	1016	0.7711	0.0260	0.6971	0.8399		3.48	2927	0.8010	0.0235	0.7222	0.8942		4.26	0.5		mA
22	RUN2 Threshold Falling (RUN2 > 1.06V)	1034	0.7129	0.0212	0.6200	0.7910		3.34	1016	0.7609	0.0260	0.6624	0.8582		3.34	2927	0.7880	0.0237	0.6864	0.8898		4.05	0.5		mA
23	RUN2 Threshold Falling (RUN2 < 0.96V)	1034	0.0623	0.0017	0.0569	0.0686		47.4	1016	0.0681	0.0022	0.0599	0.0735		35.7	2927	0.0727	0.0018	0.0643	0.0803		41		0.3	mA
24	RUN1 Threshold Rising (RUN1 < 1.16V)	1034	0.0706	0.0019	0.0635	0.0765		41.3	1016	0.0748	0.0023	0.0664	0.0806		32	2927	0.0795	0.0019	0.0722	0.0863		38.2		0.3	mA
25	RUN1 Threshold Rising (RUN1 > 1.28V)	1034	0.7358	0.0192	0.6698	0.8108		4.1	1016	0.7840	0.0262	0.6923	1.086		3.61	2927	0.8146	0.0213	0.7515	1.028		4.91	0.5		mA
26	RUN1 Threshold Falling (RUN1 > 1.06V)	1034	0.7247	0.0199	0.6592	0.8379		3.76	1016	0.7756	0.0347	0.6925	1.072		2.65	2927	0.8054	0.0367	0.7230	1.194		2.78	0.5		mA
27	RUN1 Threshold Falling (RUN1 < 0.96V)	1034	0.0654	0.0017	0.0598	0.0705		45.4	1016	0.0704	0.0022	0.0629	0.0762		34.1	2927	0.0747	0.0019	0.0669	0.0822		39.4		0.3	mA

LTC3636 -40C Comparison Data current die versus new die version

Note: Run Threshold tests are Go/No Go tests that monitor the supply current

DeltaQualifikationsMatrix

Allgemeines

Kurze Produkt- und Technologiezyklen elektronischer Bauelemente sowie neue Umweltauflagen (Bleiverbot Flammhemmer, ...) führen häufig zu prozeß- und werkstofftechnischen Änderungen an Bauelementen, Leiterplatten, Verbindungstechnik und Schaltung, welche evaluiert werden müssen. Eine geeignete Methodik zur Handhabung von Änderungen an elektronischen Bauelementen beschreibt die ZVEI "Guideline for Customer Notifications of Product and /or Process Changes (PCN) of Electronic Components specified for Automotive Applications". Ein wesentlicher Teil dieser Guideline sind die hier vorliegenden Matrizen, welche sich als Empfehlungen für die Evaluierung von typischen Änderungen an elektronischen Bauelementen verstehen. Dies sollte Teil des offenen und risikobewussten Dialoges zwischen Lieferant und Kunden sein.

Bauteilexperten des ZVEI Arbeitskreis "PCN-Methodik" erarbeitet. Der Inhalt wurde basierend auf dem aktuellen Stand der Technik erstellt und erhebt keinen Anspruch auf Vollständigkeit. Im Einzelfall ist ggf. ein abweichendes Vorgehen abzustimmen, da kundenspezifische Vereinbarungen zur Qualifikation zu berücksichtigen sind.

Anwendung der DeltaQualifikationsMatrix (auszufüllen durch den Bauelementehersteller)

- a) Diese Tabelle ist nur bei Änderungen anzuwenden. Neugualifikationen und Sondergualifikation (z.B. Verguß von Modulen) sowie Information Notes bleiben von diesen Matrizen unberührt. b) Ist eine Änderung in dieser Tabelle nicht aufgeführt, so ist der Qualifikationsumfang zwischen Kunde und Lieferant abzustimmen.
- c) Die Matrix der Aktiven Bauelemente ist so aufgebaut, dass zwischen integrierten Halbleitern (AEC-Q100 Rev.H) und diskreten Halbleitern (AEC-Q101 Rev. D1) auszuwählen ist (Zelle D4). Für Passive Bauelemente gilt die AEC-Q200. Für LED's gilt die IEC 60810.
- d) Alle Änderungen in der PCN sind in der Spalte B durch ein Kreuz (x) zu markieren und werden dadurch farblich hervorgehoben. Sofern dies geschehen ist, werden im Feld "Tests, which should be considered for the appropriate process change" (Zeile 83 für Aktive Bauelemente, Zeile 466 für Passive Bauelemente oder in Zeile 77 für LED's) alle in Betracht zu ziehenden Zuverlässigkeitstests angezeigt
- e) In "Tests, which should be considered for the appropriate process change after selection of condition table" (Zeile 85 für Aktive Bauelemente, Zeile 468 für Passive Bauelemente oder Zeile 79 für LED's) wird die Anpassung der in Betracht zu ziehenden Tests in Folge der Relevanz bezüglich der Änderung berücksichtigt.
- Dazu ist die Tabelle "Conditions" entsprechend der Auswahl (A/B/C) mit einem (x) zu bewerten. f) In "Suppliers performed tests" (Zeile 87 für Aktive Bauelemente, Zeile 470 für Passive Bauelemente oder
- Zeile 81 für LED's) dokumentiert der Bauelementehersteller die durchgeführten bzw. geplanten Tests. g) Falls von der Testempfehlung abgewichen wird, so sollten diese Abweichungen vom Bauelementehersteller angezeigt und kommentiert werden. Hierzu ist der Bereich "Reason for exception of tests" (Zeile 89 für Aktive Bauelemente, Zeile 472 für Passive Bauelemente oder Zeile 83 für LED's) zu verwender
- Werden die in Betracht zu ziehenden Tests durch generische Daten (G) belegt, ist dies ebenfalls hier anzuzeigen und zu begründen.

Die Einstufung des Untersuchungslevel erfolgt in folgende Kategorien

- "C: Component level": Die Evaluierung der Änderung am Bauelement ist durch Untersuchungen schließlich am Bauelelement beim Bauelementehersteller durchführbar. Zur Evaluierung der Änderung dürfen Ergebnisse aus bereits durchgeführten Untersuchungen herangezoger werden, wenn diese zu einem ähnlichen Bauelement bereits vorliegen (Generische Daten).
- "B: Board level": Die beschriebene Änderung hat möglicherweise Einfluss auf die Verarbeitbarkei des Bauelementes im Steuergerät. Die Evaluierung der Änderung wird wie unter C beim Bauelementehersteller durchgeführt Zusätzlich ist durch den Kunden/Steuergerätehersteller die Verarbeitbarkeit zu prüfen, die z.B. abhängig von der Änderung, Zuverlässigkeitsuntersuchungen auf applikationsrelevanten Testbords erfordert.
- *A: Application level*: Die beschriebene Änderung hat möglicherweise Einfluss auf die Applikation/ das Steuergerät. Die Evaluierung der Änderung wird wie unter C oder B durchgeführt. Zusätzlich ist vom Kunden/Steuergerätehersteller der Einfluss der Änderung im Steuergerät durch geeignete Untersuchungen zu bewerten. Dieses Vorgehen ist mit dem OEM abzustimmen. Hierbei ist zu berücksichtigen, ob die Steuergeräte- / Baugruppenanforderungen durch andere Qualifikationen bereits hinreichend abgesichert sind (applikationsspezifische Risikobetrachtung). *: Not relevant for qualification matrix": Änderung(en), die nicht in A, B oder C eingestuft werden
- können und somit nicht relevant für die DeQuMA sind.

Infomation Notes

Änderungen die nur eine Information Note benötigen (bei der Bewertung Risk on Supply Chain als "I" gekennzeichnet), dürfen nicht in der DeQuMa angekreuzt werden, da Sie ansonsten den erforderlichen Evaluierungslevel verfälschen, Für als "I" bewertete Änderungen ist das Information Note Formblatt zu verwenden, influence evaluation level and test effort.

- Wichtige Hinweise Zur formgerechten Anwendung der DeltaQualifikationsMatrizen steht auf der Homepage des ZVEI AK ein Tutorial bereit (7V/EI-Tutorial)
- ID Nummer: ist eine eindeutige Identifikationsnummer f
 ür iede angegebene Änderung, die in den ZVEI PCN DeltaQualifikatiosMatrizen identifiziert ist. Die gleiche ID Nummer wird zur Identifizierung der Änderung im PCN Form Sheet verwendet Die mittels Matrix identifizierten Tests sind in Betracht zu ziehen, d.h. es ist zu pr
 üfen, ob der
- jeweilige Test für die spezifische Änderung in dieser Form notwendig ist. Abweichungen oder generische Daten sind im Detail zu begründen. - Die Spalte "Further applicable conditions", Bemerkungen und Fußnoten sind unbedingt zu beachten, da sie
- wichtige Hinweise und Einschränkungen enthalten. - Zur Nutzung aller Funktionen muss in Excel die Anwendung von Makros freigegeben sein

Form provided by 7VEL- Revision 3.1 - December 2016

DeltaQualificationMatrix

General

Short product and technology cycles as well as new environmental regulations ("Pb-free", flame retardants) frequently result in process and material changes of components printed circuit boards, assembly techniques and circuit layout which have to be evaluated. The ZVEI "Guideline for Customer Notifications of Product and /or Process Changes (PCN) of Electronic Components specified for Automotive Applications" describes an appropriate methodology for dealing with changed electronic components. The qualification matrices in this guideline are recommendations for how to assess typical changes of electronic components These recommendations promote an open risk-based discussion between supplier and customer regarding gualifications.

The DeltaQualificationMatrices were developed by the Industry Task Force Team "PCN Diese DeltaQualifikationsMatrizen wurden durch den Industriearbeitskreis "PCN DeltaQualifikationsMatrix" und den DeltaQualificationMatrix" together with component experts from the ZVEI Working Group "PCN-Methodology". Actual content represents state-of-the-art technology and does not claim to be comprehensive. Deviation from proposed guideline should be mutually agreed as customer specific requirements have to be considered

DeltaQualificationMatrix Application (completion by component manufacturer) a) This table has to be used for changes only. The matrices are not applicable for new product,

- special qualifications (for instance for encapsulation of module) or Information Notes. b) If a change is not listed in this table, the qualification plan has to be defined and agreed
- between customer and supplier.
- c) The matrix for Active Components requires the user to chose between integrated circuits (AEC-Q100 Rev. H) and discret semiconductors (AEC-Q101 Rev.D1) (cell D4). For Passive Components AEC-Q200 is used. For LED'S the IEC 60810 is used.
- d) All changes as listed in the PCN have to be marked by a cross (x) in column B and will appear colored. The relevant reliability tests are then shown in "Tests, which should be
- considered for the appropriate process change" (row 83 for Active Components, row 466 for Passive Components, respectively in row 77 for LED's).
- e) In "Tests, which should be considered for the appropriate process change after selection of condition table" (see row 85 for Active Components, row 468 for Passive Components, or row 79 for LED's) is for modification of the found relevant tests under consideration of the weight
- of change. Related table "Conditions" has to be assessed per proposed letters with an (x). f) In "Suppliers performed tests" (here row 87 for Active Components, row 470 for Passive Components, or row 81 for LED's) the component manufacturer documents the planned and performed tests.
- a) In case of deviations from tests, which should be considered this should be notified and commented by the component manufacturer in the area "Reason for exception of tests" (see row 89 for Active Components, row 472 for Passive Components, or row 83 for LED's). Test results in form of generic data (G) are allowed when notified and justified.

Evaluation Levels are categorized as follows

"C: Component level ": The evaluation of a change at component level by the component manufacturer is sufficient. Generic data from other relevant evaluations can be used

- "B: Board level ": The intended change described in the PCN may influence processability / manufacturability of the component at board level. Therefore additional evaluation by customer may be necessary, for example reliability tests on application relevant testboards, depending on change.
- "A: Application level ": The intended change described in the PCN may influence the properties of the application (e.g. Electronic Control Unit). In addition to the evaluation under C or B the influence of the change in the application is evaluated by suitable investigations by the customer. The scope of the evaluation has to be aligned with the OEM. It has to be considered whether the application / assembly requirements are already sufficiently safeguarded by other qualifications (application
- specific risk assessment). " *: Not relevant for qualification matrix": Changes which fulfill neither A.B nor C definitions
- Infomation Notes

Changes indicated as "I" shall not be marked in the DeQuMa. For those changes the InformationNote sheet shall be used. As the DeQuMa is desired for PCN only, a marking of "I"-changes would automatically

Important Notes

To use the matrices in the right form the ZVEI working group provides a Tutorial on its homepage (ZVEI-Tutorial)

ID number: is a unique identification number for each indicated change defined in the ZVELPCN DeltaQualificationMatrices. The same ID number is used in the PCN Form sheet to identify the change.

Tests identified by the matrix have to be considered and checked if they are necessary to assess the specific change. Test modifications or generic data have to be justified in detail. "Further applicable conditions", comments and notes need attention, as they provide important hints and limitations In order to use all functions in EXCEL, macros have to be allowed.

History of DeQuMa

Version	Remarks
2.0	Revised by ZVEI PCN Methodology Workgroup in March 2015
2.1	Released March 2015
2.1.1	Active Components - delete write protection in comments
2.2	Solved problems with some ActiveX configurations
2.2.2	Solved Problems in Active Components
2.2.3	Solved Problems ActiveX, Active Components SEM-DE-02 (Design changes in routing) error fixed
2.2.4	Minor fixes
3.0	General Revision by ZVEI PCN Methodology Workgroup in June 2016
	Changes are indicated by underlining in the read only version named Changes_DeQuMa_rev3_vs_rev2.xlsx
3.0.4	Expert Release
3.0.5	Fixing of macro bugs
3.1	Final Release (orthographic and punctuation corrections)

Worked on: (Name, Function)	Bhuvaneswar Chanamolu, Reliability Engineer																							
	29/08/2019	Form provided by ZVEI - Revision 3.1 - Decemb	ber 2016																					
PCN number:	19_0202																							_
Signature:																								
circuits or discrete ctors select below:	AEC-Q100 Revision H ·						include	es integrated	l circuits	(e.g. ASICs	PERFOR s, µ-Cont	MANCE TE roler, mem	ST RESU ories, vol	LTS (on t tage regu	he basis Ilators, s	of AEC-Q mart pow	00 Revisi r devices	on H) , logic de	vices, an	alog device		ado	litional to AEC Q10x	
		emailing fists on Duppy Understanding of semiconductors experts	Examples to explain	A: Apple calcol level 8: Bioansware C: Composed level - That network for gualification matrix - That network for gualification matrix	Further applicable conditions	on and by data or antisinative checkly 00 Revision H	effection of a cryy	Temperature Hundly Blacer based HuST Autocheve or Urbased HuST Temperature Cycling	Prover Temperature Cyding Hidr Temperature Storess Life	High Temperature Operating Life Early Life Failure Raze	MMM Endormool. Oxia Relantion, and Operational Life Wran Brood Brann	Wire Bond Pull Soldendehy Physical Cirensions	Soulon Buil Shoar Land Integrity Electronismiken	Three Depending Derlecte Clinesido) en Also Contex to texter	Ang of ve Billion Transportance Instability	Stan sa Migratian Electronic Discharg e Human Body Noodel	Electronic Discriming e Charged Device Model	Latch up Electrical Distribution Characteristics	Electromagnetic Compatibility Short Chronic Characterization	Gott Error Rate Luas direo Hermetic Proclauge Text	Padvage Drop Ud Forque Die Steuer	Irrie mai Vita en Vapon Wetaken heit (160. doole 172 40. JEDEC J. #50.000)	Paramater And Julia Paramater And Julia Comparison of June and Careford Bart Eartho Chemistration of Andread Bart Eartho	Remarks
P	Type of change N	40 Yes		A: Apple B: Boar C: Conr		AEC-Q1	ck of spo	2 9 2	PTC TBL	HOL	No.	480 00	8 - 8	8	i i j	WBH	WOO	n 0 1	9 0	SER F	080P	w		
	ANY Any change with impact on agreed upon contractual agreements.	P P Not relevant for technical evaluation.		•		N S	5 ê	A2 A3 A4	A5 A	6 B1 B2	83 0	1 C2 C3 C4	CS CS D	1 D2 1	33 D4	DS E2	E3 -	E4 E5 E	7 89 89	E11 E12 G1	4 GS GS G:	G8		
SEM-AN-02	Any change with impact on processability/manufacturability at customer, which is not covered in the matrix below.	P P Any change which is not covered in the matrix below, but risk assessment at customer is recommended.		в			1.1							-								• •		
SEM-DS-01	DATA SHEET Change of databaset parametersitelectrical specification (min./max/hyp. velues) and/or ACIDC g specification	P P Update of data sheet because of technical change of the product.	f e.g. recommendations for pull-up/pull-down or NC pins, MSL	A																				
SEM-05-02	Consection of data about / errors	No technical change of the product, only correction in description (vording, drawing,). (P): In case of editorial changes. (P): In case of impact on product integrity.		A			- ÷				-													
SEM-OS-03	Specification of additional parameters.	Bascripton of a new not previously covered parameter. No luchvical change of the product. P (E) Elevision of new parameter which was not documented before. (P) Net known as single change. Only in combination with other changes.	(0): e.g. adding new tested parameter.	A										-										
	DESIGN	Any device relevant changes in design / layout of elements with effect on chits sheet																						
SEM-CE-OI	Design changes in scrive elements. ')	specified process window and design rules. Any change of wining between elements in chip	e.g. change of ESD shuckure e.g. add / remove a transistor in layout	A	Please check if data sheet is affected (SEM-DG-01).			• • •	M -	•••	D,J		· · c	DI	DD	D •	·	• •	• • •	• • •	F	• •	•	
X 55M-0E-02	Design changes in routing. ¹)	P P ¹) Not included: Modification to adjust product parameter within specified design rules.	e.g. mask changes in metal fix for corrective action (based on external BD report)		A: Impact on ENC behavior cannot be realizated / excluded on component lead. A: Il impact on electrical function is not excluded on component lead. Please check if data sheet is affected (SEM-05-01). Please check if data sheet is affected (SEM-05-01).		· ·	· · A	м -		•		· · ·	•		• •	·	•••	····	· · ·	· · ·	• •	•	
SEM-DE-03	Die abrink ¹) F	*) Not included: saving sheet/ken/scribe line	Typical shrink of dis.	A	Please check if change in process technology (SEM-PW-09) is also affected. In case of Cu wire product please consider AEC-Q006.	· ·	· •	• • •	м -	• •	D,J			•	• •	• •	•	• •	• • •	•			•	
583M-08-04	Primere molfication	Integrated achieve by design or memory as defined by suppler. P (4): Prevare modification or update without effect of functional performance at the customer (bug fib.) (47): Forware modification or update with tells of functional performance at the customer.	(B: e.g. addition of Firmware opportunities (P) t.e.g. bug fix with impact on functional performance	A																				
SEM-PW-01		P P New uniter maintail.	e.g. different water material to currently released material (like change from EPI material into non-	с	In case of Cu wire product please consider AEC-0005.		•												• • •				•	Qualification effort acc. AEC-Q100: see diffusion/doping
SEM-PW-02	New value chamilier	P P Change of water clamater resulting in equipment and process changes.		с	Impact on changes in SEM-PW-69 and/or SEM-EQ-01.	• •		е	м -	• •	- 1	Е.			•	- E	E	е •					•	ADC-Q100: "For broad changes that insolve multiple attributes (e.g., sile processed), refer to section A1.3 of this appendix and section 2.3 of Q1 the adecidion of worst-case test whickes to cower all the possible permute
SEM-PW-03	New Itral value Phickness	P P Change in Ital water thickness.	s.g. change in final chipide thickness	с	A: If thermal conductivity is affected (like MDSFET; IGBT, BGA package, stacked das,) A: If impact on EMC or ESD behavior cannot be evaluated / excluded on component leval. In case of Cu wine product please consider AEC-0006.	• •	· •	е	м -	•	. 1	Е			•	- Е	E	е •					•	
SEM-PW-04	Change of electrically active deping/implantation element	P P Change in electrically active doping / implantation element resulting in a new technology.		A			- - -		м -	• #				-	•	•	•	• •	• • •				•	
SEM-PW-05	Change of gale material / delectrics	P P Change of gale material and / or gale delectric material.		A		•	÷	• •	м -	•	D,J			-	•	•	•	• •	• • •				•	
SEM-PW-06	New / change of backside operation (grinding / metallization)	P P disaftman). Change of bottom layer of die (between die and leadtmane). Change in process, material, or dimensions nocessary. Alternative see SEM-PW-Op	e. g. change from Cr/NI//Au to Cr/NI//Ag	с	A: If thermal conductivity is affected (like MOSFET; IGBT; BGA package, stacked des,) A: If inpact to BMC or ISSO behavior cannot be evaluated / ascluded on component leval.	. e.	1.1		м -	•						- M	м	•	• • •	· · •	· · H	• •	•	AEG-Q100: Applicable to all smart power devices
SEM-PW-07	New / change of metallization / view / contacts	P P P bickness specifically for chip frontiske and internal bygers.	e. g. change from ASICu to ACu e. g. change in over pad metalization	с	In case of Cu wire product please consider AEC-Q006.				м -							• .								
SEM-PW-08	New / change of passivation or die coating (without bare die)		e. g. addition of polyimide		Change of intrinsic mechanical stress might influence electrical function. In case of Cu wire product olease consider AEC-0006.				м -	• #,N				•	•	• •	•	• •					•	
	Change in process technology (e. g. process changes like lifegraphy, etch, oxide deposition, diffusion, dis back surface preparation/backgrind, \ldots)	 P (P): If the change in process technology does not influence the integrity of the final product. 		A	In case of Cu wire product please consider AEC-DOM Please also check changes described under EOUIPMENT . Please check if change is described by specific type of change in this matrix.	•																	•	Qualification effort depends on type of change.
SEM-PW-10	Process integrity: tuning within specification	Variation within process specification (): If tuning within process specification does not	(-)): «.0. process control	с	Plasan chuck if DATA SHEET is affected. Plasan chuck if SEM-PW-39 is affected.									-									•	
SEM-PW-11	Change of valler suppler.	 P (-): If no remaining risk in supply chain salet (P): If the change of valier suppler can influence the integrity of the final product. 		с	Not on corporant, lealed on last allocture (typical for IC). Internation on corporant leal for discrimic component expected to case of SO statistics IP properties have to be qualified. Please check if SEM-PW-01 and SEM-05-01 is affected.		•																•	Qualification for IC 4 p-Controller difficult on product level. Characteria only on test structure. AEC-2100: "For bread changes that inceler nulliple attributes (e.g., st processes), or the section A.1 3 of this appendix and section 2.3 cPQI the selection of worst-case set whiches to cover all the possible permut
SEM-PW-12	Change of specified valler process sequence (deletion and/or additional process step)	 Any change which is not covered by another type of change. Risk in to be assessed. (-): No Risk for Supply chain. (P): Risk for Supply chain (influence on product integrity) 		с							-			-									-	
SEM-PW-13	Mose of all or part of wafer fab to a different location/site/subcontractor	P P Wafer tab transition with additional changes (described above).	e.g. dual source / tab straingy	A	In case of Cu wire product please consider AEC-Q006.	• •		• • •	м -	• •	J	• • •		•	• •	• •	•	•••		· · •	· · H		•	AEC-Q100: "For broad changes that inclue multiple attributes (e.g., site processes), refer to section A1.3 of this appendix and section 2.3 of Q1 the selection of worst-case test whicles to cover all the possible permut
SEM-PW-14	Litography -	P P If the change in process technique for lifegraphic process and material (-) If the change in process technology does not refuerce the integrity of the final product. (P): If the change in process technology can refuerce the integrity of the final product.	(-): e.g. exchange of defect mask (P): e.g. change from E-been process to X-ray process e.g. change from contect into projection mode	с	Please also check changes described under EQUIPMENT.		· ·	• • •	м -	• =		•			•								•	
SEM-PW-15	Dade / Interlayer Datachic -	 P P Ho change in process technology does not indicidic process P (P) Ho change in process technology does not influence the integrity of the final product. (P): If the change in process technology can influence the integrity of the final product. 			Please also check changes described under EQUIPMENT.		•		м -	• <i>z</i> ,N	D,J	•		•	• •	• •	•	• •					•	
	DARE DIE	manual in raipin of the stat possio.																	-					

SEM-BD-02	New / change of frontside metallization		Charge is bondpade, material, pad pitch, surface charges, layer thickness	e. g. change from ASICu to AICu	в	In case of Cu wire product please consider AEC-Q006.					м.	1.1							.							_	1
SEM-8D-02		р р 0 0	changes, layer thickness Change of bottom layer of die (between die and leadhame). Change in process, material, or	e. g. change in over pad metalization e. g. change from CriNIVIAu to CriNIVIAg	ь А	In case of Cu wire product please consider AEC-Q006.		· ·			M .															•	
	Perer / Line of the second entertained in		dimensions.					÷		-			-												-	-	4
SEM-8D-04	Change of water setup or number of possible good dies on water.	I P		(I): e.g. change from 350 to 240 good clies on water (P): e.g. information change for pick & place machine.	в			•				-										•					
SEM-BD-05	Change of optical appearance of wafer edge region (like inside coverage or edge exclusion)	I P	Selection of dies in valer edge region which have full electrical functionality. (I): In case of valer edge is affected only (IP): In case of single die is affected	(1): e.g. appearance of water edge (rounded instead of square) (P): e.g. polytmide as new coating on die	в		10 A			• •	• •			• •					1		• •					•	
SEM-8D-06	Die scrite or separation		Needed information for sawing and pick & piace machine. (8: If the change in sawing process does not influence the integrity of the final product. (91: In case if product is delivered on wefer	(I): e.g. if product is delivered as known good die (in tope and nee) (P): e.g. information change for pick & place machine. e.g. information change for assing machine.	в	Please check if SEM-BD-04 is affected.	• •		•		м -	-						 •									
SEM-BD-07	Die Preparation / Clean	- P	Change in process technique for die preparation / classing (-)-: If the change in process does not influence the integrity of the find product. (P): If impact on product integrity is anticipated.	(): e.g. change of cleaning time. (P): e.g. change in cleaning procedure after change of sawing equipment.	в	Please check if SEM-BD-06 is affected.	•		•	•	м -	•		•••										• • н			
SEM-BD-08		P P	Change of top layer on die.	e.g. addition of polyimide e.g. change of polyimide thickness	в	In case of Cu wire product please consider AEC-Q006.		-																		•	
SEM-PA-01	PROCESS - ASSEMBLY Change in critical dimensions of package	P P	Change in dimensions of existing package.	e. g. changes in package dimensions (further development).	в				•		м.	1.1	• •		•••			 •	•				L H	н	н		
SEM-PA-02		 Р Р		development). e. g. change from alky42 to copper e. g. change between two different copper alkys	в	In case of Cu wire product please consider AEC-Q005.					м •				•••			 					L H	_			1
SEM-PA-0		P P	Change in leadhanne dmensions which has impact to the specified electrical parameter acc, des wheel or specification (e.g. heat sirk, pin dimensions, die padde size,) Not included: Variation within specification.		в	ESD investigations are only necessary if internal ground and power supply connection of leadimme is affected. At it impact on DMC behavior cannot be evaluated / exclude on component lead. In case of Cu wire product please consider AEC-0006.				• •					• • •			 				•	L H				
SEM-PA-04	Change of lead frame linibiling material/ area (internal)	P P	Change of surface material of die attach pad and second bond area (e.g. influence in adhesion to mold compound, wedge bond reliability)	 g. change from Ag flash to NP protection layer g. change from Ag spot to Au spot g. increase of silver plating area 	с	In case of Cu wire product please consider AEC-Q005.		•	•	• •	м •			. c	• • •	• •							L H	• • н			For wire bond strengh test Pre-& Post-process change comparison to evaluate process change robustness (AEC-Q101).
SEM-PA-05	Change of lead and heat skip plating material/plating thickness (external)	P P	Change in material and / or process resulting in a new technology (e.g. pure tin).	e.g. change in heat slug atack e.g. change from 5n into NIPdAu e.g. change of layer thickness	в			•	•					- c	• • •	•						•	L H	• • н			
SEM-PA-06	Bump Material / Metal System (internal)	P P	Stack die or die to substrate (Tip chip)	e. g. change to tipe rectana e. g. change to Pb-free material e. g. change of copper pillers	с		· ·	•	•	• •	м •	•				• • •						•	L -		-		
SEM-PA-07	Die aftach material	P P	Change of die altach material and / or process resulting in a new technology (e.g. acit solder, apoxy, etc.)		c	A: If impact on ENC behavior cannot be evaluated / excluded on component level (if die attach hea impact on electrical conductivity). In case of Cu wire product please consider AEC-Q006.		•	•	• •	м .	•										•	L H	•••н	н -	•	
SEM-PA-08	Charge of elies bonding	P P	Material, diameter, change in bonding diagram and, or change in process resulting in a new technology.	e.g. change from Au to Cu material / e.g. change from 22µm to 22µm diameter e.g. change from single to double bond e.g. change from slich bond to slich on ball bond.	с	A: In case of bond degram change and ENC cannot be evaluate on component livel. Please also check changes described under SEMECO-4. In case of Curvive bonding please consider AEC-Q006.	• •	•	•	•	۰ ،			• •		•		 -		. м.		•	- н			•	Paramiter Analysis: Strictly weighted only for Power devices, the second
SEM-PA-09	Substrain / Heleposer			e.ç. changes in routing	В	A: Impact on EMC behavior cannot be evaluated / excluded on component level. A: If impact on electrical function is not excluded on component level. In case of Cu wire product please consider AEC-0006.	•	•	•	• •	м •	•		••	· · 1	r - •		 	-		•		LH	н	н -		
SEM-PA-10	Die Dercost / Underfil	- P	Supporting layers for complex packages like flip chi and /or change in process neutling in a new technology. (-): It change does not influence the integrity of the final product (P): If impact on product integrity is anticipated.	p (): e.g. change of dispansing speed (P): e.g. change of underfill material	с			•	•	• •	м •	•						 				•			н.		
SEM-PA-11	Change of mold compound / ancapsulation material	P P	Change of mold compound / encapsulation material.	e.g. change is green mold compound e.g. change of filer particles	в	A: impact on thermo-mechanical stress caused by mismatch of node compared, thereconnecting subhology and control is aliant b. in case of the threadness (small control is aliant assessed if possible changes in permeability of node compound could affect signal behavior (e.g. digital signal processor), in case of Cu wire product please consider AEC-2005.			•	. .	м •		•		•••	• •		 					L ·				
SEM-PA-12	Change of hermetic sealing	P P	Affected anexes are material and process of hermetic (e.g. ceramic) packages, capped die and sealed devices (e.g. pressure sensors)	e.g. change of sealing material for RoHS	в	A: impact on EMC behavior cannot be evaluated / excluded on component level (if encapsulation / sealing has impact on electrical conductivity).		•		• •						••			-					· • ·	• •		
SEM-PA-13	Change of product marking	I P	Change of marking on device and / or change in process resulting in a new technology (§: If change does not influence the integrity of the final product (P): If impact on product integrity is anticipated.	(i): e.g. change of appearance (additional marking) (P): e.g. change from inked marking to baser marking e.g. marking of pin 1	в		· •								в.												
SEM-PA-14	Change in process technology (e.g. smaling, blang, birn and form, lead frame preparation, \dots) (e.g. smaling, die attach, bonding, melding, plating, birn and form, lead frame preparation, \dots)	- P	(-): If the change in process technology does not influence the integrity of the final product. (9): If the change is process technology can influence the integrity of the final product.	(P): e.g. change from ball bond to stitch	в	Please also check changes described under <u>StateCo.40</u> . Please check if change is described by specific type of change is this matrix.	•					-															
SEM-PA-15	Process integrity: tuning within specification	- P	Variation within process specification (-): If turing within process specification does not influence the integrity of the final product. (P): If impact on product specification is anticipated		c			÷									• •								•	•	
SEM-PA-16	Change of direct material supplier	- P	Change of suppliers for direct materials which are used in assembly process (BCAL). (-): If change does not influence the integrity of the final product. (P): If impact on product integrity is anticipated.		с	Please check if malerial is changed	1. A.	•										 									See change of material.
SEM-PA-17	Change of specified-essembly process sequence (deletion and/or additional process step)	- P	(): no influence in final product integrity or specified sequence (P): influence in final product integrity or specified sequence	(-): e.g. additional cleaning step e.g. deletion of optical inspection (P): e.g. change lead finishing pre-trim & form to past trim & form	с		1. A.											 									Qualification depends on specific change.
SEM-PA-10	More of all or part of assembly to a different location/site/subcontractor.	P P	Assembly transfer or relocation	e.gdual source / fab strategy	с	A or B: Impact on other type of changes described under PROCESS ASSEMBLY and SEMPCA-01. In case of Cu wire product please consider AEC-0005.	• •		•	• •	м -	•	•	•••	•••	r • .							L H	н	нg	•	White's task have to be done on monitoring basis! AEC-CHO: "For bread changes that incide multiple attributes (e.g., site, materials, processad), refer to section AL3 of this appendix and section 2.3 of CHO, which allows for the addiction of section 2 and set of the location after proteinable permutations: "
SEM-PA-19	Die scribe or separation		Separation process from single value to dies. (-): If the change in process does not influence the integrity of the final product. (P): If impact on product integrity is anticipated.		c		•		•	• •	м .															-	
SEM-PA-20	Dia Praparation / Clean	- P	Change in process technique for die preparation / cleaning (-): If the change in process does not influence the integrity of the final product. (P): If impact on product integrity is anticipated.	(): e.g. charge of cleaning time.	с				•	•	м.	•		•••										•••н		-	
SEM-PA-21	Mading / Encapsulation process	- P	Change in process technique for molding / encopsulation. (-): If the change in process does not influence the integrity of the find product. (P): If impact on product integrity is anticipated.	(): e.g. tuning within process specification	с		· •		•	• •	м •	•			•••	•							ь -				
SEM-PS-01	PACINICIDAR PING Packing/http://g.nec/lication.chunge Dry.pack.reg/interents.chunge	P P	Packing whipping specification change.		•							·								· · ·			· [·]	· · ·			
	Change of carrier (tray, reel)	P P	Change of dry pack requirements (e.g. change of MSL) Change of carrier (tray, ree)		В						· ·			· ·	· · ·				-					• • •			
SEM-P5-04	Change of labeling		Change of labeling also on reel. (P. Change of material label school impact on harcode. (P): Changes of material label information which affects data processing at customer.	(1) e.g. additional information (Rol-G stamp) (P) e.g. change of defined nomenclature for data processing	в			÷										 -									
	EQUIPMENT Production from a new equipment/fuci which uses a different basic technology or which due to its unique form or function can be expected to influence the integrity of the final product	P P	Change in process technique which is not already covered above.	Change from single water to batch process (e.g. over pad metalization) e.g. dembar cutting (mechanical to baser cutting)	A		• •	÷	•			•															Affactied process change is to check.

589-80-02	Production from a new explorated half which uses the same basic technology (replacement exploreed or extension of existing exploreed pool) without change of process.	- 1	PCN required for dedicated equipment for sensitive component production. P (-): If change does not influence the integrity of the final product. (P): If impact on product integrity is anticipated.	(k e.p. extension of existing equipment pool	с	· · ·			 														•		
SEM-EQ-03	Change in final test equipment type that uses a different technology.	PF	Change of tester (only in case of bare die: final test means water test.)	e. g. change tester equipment from LTX to Teradyne	с	• • •	-		 	-												• •	•	Ga	nge R&R / delta correlation
	TEST FLOW																				(
SEM-17-01		PF	Tester transfer or relocation. Check impact on SEM-AN-01	Dual source strategy	с	 • • • • • 	1.1		 1.1								• •					1.1	•	Ga	age R&R / delta correlation
	0-GATE			•																		_			
583M-005-01	Change of the test coverage-basis grooms flow and by the applier to ensure data sheet complexic log, alternativity/data of electrical measurement but files block relaxations/intercenter of motioning processes or amplifying	- 1	 g test flow block, reduction from three temperature measurements to two temperature measurements, phonge in burn in / run in process. (-):: It change does not influence the integrity of the final product; (P): It impact on product integrity is unlicipated. 	requirement	c	• • •			 														•		nameler Anslysis: Delta correlation For "barn In" changes EUFR recommended
	Tests, which should be considered for the appropriate process change.							1.1	 		· · ·	1.1										1.1			
	Tests, which should be considered for the appropriate process change after select	tion of con	dition table.					•			• • •		• •	•			• •	•	• •	• •	• • •	•			
	Suppliers performed tests (mark with an 'X' for done or '0' for generic)														x	X	X X	x	x				x		
	Reason for exception of tests and/or usage of generic data:							1 1									11								
	EMC - Electromagnetic compatibility depends on the board layout, proper grounding, and placement of cor	rponents.																							

_	Information Note required.
Р	PCN required.
	•" indicates that performance of that stress test should be considered for the appropriate process
change.	
	CONDITIONS
A	Only for peripheral routing
в	For symbol rework, new cure time, temp
c	If bond to leadinger
D	Desire rule cheme
- F	Theiress only
- F.	MEMS alement only
	Conseis Data qualitata

E.	MEMS element only		
6	Generic Data available		
н	Hermetic only		
J	EPROM or EEPROM		
- E	Lead free		
M	For devices requiring PTC		
N	Passivation and date oxide		
P	Passivation and interlevel dielectric		
۵.	Wire diameter decrease		
т	Only for Solder Ball SMD		
	Only from non-100% burned-in parts		
	For "burn in" changes IOL or ELFR recommended		
	=> Please mark 'NO' with 'X, default is 'YES'		
			_
A letter	or "+" indicates that performance of that stress test should be considered for the appropria	ate proces	a

Worked on: (Name, Function) Max Mustermann	Form provided by ZVEI - Revision 3.1 - December 2015																					
Date:																						
PCN number: Signature:													valuation	۰ ۲							additional to AE Q200	EC-
organaute		Evaluation level A/ B / C																			Q 200	tuan
Assassment of ingest on Boyley Chain regarding toloning aspects - control of generation - control of generation - there is a set of the set	Understanding of component Examples to exervise	united A Aptimitor Invest B. Boordinent C. Comparent Level - Nac relevant (or guallication matrix	Further applicable conditions	be ordinand by day of an diffor (C-Q200 Revision D Kot specification the read at only)	High Tany Espoure (Borago) Temperature Cycling	Destructive Physical Andrysis Matematica	Bisecol Humid ly Operational Life	External Visual Physical Dimension	Terreiral Scretzh (Loadio) Roeisteroe to Solvers	Mathonical Brock Vibration	Resistance to Soldering Heat Thermal Shock	Electrostatic Discharge (BSD) Sobjeebility	Electrical Characterization Planmada ly	Bloard Place Terrahout Strongth ((SARD)	Bears Load Test Flare Retardince	Roadion Life Surge Voltage	Salt Sproy Electrical Translere Conductor	Shear Shrengh Fault Ourrent Durablity	End of Like Mode Verification	Jurg Bart Briduance Load Dung Briduance	Whisker Test (IEC 0006-12-92, JEDEC JES Passredet-Analysis Comparison of ourrent with che	characterization electrical data
of Nt ID Type of change No Yes NTWORKS & RESISTORS NETWORKS & RESISTORS NO Yes		2807	55	<u>₹ 88</u>	3 4	• •		8 10	11 12			17 14	19 20	21 22	20 24	28 27	29 30	31 33	22	34 35		
TORS PAS-985-AN-01 Any change with impaction special customer characteristics/contractual agreements P P	Not relevant for technical evaluat		-																•			
PAS-825-VA402 Any change with inpact on processability/manufacturability at customer, which is not covered in p p rotors DATADAGET	Technical interface means comp	onent terminala. B	•				1.1	1.1					1.1					8 - F		8 (B)	•	
PAS-BES-DS-01 Drange of datasheet parameters/electrical specification (min./max./typ. values) and / or AGIDC p	Change of application relevant information e.g. tighten of electrical paramete Not included: Editorial changes.	er datibution A	Rak assessment depending on change																			
PR5405 generation of data sheet () P	Not included: Editorial changes. No scholard changes of the product, only correction in discussion (see the scholard changes), drawing,) (p): In case of impact on product (p): In case of impact on product		-																-			
PK53E5C5G3 Specification of additional promotions (P	Net indukted: Ethnic in brugs. Here handless and the second seco	w. A																				
STORS MATERIAL		rute C							w .											-	- •	
	Change of Ink / Wine material e.g. resistor pasts, NCr, resistor Change of Ink / Wine material e.g. AgPd pasts, NCr, resistor Change of Ink / Wine material side termination				· ·			_	w .			F -	в.		- R							
PAS-RES-MA-03 Change of material composition - Package/ Mold P P	Change of Package e.g. for chip res.: final costing, e	poy B			• •		•	••	•••			• •		• •	- R							Check whether a
PAS-RES-MA-04 Change of material composition - Passivation P	Change of Passivation /Inner protection a.g. change of glass Change of substrate material	c	•		•		· ·		•						- R		N ·					
PASSES MALK Descend service of material . P	Change to a new or additional material supplier at component manufacturer.	c		• •					• •				в •		- R		N +				- •	Assumption ma remains unchas change of male
Constraints of the product of the second secon	Change of package Change of passivation/inver protection a.g. change of glass, laquer, ep		-	• •	: :		: .					• •		•••	- R - R		· · N ·	: :		· ·		
	Change of ink line process e.g. change of fring profile e.g. change from normal atmosp atmospher	her to nitrogen C	•		•		· •		R ·				в -	· ·						· ·		•
PX5-885-PR-02 Diarges is process technology or manufacturing methods - his Print P PX5-985-PR-03 Diarges is process technology or manufacturing methods - Trim - P	Change of ink print process Change of trim process e.g. change from mill trimming is:	baser timming C			• •		•	•	R -				B - B - B -	R R 	- R			1				
PAS-RES-PR-04 Changes in process technology or manufacturing methods - Lead Form - P	Change of lead form process e.g. change from bending to pur bange of termination attach process Change of termination attach process e.g. chip resistors: electropteling e.g. weiding of leads for through						•			•	•		в.				N -					
PAS-RES-PR-06 Changes in process technology or manufacturing methods - Marking - P	Change of marking process e.g. change from tempon printing	g to laser marking B							•		1.1		1.1							· ·		-
PIG-RES/RG Changes is process indrakely or mandaculing methods - Malding - P PIG-RES/RG Process indrays and registry and registrations - P PIG-RES/RG Process indrays in process indraws - P PIG-RES/RG PROVE - P	Charge of molding process Variation within process specification. e.g. process control	B						•			•	•			• R			1		1 1		
PAS-RES-PN-01 Packing / shipping specification change (losening of tolerances) P P	Charge of packing specification. e.g. number of pieces on real.	В	-				· ·	· ·	· · ·	· · ·	· ·	· · ·	· ·	· · ·	· · · ·		· ·		· -	· [·		-
	Change of dry pack requirements. e.g. change of MSL e.g. change in dry pack assurant e.g. change by material		•																-			
PAG-885-FN403 Change of carrier (my, me) P P FN66 PAGRAG / SHPING - VISUAL INSPECTION	Change of carrier e.g. change by material e.g. change by geometry.	В	•													· · ·	•			· · ·	• •	
PAS-RES-PV-01 Diarge of labeling I P	Change of labeling, also on reel. (0 e.g. additional information (Ro (P) e.g. change of customer spe	artG stamp) scific information B	-																			
PX5-RES-PV-42 Change of product marking I P	A.g. change of content of markin A.g. change of method of markin A.g. change of method of markin A.g. change of appearance of m																					
	e.g. change of appearance of m Change in packing specification which does not described a change of demanation or material of the packing. specification	packing .																				
STOPS LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT																						
	Change in process technique which is not sitesdy coursed above. As a grow equipment supplier with Note: Coursed by the table nequire also a PCN e.e. additional equipment to incre-	e different processe C	•	•		•					•	• •	в.									Performance & process chang
	PCN required for dedicated equipment for annables component production Channel film last excitoment abirth use	ease production Tent	•		• •	• •	• •				•	•	в -		· ·	· ·	· ·		•	1.	•	
stops Logistics / CAPACIty / Testing - PROCESS FLOW	Change of Inal test equipment which are different technology. PCN required for decicated equipment for aenative consenses.	c	•		• •	• •	· ·		· ·	· ·		• •	в.	• •	• •	• •	• •	• •		• •	• •	_
SICHS	Change of manufacturing alle. Note: Receptantiation inside one plantiate is not affected Change of manufacturing process. e.g. sharing of offent of process. e.g. change of order of process.		•		•••	••	••	••	•••	· ·	••	• •	в.	•••	- R	· ·	N ·	• •	•	• •	•••	
LOGISTICS / CAPACITY / TESTING - Q-GATE	1			الناري ا																	•	
TOPS newtoning procedure or sampling)	e.g. change from 100% to samp change of test coverage. e.g. test flow block, reduction fn samperature measurements e.g. change in burn inhun in pro	le inspection on three to two C coss.	-			· ·	• •		• •				• •					• •	•			R (electr. funct. R (reliability) or process.
ANY PAS-IND-AN-01 Any change with impact on special customer characteristical contractual agreements P P	Not relevant for technical evaluat	ken. •	-					· ·				• •								· ·		
No.	Technical interface means comp	coart terminals. B	-	<u>teret</u>			· · ·	· · ·					· · ·			· · · ·			•	· ·	• •	·
PAS-IND-CIS-01 Change of databaset parameters/electrical specification (min./max./typ. sakes) and / or ACIDC p p	Charge of application netwant Information Not included: Editorial changes. 4.9 lighten of electrical parameter No technical charge of the product, only correction in editorial in function.		Risk assessment depending on change			• •	• •				• •	• •	• •	· ·	· ·			•	-			
	No structure dange of the product, may default, and a degreg of the product, may default, and a degreg of the default of the product of the sear of end of the product No structure dange o	as of new A	-		• •	• •	• •	· ·	• •		· ·	• •	• •	• •	• •		• •	• •	•	•		·
	covered parameter.																					

	_																												
	PAS-IND-MA-01	Change of material composition - Bobbin Material P P	Material without magnetic function ("Sputerkloper") typically made by plast material	ic e.g. change from Thermoset to Thermoplastic	в		-		• •			• • •	• •	· ·	1.0	• • •			1 - 1		1.1			1.1	1.			- 1	
INDUCTORS	PAS-IND-MA-02	Change of material composition - Core Material P P	Change of core material, which is material with manualic function	e.g. change from NZn into MsZn	A											• • •	в.		. 7		. 1			· · ·			. 7	•	
INDUCTORS				e.g. sitre insulation, insulation tapes, e.g. change from Polyarethane to Polyamide	c									• •			. в •				+	\vdash			+		+		
INDUCTORS	PAS-IND-MA-03			e.g. change from Polyarethane to Polyamide e.g. change from in coverd to non-coverd lead material			-	• •		-			_						+	4	4	⊢∔-	<u> </u>	4	<u> </u>	4	<u> </u>		
INDUCTORS	PAS-IND-MA-04	Change of material composition - Lead Material P P	Change of lead material	e.g. change from thi covero to non-coverd lead material	в		-	•		1		•••	•	1.1	• •	1.1.1.1.1	• • •	• •	<u> </u>	<u>, , , , , , , , , , , , , , , , , , , </u>		<u> </u>	· ·	4		<u></u>	•	-	
	PAS-IND-MA-05	Change of material composition - Mold Compound P P	Change of mold compound material	e.g. change to green mold	в		-		. .								в.		1.1			1 - I/		1.1	. 1		. 1	• ch	Electrical function affected If mechanical stress distribution changes. ACI, wave soldering and board coaling has to be assessed. MSL might change.
INDUCTORS				eğ calğı biğanı indi						_									4		4	$ \rightarrow $		4			4	bo	card costing has to be assessed. ISL might change.
	PAS-IND-MA-06	Change of material composition - Solder Material P P	Change of solder material at internal connection.	e.g. change of SnAgCu composition	в		-		•			· · ·	· · ·	· •	• •	• • •	• • •	• •	1 + 1		1.1	1 · 1		1.1			•	/	
INDUCTORS	PAS-IND-MA-07	Orange of material composition - Wire / Fol Material P P	Wire for wounded inductors. Foil for multilayer inductors (inner electrode).	e.g. charge of Cu composition	в	-			• •								. в .												
INDUCTORS	PAS-IND-MR-07			e.g. change or cu composision	в		-	• •	•												<u> </u>	⊢i∔-		4			· ·	<u> </u>	
	PAS-IND-MA-08	Change of material composition - Gaue P P	Change of glue material	e.g. change from glue A into glue B	с		-		•				1.1	10 A.	• •		в.		1 - 1		1.1			1.1	1.			• 00	Considere in case of core-core glue the air gap.
	PAS-IND-MA-09	Charge of suppler of material	Change to a new or additional material supplier at component manufacturer.	e.g. for 2nd source purpose	с												в -												Assumption material specification
INDUCTORS				e.g. for 2nd source purpose			-			_			_								<u> </u>	⊢i∔-		4			· ·		Assumption material specification remains unchanged. Otherwise see change of material.
NO CTOPS	PAS-IND-MA-10	Change of material composition - Poting Material P P	Change of potting material	e.g. change from eposy resin to allicon	с	A If influence on other connections on PCB or laquer expected.	-	•	•			• •	• •	1.1	• •		в -	1.1	1 - 1	6 - F	1.1	1 × 1	1. 1.	1.1			- I /	•	
INDUCTORS		DESIGN	Material athent excession is written			1			1	-		1 1	1 1				1 1			_					_	_			
INDUCTORS	PAS-IND-DE-01	Changes of termination, surface finish, shape, color, appearance or dimension structure - Bobbin I P	Material without magnetic function ("Sputerkörper") typically made by plasti material	ic e.g. construction / dimension change of bobbin	в		-	•	•	1.1		•	• •	· · ·	1.1	• •	- в -	1.1	1.1		1.1	1.1	1.1	1.1	1	5 - F		•	
INDUCTORS	PAS-IND-DE-02	Charges of termination, surface finish, shape, color, appearance or dimension structure - I P Lead Terminate	Change of lead/terminals	e.g. change from PTH terminals to SMD terminals	A		-	• •				•	•••	19 A.	• •	· · ·	• • •	•••	1 + 1	6 - F	1.1	1 - 17	1. 1.	1.1	· • 17	8 B 8	•	• 5	Effect regarding EMC relevant for high Inequency only.
	PAS-IND-DE-03	Changes of termination, surface finish, shape, color, appearance or dimension structure - Mold J P	Change of mold	e.g. new mold material with different colour	в		-						• •			• • •	в.		1 . 1			1 - I/		1.1	. 1		. /	• Pa	Parameter Analysis only for components where mold material has
INDUCTORS	PAS-IND-DE-04			e.g. change fromdrum core & shield core into pot core & cover plate core	A												в.				+ +			+	_		+	•	magnetic function
INDUCTORS	PAS-IND-CE-CS	Changes of inner construction - Lore Losstruction - P Changes of inner construction - Insulation System - P	material with magnetic function Change of insulation system	core & cover plate core e.g. sitre insulation, insulation tapes,	c				•			<u> </u>		•		• A	в.												
INDUCTORS				e.g. wire insubitor, insubitor tapes, e.g. change from Polyurehane to PTFE (Tellon) e.g. change from round creas section to rectangular cross section e.g. from single wire to Rz wire												-				-	-			+	-		+		
	PAS-IND-DE-06		Change of wire / foil dimensions	cross section e.g. from single wire to litz wire	в			•	•			•		1.1	•	•	• в •	• •		1.1	1		1.	1		1.		•	
INDUCTORS	PAS-IND-DE-07	Ohanges of termination, surface linish, shape, color, appearance or dimension structure - Poting	Change of potting dimension	e.g. charge of potting (1lling) height	с	If data sheet is affected (PAS-IND-DS- 01)	÷.		•			•	•		• •		в -						•	<u> </u>		· ·		•	
INDUCTORS		PROCESS	1	T						1					1 1			1 1									T	V	Action of the state of the stat
INDUCTORS	PAS-IND-PR-01		(Mechanical) removal of insulation.	e.g. change from mechanical removal to laser removal	в		•	•		1	•	•	1.1	• •	· •	1 1 1	• • •			1			1 1	1	1	1 1			Mechanical damage of wire, impact on aciderability in case of stripping process is affecting soldering area.
INDUCTORS	PAS-IND-PR-02	Changes in process technology or manufacturing methods - Lead Prep. / Pating - P	Change of lead prep. / plating	e.g. charge from hot dp tinning to electroplating	в		•	•				•	• •		• •	• • •		• •	· · /			· ·]	· .			• •	•	- 17	area. Influence regarding reliability of solder pint.
incourtence	PAS-IND-PR-03		Connection of wire terminal and / or connection of termination to core/bobbin	e.g. charle from Manual winding to Semi-automic winding (winding of wire on terminal)	с			•			• •	•			• A	• • •		1.1	. 7			. /					•		increase of contact resistance.
INDUCTORS	PAS-IND-PR-04	Danvas in reveau inclusion or man factoring methods, Marian	Change of marking renorms	a a channe from ink marking in laser marking	в									• •											-		+++		
INDUCTORS	PAS-IND-PR-05	Changes in process technology or manufacturing methods - Molding - P	Change of molding process	 a.g. change from one component molding to two component molding (other technology needed) a.g. change from hot lip finning to resistance welding 	в		•	•	• •				•				в.	1.1	· · 7						1.	· ·	• 7	- 1	
INDUCTORS	PAS-IND-PR-06	Changes in process technology or manufacturing methods - Soldering Internal Connections . P	Change of soldering internal connection	e.g. change from hot tip tinning to resistance velicing	в		•	• •				•						• •						1.1		5 - F		-	
INDUCTORS	PAS-IND-PR-07	Changes in process technology or manufacturing methods - Winding Insulation . P	Change of winding - insulation	e.g. charge from manual to automatic process	в		•	• •	•			• • •		• •	· •		в -	1.1	<u> </u>	8 - F	<u> </u>		1. 1.	4	· -	8 - B	<u>+-</u>		
INDUCTORS	PAS-IND-PR-08		Change of winding - wine	e.g. change from semi-automatic winding to full automatic winding	c		•		•		•	•••	1.1	1.1	1.1		• в •	1.1	<u> </u>	<u></u>	<u> </u>	<u> </u>	1. 1.	4	· _	<u>e</u>	· ·	•	
	PAS-IND-PR-09		Variation within process specification.		c		-												<u> </u>	<u> </u>		<u> </u>	· ·	<u> </u>		· ·	<u>+</u>	<u> </u>	
INDUCTORS	PAS-IND-PR-10	Charges in process technology or manufacturing methods - Poting . P PACRING / SHPPING - NEW MATERIAL, CRITICAL DIMENSIONS	Charge of potting process	e.g. change from manual poting process to automatic pating process	с		•				· · ·	• •	• •						لمغنه	<u></u>	<u> </u>	بل ن	<u>· · ·</u>	<u> </u>	· _	<u></u>	لمغط		
INDUCTORS	PAS-IND-PN-01		Charge of packing specification.	e.g. number of pieces on real.	в		-												· 7									- 1	
INDUCTORS	PAS-IND-PN-02	Dry pack requirements change P P	Change of drypack requirements.	e.g. charge of MSL e.g. charge in dry pack assurance (HIC, MBB)	в														. 7			. /					. /	. /	
INDUCTORS	PAS-IND-PN-03		Change of carrier		в				_	-										—	+	\vdash				—	+		
INDUCTORS		PADONG / SHPPING - VISUAL INSPECTION	Change of Carrier	e.g. change by maisrial e.g. change by geometry.		I													<u>با نـــا</u>	<u> </u>		بل نب				<u> </u>			
INDUCTORS	PAS-IND-PV-01	Drange of labeling I P	Change of labelling, also on reel.	(B) e.g. additional information (RoHS stamp) (P) e.g. change of customer specific information	в		-			1.1									. 7		.						· /	- /	
incourtence	PAS-IND-PV-02		Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	в														. 7			. /					. /	- 1	
INDUCTORS				e.g. charge of appearance of marking					_	-										—	+	\vdash				—	+		
INDUCTORS	PAS-IND-PV-03	Ohange of packing/shipping specification P P	Change in packing specification which does not described a change of dimensions or material of the packing.	e.g. change of documentation in packing specification	•			5 (S. 1997)		1.1			1.1	1.1	1.1	1.1.1.1.1.1		1.1		2 C	1		1.1	1.1	1	5 F.		1.1	
INDUCTORS		LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT	Channe in correct technique which is o	-	1	1			-	1	<u> </u>	<u> </u>	1 1					<u> </u>				T		—			T	-	Test effort depends on final risk
	PAS-IND-ED-01	Production from a new equipment/loci which uses a different technology or which due to its unique p form or function can be expected to influence the integrity of the final product	Change in process technique which is n already covered above. Note: Changes affecting the product not covered by the table require also a PCN.	e.g. introduction of polling process	с		•						1.1	1.1	1.1			1.1	1 - 1	6 - F	1.1	1 × 1	1. 1.	1.1			I	• an	Research departs of heat like assessment. Performance test according to affected process change.
INDUCTORS																			+	—	+	++	—	4		—	++	T	focess change. Fest effort depends on final risk
	PAS-IND-ED-02	Production from a new equipment/loci which uses the same basic technology (replacement equipment or extension of existing equipment pool)	PCN required for dedicated equipment for sensitive component production.	e.g. duplication of existing winding machine	с		•						1.1	1.1	1.1			1.1	1 1 1	6 N	1.1		1. 1. 1	1.1	1	1.1	1 · 1	• 80	Test effort depends on final tisk assessment. Performance lest according to affected process change.
neoc.rona	PAS-IND-ED-00	Orange in final test equipment type that uses a different technology P P	Change of final test equipment which use different technology.	e .g. charge of tester platform	_												. в .					1							Gase R&R / deta correlation
INDUCTORS			Charge of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	w.g. unange or seaser pasform	с												- B -											• •	wyw wark / detta correlation
INDUCTORS		LOGISTICS / CAPACITY / TESTING - PROCESS FLOW				1			1	1															-	_			
INDUCTORS	PAS-IND-PF-01		Change of manufacturing site. Note: Reorganization inside one planifistie is not affected	Movement or transfer of manufacturing site or process step(s) to a different location/site.	в		•	•	• •		• •	• •	• •		•	•	• в •	•	1	1.1	1.1		1.	1	1	1.	•	•	
	PAS-IND-PT-02		Change of manufacturing process sequence.	e.g. washing / cleaning process e.g. change of order of processes	с		•														. T	•		· ·			1.	•	Characterisation depends on impact of production flow
moucrons	PAS-IND-PT-03	Elimination of final electrical measurement / last flow block	Reduction of final testing.	e.g. elimination of High-voltage measurement	с																								
INDUCTORS INDUCTORS		Lamination or ninal electrical measurement / test flow block	Reduction of final testing, PCN required for dedicated final test reductions for sensitive parameters.	e. g. exmination of High-voltage measurement	c	L																						-	Characterisation depends on impact of Irrai test flow.
INDUCTORS		LOGISTICS / CAPACITY / TESTING - Q-GATE		e.g. charge from 100% to sample inspection						1																	T		R (electr. funct.): (entronemon
	PAS-IND-QG-01	Change of text coverage used by the suppler to ensure data sheet compliance (e.g., elimination/addition of electrical measurementhant flow block, network/or/sprocedure or sampling). P	Charge of test coverage.	 a.g. change from 100% to sample inspection a.g. test flow block, reduction from three to two temperature measurements a.g. change in burn inhun in process. 	c		1	•		1		•	•	1.1	1.1	1.1		1.1		1 1			1 1	· ·		1 1		- R	R (electr. funct.): test coverage. R (reliability) only for change in burn in process.
CERAMIC / TANTALLM CERAMIC / TANTALLM		CERAMIC / TANTALUM																											
CERAMIC / TANTALUM	PAS-CER-AN-01	Any change with impact on special customer characteristics/contractual agreements P P	1	Not relevant for technical evaluation.	· ·	-				1 .		1	1					1 1 1			1-1		1 1	1-1	-		ŦŦ		
CERAMC / TANTALUM CERAMIC / TANTALUM	PAS-CER-AN-02	DATADHET		Technical interface means component terminals.	в		•				· · ·	1 - 1 -	1					1		· ·			1 1	1 •	•		•		_
SERVICE INTRUM	PAS-CER-0S-01	Divergence of databased parameters/electrical specification (min/max/typ.values) and / or ACIDC p p specification	Charge of application relevant information Not included: Editorial charges.	e.g. lighten of electrical parameter distribution	A	Risk assessment depending on change																							
CERAMC / TANTALUM		peciliation P P	Not included: Editorial changes.		^	Risk assessment depending on change for each application.													44	4	النعب			4			4		
	PAS-CER-0S-02	Connection of data sheet I P	 w.m.micai change or the product, only correction in description (wording, drawing,) 	e.g. data sheet conscion because of new information about component behavior	A																								
CERAMIC / TANTALUM			No technical change of the product, only correction in description (wording, dwaling,) ((): In case of editorial changes. (P): In case of impact on product integrity.	information about component behavior	Ŷ																								
SERVICE INTRUM			Integrity. Description of a new not previously covered parameter. No technical change of the product. (§): no influence (P): Risk assessment depending on change for each application to provide endersco of additional parameters (stat endeated)	1																									
	PAS-CER-OS-03	Seecification of additional carameters	covered parameter. No technical change of the product. (0: no influence	e.o. adding new (tested) garameter.																									
	75-75-75-75-75	I P	(P): Risk assessment depending on change for each application to provide manual of additional sectors of the	w.y. "dding new (sessed) parameter.	A																								
			evaluation)																										
CERAMC / TANTALUM		Bit IEMAL Drange of material composition - Ceramic Binder P P	Binder material (ceramic)		с	-			•	1:			1 · 1 ·		•	•			F • F		10	- T		1-1	-		$ \rightarrow $	· •	
CERAMIC / TANTALIJM CERAMIC / TANTALIJM CERAMIC / TANTALIJM	PRS-CER-MA-01		Dinder material (tantal)	e.g. change from wax 1 to wax 2	c c										•	• •	- B -	с.	•										
CERAMC / TANTALUM CERAMC / TANTALUM CERAMC / TANTALUM CERAMC / TANTALUM CERAMC / TANTALUM	PAS-CER-MA-02 PAS-CER-MA-03	Change of material composition - Dielectric P P	Dielectric change (ceramic only)	e.g. change from ceramic A into ceramic B																									
CERAMC / TANTALUM CERAMC / TANTALUM CERAMC / TANTALUM	PAS-CER-MA-02 PAS-CER-MA-03 PAS-CER-MA-04	Drange of material composition - Electrode Attach P P Orange of material composition - Electrode Attach P P	Dielectric change (ceramic only) Electrode attach (only tantal, glue, carbon, Agi	e.g. change from ceramic A into ceramic B e.g. change of Ag particle size in conductive adhesive	с				• •			• •	1.1		- с		в -	с •			<u> </u>			· ·			1 ·		
CERAMIC / TANTALUM CERAMIC / TANTALUM CERAMIC / TANTALUM	PAS-CER-MA-02 PAS-CER-MA-03 PAS-CER-MA-04 PAS-CER-MA-05	Charge of material composition - Electrode Altech P P Charge of material composition - Electrode Material P P	Electrode attach (only tantal, glue, carbon, Ag) Electrode Material (only cenamic, inner al-trodol	e.g. change of Ag particle size in conductive adhesive e.g. change from spehric to fake shape (N paste)	c c				•••	•		•	•	•	• c		B -	с •							-	· ·		•	heck whether ADI at Tier 1 can be
CERAMIC / TANTALLM CERAMIC / TANTALLM CERAMIC / TANTALLM	PAS-CER-MA-02 PAS-CER-MA-03 PAS-CER-MA-04 PAS-CER-MA-05 PAS-CER-MA-05	Charge of material composition - Electrode Attach P P Charge of material composition - Electrode Material P P Charge of material composition - Electrode Material P P Charge of material composition - Encapsulation P P	Electrode attach (only tantal, glue, carbon, Ag) Electrode Material (only ceramic, inner el-trode) Encapsulation	 e.g. change form carrent & into carrents B e.g. change of Ag particle size in conductive detexture e.g. change from spetric to faile shape (N paste) e.g. change from spetric to faile shape (N paste) e.g. change from spetric into spory2 e.g. change from SnPb to pure Sn 	с				• •	•			· · ·	• •				C •		· ·			· ·	-	• •	· ·		·	Check whether AOI at Tier 1 can be affected

	PAS-CER-MA-08	1 1 1	Channe to a new or additional material	1	1	i i												• •				1 1	1 1		1				Assumption material specification
CERAMC / TANTALUM CERAMC / TANTALUM	PAS-CER-MA-08	DESIGN	Change to a new or additional material supplier at component manufacturer.	e.g. for 2nd source purpose	с			•	•	• •	•	•		•	• •	•••	•	• •	в .	•	• 0							· ·	remains unchanged. Otherwise see chance of material.
CERAMIC / TANTALIJM	PAS-CER-DE-01	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead	Lead diameter	e.g. change from 0.8mm inio 0.6mm	в		.	1.0	•	•	•	• •	• •	•		• •				-									
CERAMC / TANTALUM	PAS-CER-DE-02	Osunges of termination, surface finish, shape, color, appearance or dimension structure - I P Termination Area	Termination area	e.g. change in width of termination from 0.1 -0.3mm into 0.2 - 0.4 mm.	в		1. Sec. 1. Sec	•		•			• •			• •				•				1.0			1.1		
CERAMIC / TANTALUM CERAMIC / TANTALUM	PAS-CER-DE-03 PAS-CER-DE-04	Termination Area II P Changes of termination, surface finish, shape, color, appearance or dimension structure - II P Dranges of Inner construction - Electrode Thickness - P	Terminal intertace	e.g. additional layer in termination e.g. N layer change from 2.5µm into 3.5µm e.g. Ceramic layer thickness changes from 3µm into	B			:	÷		•		-	•	•				в - в -	•	•						1 1		
CERAMC / TANTALUM	PAS-CER-DE-05	Changes of inner construction - Layer Thickness - P	Layer thickness (delectric thickness)	e.g. Ceramic layer thickness changes from Jum into Sym.	с		1. A	•	•	•	•	•	•	•	•		•	•	в -	-	· с			1.0	1.1		1.1		
	PAS-CER-DE-06	Changes of inner construction - Number of Layers - P	Number of layers (caramic only). Always in combination with PAS-CER-DE-05.	see also layer thickness	с		1		с	с -	с	с .	с		. с		с	c .	B,C ·		· с			1.0			1.0		
CERAMC / TANTALUM CERAMC / TANTALUM CERAMC / TANTALUM	PAS-CER-PR-01	PROCESS Diarges in process technology or manufacturing methods - Dicing . P	Charge of dicing	e.g. change from cutting to sawing	с			•	•		•			1.1	• •		1.1		в .		. c	1 • 1				1 • 1 •	1 - 1 -		
CERAMIC / TANTALUM	PAS-CER-PR-02	Changes in process technology or manufacturing methods - Electrode apply - P	Electrode apply (dielectric layer process	e.g. charge from wet to dry process	с		•	С			С					- C		c - 0	B,C ·	с	1.0			1.0	1.0	1.1	1.1		
CERAMIC / TANTALUM CERAMIC / TANTALUM	PAS-CER-PR-03	Ohanges in process technology or manufacturing methods - Pring - P Dhanges in process technology or manufacturing methods - Lamination - P	Change of firing profile	e.g. separation of decarbonization and firing prolie. e.g. standard pressing to iso static pressing.	c				•		•	•					•		в ·		· c								
	PAS-CER-PR-05	Charges in process echnology or manufacturing methods - Particle Size - P	Change of powder particle size. Always	e.g. change D50 from 0.5µm into 0.4µm	c				•		•								в.										
CERAMIC / TANTALUM	PAS-CER-PR-05			e.g. change from screen printing into offset printing	с							c ·			. с				B,C ·		. с								
	PAS-CER-PR-07			e.g. change in plating technology (final termination) e.g. change from dp in paste to plating (apply)	в		• • •	•	•			• •		•						•	• •			1.1			1.1		
CERAMC / TANTALUM CERAMC / TANTALUM		Process integrity: tuning within specification - P	Variation within process specification.	e.g. process control	с																								
CERAMC / TANTALUM		PACKING / SHEPPING - NEW MATERIAL CONTICAL DIVENSIONS Packing / shipping specification change (lossening of tolerances) P P P	Change of packing specification.	e.g. number of pieces on reel.	в	1																1.1							
CERAMIC / TANTALUM				e.g. change of MSL e.g. change in dry pack assurance (HIC, MBB)	в																								
CERAMC / TANTALUM	PAS-CER-PN-03		Charge of carrier	e.g. change by material e.g. change by material e.g. change by geometry.	в																								
CERAMC / TANTALUM CERAMIC / TANTALUM		PACKING / SHIPPING - VISUAL INSPECTION									_		_											-				1	
CERAMIC / TANTALUM	PAS-CER-PV-01	Change of labeling I P	Change of labelling, also on reel.	(8) e.g. additional information (Rol/G stamp) (P) e.g. change of customer specific information	в		1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 -	1.1	1							1.1					1.0			1.0	1.1		1.1		
CERAMIC / TANTALUM	PAS-CER-PV-02		Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	в			1.1	1	1 (A	1						-		1.1	•	1.1	-	· ·	1.1			1.1		
CERTIFIC (TO CONTRACT)	PAS-CER-PV-03	Change of packing/hipping specification P P		e.g. change of documentation in packing specification	•		14 (A) (A)	1.1																					
CERAMIC / TANTALUM CERAMIC / TANTALUM		LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT			-	1				_			-		_				_		_							-	
	PAS-CER-ED-01	Production from a new equipment/ool which uses a different technology or which due to its unique p P	Change in process technique which is no already covered show. Note: Changes affecting the product not covered by the table require also a PCN.	a g. change from wet to dry technology.	с		• • •					•		А		• •		• •	в.		. c								Test effort depends on final risk assessment. Performance test according to affected
CERAMC / TANTALUM																													Test eller depends on trace has assessment. Performance test according to affected process change.
	PAS-CER-EO-02	Production from a new equipment/ool which uses the same basic technology (replacement $$,$\ensuremath{p}$$ pulpment or extension of existing equipment pool)	PCN required for dedicated equipment for sensitive component production.	e.g. elimination of manual handling processes	с		•	1.1	•	•	•	•	• •	А		• •		• •	в .		. c		· ·	1.1				•	Test effort depends on final risk assessment. Performance lest according to affected process change.
CERAMC / TANTALUM			Charge of final test equipment which use different technology.																										
CERAMIC / TANTALLM	PAS-CER-ED-03	Change in final test equipment type that uses a different technology P P	different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of tester platform	с		• • •	1	1	1.1					1.1				в -					1.1			1.1	•	Gage R&R / delta correlation
CERAMIC / TANTALUM		LOGISTICS / CAPACITY / TESTING - PROCESS FLOW		1		1							1	1 1											1 1			1	
CERAMC / TANTALUM	PAS-CER-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site P P	Change of manufacturing alle. Note: Reorganization inside one plantialle is not affected	Movement or transfer of manufacturing site or process step(s) to a different location/site.	в		• • •	•	•	• •	•	• •	• •	•	• •	•••	•	• •	в -	•	• c			1.0	1.1		· ·	•	
CERMIC/ INVIALIN	PAS-CER-PT-02		Charge of manufacturing process sequence.	e.g. washing / cleaning process e.g. change of order of processes	с																							•	Characterisation depends on impact of production flow.
CERAMC / TANTALIM CERAMC / TANTALIM		LOGISTICS / CAPACITY / TESTING - Q GATE									_					<u> </u>	<u> </u>								<u> </u>				production now.
	PAS-CER-QG-01	Change of text coverage used by the supplier to ensure data sheet compliance (e.g., altinization/addition of selectical measurement/set flow block, networkov/enhancement of menotoring procedures or sampling.	Change of test coverage.	e.g. change from 100% to xample inspection e.g. test flow block, reduction from three to two temperature measurements	с																								R (electr. funct.): test coverage. R (reliability) only for change in burn in
CERAMC / TANTALUM		monitoring procedure or sampling) Film capacitors		e.g. change in burn inhun in process.																									process.
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	Мол Манкен Mon Tall Market Mon Tall Market <td< td=""><td>Num P P Program P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P <</td><td>Cargo displant and a second and</td><td>Notice of a search angunar barrates a support of district angunares destination a support of district angunares a support of d</td><td>A A C</td><td>Ale accession describes on charge for all special description of the special de</td><td></td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td><td>• • • • • • • • • • • • • • • • • • •</td><td></td><td></td><td></td><td></td><td>B</td><td></td><td>• •</td><td></td><td></td><td></td><td></td><td></td><td></td><td>• • • • •</td><td>Ohange of base motivatic Consider ESR, high hequercy parameter Consteler ESR. Saketability Ten for maked SMD components.</td></td<>	Num P P Program P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P <	Cargo displant and a second and	Notice of a search angunar barrates a support of district angunares destination a support of district angunares a support of d	A A C	Ale accession describes on charge for all special description of the special de				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			• • • • • • • • • • • • • • • • • • •					B		• •							• • • • •	Ohange of base motivatic Consider ESR, high hequercy parameter Consteler ESR. Saketability Ten for maked SMD components.

Film capacitors	PAS-FLM-PR-04	Process integrity: tuning within specification	. P	Variation within process specification. e.g. process control	с		1. A.	1.1		-	-	1 - F		1.1	1.1			1.0	1.1	-	 					
Film capacitors	PAS-FLM-PN-01	PADIONS / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS		Change of packing specification. a n number of nieros on real	8	1				1										1.1		T . T .	1.1.		—	
Film capacitors				a contraction of the second se	-					-															4	
Film capacitors	PAS-FLM-PN-02	Dry pack requirements change	P P	Change of drypack requirements. e.g. change of MSL e.g. change in dry pack assurance (HIC	5, MDD) B		1. A.	1.1				· · ·	1.1	1.1	1.1			1.1			 1.1				1 1	
	PAS-FLM-PN-03	Change of carrier (tray, reel)	р р	Change of carrier e.g. change by material e.g. change by geometry.	в									1.1							 					
Film capacitors Film capacitors		PACKING / SHIPPING - VISUAL INSPECTION		e.g. change by geometry.							1 1														_	
	PAS-FLM-PV-01	Change of labeling	I P	Change of labeling, also on reel. (i) e.g. additional information (RoHS sta (P) e.g. change of customer specific inf	mp) B		1. A.	1.1				· · ·	1.1	1.1		1.1		1.1			 1.1.1.1			1.1	1 1	
Film capacitors				a se advance of analysis of modules.		-				_		_													4	
	PAS-FLM-PV-02	Change of product marking		B.g. charge of content of marking a.g. charge of method of marking a.g. charge of spearance of marking a.g. charge of appearance of marking	в		1 A 1 A 1	1.1				1.1	1.1	1.1	1.1	1.1		1.1			 1.1	1.1		1.1	1 1	
rin capacita i	PAS-FLM-PV-03				۰ .																					
Film capacitors			P P	Change in packing specification which does not deacrited a change of dimensions or material of the packing.								1 1		1.1		1.1					 					
Film capacitors Film capacitors		LOGISTICS / CAPACITY / TESTING - EQUIPEMEMENT				1		_	-	1	1 1			<u>г г</u>		1 1	- I I		1 1		 1 1	<u> </u>	<u> </u>			
	PAS-FLM-EQ-01	Production from a new equipmentitool which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	P P	Change in process technique which is not already coursed above. Note: Changes affecting the product not coursed by the table require also a PCN.	с													в.			 					Test effort depends on final risk assessment. Performance test according to affected process change.
Din caracity		form or function can be expected to influence the integrity of the final product		Note: Changes affecting the product not covered by the table require also a PCN.	-																					Performance test according to affected process change.
	PAS-FLM-EO-02																									Text effect depends on final data
	PAS-FLM-EQ-02	Production from a new equipment/bool which uses the same basic technology (replacement equipment or extension of existing equipment pool)	- P	PCN required for dedicated equipment for sensitive component production. e.g. extension of existing machin capaci	ny C		• •	1.1	•	•	•	• •	• •	1.1		•••	· · ·	в -	•		 1.1.1.1			1.1	•	assessment. Performance test according to affected process change.
Film capacitors				Charge of final test equipment which use different technology. a c. charges of tester eleftrem																						
	PAS-FLM-EQ-03	Change in final test equipment type that uses a different technology	P P	different technology. PCN required for dedicated equipment for ansature a.g. change of tester platform	с		 • • 				-	· ·	1.1	1.1	1.1			в -			 				•	Gage R&R / debs correlation
Film capacitors Film capacitors		LOGISTICS / CAPACITY / TESTING - PROCESS FLOW		for senance parameters.						_				II	<u> </u>				<u> </u>		 		1 1			-
				Change of manufacturing alle	-																					
	PAS-FLM-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site	P P	Change of manufacturing alle. Note: Recegarization inside one plantistis is not affected	she or B		• •	•	•	•	•	• •	• •	•••	• •	•••	• •	в •	•••		 1.1.1.1				• •	
Film capacitors	PAS-FLM-PT-02																									Operant existing depends or import of
Film capacitors Film capacitors		Elimination or addition of a manufacturing process step	- P	Charge of manufacturing process e.g. washing / cleaning process e.g. charge of order of processes	c																					Characterisation depends on impact of production flow
Film capacitors		LOGISTICS / CAPACITY / TESTING - Q-GATE	1	a a shares from \$5000 to	rten												1 1					1 1	_			
	PAS-FLM-QG-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination/addision of electrical measurement/test flow block, relaxation/enhancement of monitoring procedure or sampling)	. P	e.g. change from 100% to sample impe Change of test coverage. Emporture measurement e.g. change in barn inhum in process.	to two C		1. A.			1.1			1.1					1.1			 					R (electr. funct.): lest coverage. R (reliability) only for change in burn in process.
Film capacitors				e.g. change in burn inhun in process.																						process.
QUARTZ ORYSTAL / SAW		QUARTZ CRYSTAL / SAW							_									_			 					
QUARTZ CRYSTAL / SAW	PAS-QUA-AN-01	Any change with impact on special customer characteristics/contractual agreements	P P	Not relevant for technical evaluation.	•							· ·									 					
QUARTZ CRYSTAL / SAW	PAS-QUA-AN-02		P P	Technical interface means component to	erninals. B		1. A. 1. A. 1.	1.1		1.1		· · ·	1.1	1.1	1.1		1.1	1.0			 1.1	1.1	1.1		/ - ·	
QUARTZ ORYSTAL / SAW		DATASHEET																			1	1 1				
	PAS-QUA-OS-01	Drange of datasheet parameters/electrical specification (min./max/typ. values) and / or ACIDC specification	P P	Change of application relevant information e.g. tighten of electrical parameter date Not included: Editorial changes.	bution A	Risk assessment depending on change for each application.															 					
QUARTZ CRYSTAL / SAW				Not included: Editorial changes.						_		_													4	
		Connection of data sheet		No technical change of the product, only correction in description (wording, dwalan,) and dwalang and the strength of the s	-																					
	PAS-QUA-DS-02	Correction of data sheet	I P	drawing) (0: In case of editorial changes. (P): In case of impact on product	••• A		1 C C							1.1							 				1 1	
QUARTZ CRYSTAL / SAW				rangray.																						
				Description of a new not previously covered parameter. Not included dange of he product. (§: no filamon (§: no filamon (%): Risk assumment depending on change for each application to provide substrance of additional parameter. (Init.)																						
	PAS-QUA-05-03	Specification of additional parameters	I P	No technical change of the product. (I): no influence (IP): Risk assessment depending on 9: g. adding new (tested) parameter.	A																 					
				(P): Risk assessment depending on change for each application to provide																						
QUARTZ CRYSTAL / SAW				makation)																						
		MATERIAL		1		-			-	-										_	 		1 1		4	
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-01			A change of Quarte Blank is a very new case. Meloly for SAW-Filter	A		· · ·	• •				•		•		•		в -	• •		 					
CUMPTE OPYSTAL (SAW	PAS-GLA-MA-02	Change of material composition - Base	P P	Changing of the material of the base. e.g. change from ceramic to eposy	A				• •	•	•	•	• •	• •	• •	• •			• •		 	• •				O0 may be influenced Temperature expansion coefficient may change
	PAS-QUA-MA-03	Change of material composition - Lead / Termination	P P	Change of Lead/Termination e.g. change of plating finish. (eg:Au, Ag	Pd.Sn) B				• •				• •	• •	• •		•	в -	• •		 • •					Play Change
	PAS-QUA-MA-04	Change of material composition - Sealing	P P	Change of Glass Seal e.g. change to lead free glass	в									• •				в -			 • •					X-Ray inspection may be influenced when sealing is containing Pb
				Changing of the material of the carvicap e.g. change from metal to ceramic mate										• •				в.								when sealing is containing Pb
		Charge of material composition - Blank Support	P P	Change of Blank Support e.g. change of glue (Silicone to Epoxy) e.g. change of Blank Support e.g. change metal holders (old troes)	c				•		Y							в .	•		Y .					
QUARTZ CRYSTAL / SAW	Production of	Line ge of meeter Composition - seek opport		e a, change nebel holders (old topes)					-	-		-						-							+	Electrical function affected in case of
	PAS-QUA-MA-07	Change of material composition - Overmold	P P	Change of Overmold e.g. change to green mold compound e.g. change of filer particles	в			• •		•	•	• •	• •		• •	•		в •			 • •					mechanical stress distribution change. ACI, www solidering and board costing has to be assessed. MSL might be
QUARTZ CRYSTAL / SAW																										has to be assessed. MSL might be changed.
	PAS-QUA-MA-08			Change of Case Sealing, Change of material for seam welding. Relevant for components with caramic base and metal cap.	c C				•	Y								в •								
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-08	Change of material composition - Case Sealing	PP	material for seam welding Relevant for components with ceramic base and metal cos.	he glue		· · ·	• •	•	r	•	•		•••	•••	•		в •	• •		 					Impedance my be influenced.
	PAS-QUA-MA-09	Change of material composition - Electrode		Change of Electrode material on crystel bank.	с				•	Y	Y .	•		Υ.	• •			в.			 					
QUARTZ CRYSTAL / SAW																										
QUARTZ CRYSTAL / SAW	PAS-QUA-MA-10	Change of material composition - Insulator	P P	Change of Insulator. City for leaded types Not released for leads Not released for leads	в		• •	• •	• •	•		• •	• •	• •	• •	•		в •	• •		 1.1.1.1.1.1.1	1.1	1.1			
	PAS-QUA-MA-11	Change of material composition - Marking	P P	Change of marking material e.g. change of Ink e.g. change of Ink e.g. change of Ink	в									• •				1.1			 					ACI check recessary!
QUARTZ ORYSTAL / SAW	PAS-QUA-MA-12	Change of supplier of material			с																					
QUARTZ CRYSTAL / SAW			• P	Change to a new or additional material supplier at component manufacturer. e.g. for 2nd source purpose	c																					remains unchanged. Otherwise see change of material.
Summe unitation rann		DESIGN		1					-		-	_	-			1 1	_	-		1	1 1					
QUARTZ ORYSTAL / SAW	PAS-QUA-DE-01	Changes of termination, auface linish, shape, color, appearance or dimension attucture - Base	I P	Change of Base design e.g. due to miniaturization purpose.	В			•	• •	•				•••				• •			 	• •			<u> </u>	Characteristics
QUARTZ ORYSTAL / SAW	PAS-QUA-DE-02	Changes of termination, surface finish, shape, color, appearance or dimension structure - Lead / Termination	I P	Change of usua design e.g. due to minimutation purpose. Change of Lead/Terminal pad or lead form form a generative or iterminal pad or lead form	olly. B		- •		•			•	• •	· ·	• •		•	в -	•••		 • •	1.1	1.1			C0 may be influenced Reliability of solder joints may be
	PAS-QUA-DE-03	Charges of termination, surface finish, shape, color, appearance or dimension structure - Can /	1 0	form Change of Can/Cap design e.g. due to miniaturization purpose.	A				• •				• •	• •				в -	• •		 • •					
QUARTZ CRYSTAL / SAW		Lay																								Electrical function affected in case of
	PAS-QUA-DE-04	Changes of termination, surface finish, shape, color, appearance or dimension structure - Package	I P	Change of Package (Molded). Change the design of the package. Not relevant for typical SMD.	device B			•	• •	•	•	• •	• •	• •	• •	•		в •	• •		 • •	1.1	1.1			mechanical stress distribution change. ACI, wave acidering and board coating has to be assessed. MSL might be
QUARTZ ORYSTAL / SAW																										changed.
	PAS-QUA-DE-05	Changes of termination, surface linish, shape, color, appearance or dimension structure - Insulator	I P	Change of Insulator design. Chilj for leaded types (old technology) Not relevant for typical SMD.	в			•	• •	•			• •	• •	• •	• •		в -	• •		 					
QUARTZ CRYSTAL / SAW	PAS-QUA-DE-05	Connected in the construction of Construction		Not relevant for typical SMD. Change of Quartz Blank design electrode design electrode design	ase, C				• •			•						в -								
QUARTZ ORYSTAL / SAW		Changes of inner construction - Quartz Blank								-															_	-
QUARTZ ORYSTAL / SAW	PAS-QUA-DE-07	Changes of inner construction - Blank Support	- P	Change of Blank Support design & G. change design of glue shape a.g. change design of metal supporter	с		•	•	•	Y	Y	•	1.1	•	•••			в -	• •		 Υ.					
QUARTZ CRYSTAL / SAW		PROCESS Changes in process technology or manufacturing methods - Quartz Blank	. P	Charge of Quartz Blank process e.g. charge of cutting or lapping techno	kogy C		• •		• •			•		• •	• • •			в .	• •	1 . 1	 1 . 1 .	1 . 1 .				
	PAS-QUA-PR-02	Charges in process technology or manufacturing methods - Blank Eliching / Geaning		Change of Bank Elch/Clean process Liking different / new technology	w etching C										•			в.								
QUARTZ CRYSTAL / SAW			- P	Using different / new technology e.g. change from square etching to plasm																				-	4	
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-03	Changes in process technology or manufacturing methods - Electrode Formation	- P	Change of Electrode Formation process e.g. change from exeporation to sputier	ing C		• •		• •			•	1.1	1.1	• •	•		в -	• •		 1.1	1.1	1.1	1.1		
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-04	Changes in process technology or manufacturing methods - Trimming	- P	Change of Auto Trim process (Method of final frequency tuning) e.g. change from exportation to ion bea	m C		•			1.1			1.1	· · ·	•	•		в .	•		 		1.1			
2000 CONSTRUCTOR				Change of Blank bonding / annealing																						
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-05	Changes in process technology or manufacturing methods - Bonding / Annealing	- P	Change of Blank bonding / annealing process. Change of method how apply conductive material to base or blank	c		• •	•	• •	Y	Y	• •	1.1	• •	• •	•		в -	• •		 Υ.	1.1	1.1			
	PAS-QUA-PR-06	Changes in process technology or manufacturing methods - Can / Cap Attaching	. P	Charge of CapiCan attaching process e.g. charge of the seeing method e.g. charge from tatch over to reflow of	c c					Y			• •		• •	•		в.	• •		 					
Summe unitation rann	PAS-QUA-PR-07	Charges in process technology or manufacturing metods - Carri Cap Asabring Ohanges in process technology or manufacturing methods - Molding		Change of Cuproal maching process a.g. change of overmolding process Not relevant for typical SMD.	eter C								• •		•			в •								
QUARTZ CRYSTAL / SAW		and get a process contrology or management methods - meaning	· *	relevant for typical SMD. e.g. change to collition process param e.g. change from inkert marking to hear	marking							_														
QUARTZ ORYSTAL / SAW	PAS-QUA-PR-08	Changes in process technology or manufacturing methods - Marking	- P	Testantize by porta toda. Change of Marking process Change of Marking process Change of Ageng process. Typically no Change of Ageng process. Typically no Targing daws on quart crystals.	marking B		• •	1.1	1.1	1.1		•	1.1	• •	1.1	1.1		1.1			 • •	1.1	1.1			AOI check recessary!
	PAS-QUA-PR-09	Changes in process technology or manufacturing methods - Aging	. P	Change of Aging process. 7/pically no arrive dras on matter crustels	c		• •						1.1		• •	• •		в.	• •		 					
QUARTZ CRYSTAL / SAW	PAS-QUA-PR-10	Process Integrity: having within specification PACKING / SHIPPING - NEW MATERIAL, CIRTICAL DIMENSIONS	. P	aging doe on quarte crystale. Interpretaches Variation within process specification. e.g. process control	c		-														 					
QUARTZ CRYSTAL / SAW		PACKING / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS									1 1					1 1				_	 1 1	1 1	1 1		_	
	PAS-QUA-PN-01	Packing / shipping specification change (loosening of tolerances)	P P	Charge of packing specification. e.g. number of pieces on reel.	в		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.1	1.1	1.1		1 - F	1.1	1.1			1.1	1.1			 	1.1	1.1			
QUARTZ CRYSTAL / SAW																										

	PAS-QUA-PN-02	Dry back requirements chance		P Change of drypack requirements.	e.g. charge of MSL e.g. charge in dry pack assurance (HC, MBB)	в	1																			_				
Z CRYSTAL / SAW	PAS-QUA-PN-03	Change of carrier (tray, ree)		P Change of carrier	e.g. change in dry pack assurance (HC, MBB) e.g. change by material	в				-		_													4	_	4	4		<u> </u>
Z CRYSTAL / SAW	PAPER NO	PACKING / SHIPPING - VISUAL INSPECTION	P	p change of carrier	e.g. charge by geometry.					_	<u> </u>		<u> </u>	<u> </u>				<u> </u>					- 1	<u> </u>				بلنط		-
Z CRYSTAL / SAW	PAS-QUA-PV-01	Change of labeling	1	P Change of labelling, also on reel.	(1) e.g. additional information (RoHS stamp) (P) e.g. change of customer specific information	в		14 C	1.1																/			· · /	-	
IZ CRYSTAL / SAW	PAS-QUA-PV-02	Change of product marking			e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	в																								
Z CRYSTAL / SAW				P Marking on device.	e.g. change of appearance of marking					-										-				-	44		4	4-4		
Z CRYSTAL / SAW	PAS-QUA-PV-03	Change of packing/shipping specification	Р	P Change in packing specification which does not described a change of dmensions or material of the packing.	e.g. change of documentation in packing specification	•								1.1						-				1.1	1.1	1.1	1.1	1 - 1		1
Z CRYSTAL / SAW		LOGISTICS / CAPACITY / TESTING - EQUIPMEMENT		T						_	<u>т т</u>		1 1	<u>г г</u>	T T	- I I	- T - T	T T	- T - T			1		_			_			
	PAS-QUA-EQ-01	Production from a new equipment/ocl which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	Р	P Change in process technique which is not already covered above. Note: Changes affecting the product not covered by the table require also a PCN.	 g. new equipment supplier with different process concept 	с		•	1.1																		1 1	1 - 1	•	Test effort depends on final risk assessment. Performance test according to affected process change.
Z CRYSTAL / SAW									_	_		_								_		_			4		4	4-+		process change.
Z CRYSTAL / SAW	PAS-QUA-EQ-02	Production from a new equipment/bod which uses the same basic technology (replacement equipment or extension of existing equipment pool)	-	P PCN required for dedicated equipment for sensitive component production.	e.g. additional equipment to increase production capacity e.g. replacement of same equipment	с		•	1.0	1.1			1 C 1	- e - e									-	1.1			1.1	1 - 1	•	Test effort depends on final risk assessment. Performance test according to affectes process change.
IZ CRYSTAL / SAW				Change of final test equipment which use	n grandelinin of same equipment.																									
Z CRYSTAL / SAW	PAS-QUA-EQ-03	Change in final test equipment type that uses a different technology	Р	P Charge of final test equipment which use different technology. PCN required for dedicated equipment for sensitive parameters.	e.g. change of leater platform	с		•		1								в.					-			1. 1. 1		1 * 1	•	Gage R&R / delta correlation
Z CRYSTAL / SAW		LOGISTICS / CAPACITY / TESTING - PROCESS FLOW				1	1			1	1 1		1 1		1 1		1 1	1 1	1 1	1 1	1		I I				_			
Z CRYSTAL / SAW	PAS-QUA-PF-01	Manufacturing sits transfer or movement of a part of production process to a different location/site	Ρ	P Note: Reorganization inside one plantisite is not affected	Movement or transfer of manufacturing site or process step(s) to a different location/site.	в		• •	•	•		• •	•••	•••	•••	• •	• • •	в •	•			1.1		1.0	1.1	1.1	1.1	•	•	
Z CRYSTAL / SAW	PAS-QUA-PF-02	Elimination or addition of a manufacturing process step	-	P Charge of manufacturing process sequence.	e.g. seshing / deaning process e.g. change of order of processes	с		•	1.0	1.1			1.1	1.1	1.1	1.1	· · ·	1.1		1.1				1.0	1.1	1.1	1.1	/ · /	•	Characterisation depends on impact of production flow.
Z CRYSTAL / SAW		LOGISTICS / CAPACITY / TESTINS - Q-GATE Obarde of test coverage used by the suppler to ensure data sheet correlance (e.g.,	L L	1	e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements	1					ТТ		1	ТТ	ТТ	<u> </u>	<u> </u>	ТТ	<u> </u>	<u> </u>	<u> </u>		ГТ		TΤ			TT	<u> </u>	R (electr. funct.): test coverage.
Z CRYSTAL / SAW	004-05-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination/addition of electrical measurement/test flow block, releasion/enhancement of monitoring procedure or sampling)	-	P Change of test coverage.	 g. test flow block, reduction from three to two temperature measurements g. change in burn inhun in process. 	с		1 A 1	1.1	1.1				1.1		1.1							-	1.1		1. 1. 1	1.1	1 * 1	1	R (electr. funct.): test coverage. R (reliability) only for change in burn i process.
		montang process is an anyong Auninikan Electroletic Casacitor Any																			-									
	PAS-ALU-AN-01 PAS-ALU-AN-02	Any change with impact on special customer characteristics/contractual agreements Any change with impact on processability/manufacturability at customer, which is not covered in	P	P	Not relevant for technical evaluation. Technical interface means component terminals. See processability on board level.	в															-			-		+++		•		
		DATASHEET			see processability on board level.					-																-		÷		
	PAS-ALU-DS-01	Change of datasheet parameters/electrical specification (min/max/kps.values) and / or ACIDC specification	Ρ	Change of application relevant P Information Not included: Editorial changes.	e.g. tighten of electrical parameter distribution	A	Risk assessment depending on change for each application.		1.0						· ·				-				-		· ·	• •			•	
			Ħ	No technical change of the product, only correction in description (wording																										
	PAS-ALU-DS-02	Correction of data sheet	1	No technical change of the product, only correction in description (working, drawleg,) (Tr: In case of editorial changes, (P): In case of impact on product integrity.	e.g. data sheet correction because of new information about component behavior	A			1.1						· · ·	· ·								1.1	· ·	· ·		•	•	
	<u> </u>		\square	(P): In case of impact on product integrity. Description of a new not previously covered parameter. No technical dramps of the product. (P): Risk assumment depending on change for each application to provide enderso or daditional parametes (that exolution)																					4		42	4		L
				Description of a new not previously covered parameter. No technical change of the product.																								1 1		
	PAS-ALU-DS-03	Specification of additional parameters	1	P (f): no influence (P): Risk assessment depending on charge for each application in provide	e.g. adding new (tested) parameter.	A		- E - E - E	1.1	1.1				1.1										1.1	1 1	1 1	1.1.1	1 • 1		1
				evidence of additional parametes (stat. evaluation)																								4		1
·	PAS-ALU-MA-01	MATERIAL Change of material composition - Housing		P Charge of housing	e.g. change Al alloy for housing	C .	E: only if a cap holder holds the Capacitor body by pressing.			•				• •		•													-	
•							E: in case of external surface of sealing is changed.			-		_						_	_						+		<u>+-</u>	<u>+</u>	-	<u> </u>
	PAS-ALU-MA-02	Change of material composition - Sealing		P Charge of sealing	e.g. change of subber compound e.g. change of assiling disc material (satal, Snap in)		Evaluation only, if capacitor is glued	· ·	•	•					• •	• s		•		-	1.1	1.1	1	1.1	1.1	1.1	1.1	1 - 1		
	PAS-ALU-MA-03	Change of material composition - External Insulation		P Change of external insulation / sleeving	e.g. charge from PVC into PET e.g. charge of colour	с	B: Only for glued capacitors.	· ·	• •	•		• •	••	• •	•	- s		•					-	1.1	1.1		1.1	(· · ·)		Based Humidity test can be done without applying voltage.
	PAS-ALU-MA-04	Change of material composition - Lead / Termination	Р	P Change of lead or outer termination.	e.g. change of leadhame from iron into copper e.g. change of leadhame finish from tinilead into tin	в		· ·	•					•		• •		в -	•				-	1.1	1.1		1.1	•	- ÷ -	
	PAS-ALU-MA-OS	Change of material composition - Internal Insulation / Paper	Р	P Change of paper type / internal insulation	e.g. change of paper thickness 50 µm to 40µm	с	& Only if impedance increase (delta characterization). Check if datasheet is affected (PAS-ALU-DS-01).						• •					в -				•			1.1		1 .			1
·	PASALIMEN	Change of material composition - Electrolyte		P Change of electrolyte	e a, change in formulation	c	A Only if impedance increase (delta characterization). Check if datasheet is affected (PAS-ALU-DS-01).			•								в.			_				+			+	•	<u> </u>
		Change of material composition - Electrolyte Change of material composition - Tape Material		P Charge of electrolyte P Charge of closing type material		c	characterization). Check if datasheet is affected (PAS-ALU-DS-01).	· •					•	1.1		•	• • •	в.				•						4 -	· •	L
	PAS-ALU-MA-08	Charge of material composition - labe Arternal Charge of material composition - Base Plate	P	P Change of base plate material P Change of base plate material	e.g. change of gue of basis material	C B		· ·								•														
																												1 1		Test effort depends on final risk assessment. Performance test according to affecte material. Assumption material specification remains unchanged. Otherwise see change of material.
	PAS-ALU-MA-09	Change of supplier of material	-	P Change to a new or additional material supplier at component manufacturer.	e.g. for 2nd source purpose	с		· ·	• •	•		• •		•	•••	• •	• • •	в •	•	-	1.1	1.1		1.1	1.1	1 1	1.1	1 • 1	•	material. Assumption material specification
	<u> </u>	DESIGN																												change of material.
	PAS-ALU-DE-01	Changes of termination, surface linish, shape, color, appearance or dimension structure - Wire Diameter	1	P Charge of wire dameter	e.g. change from 0.8 into 0.6 mm wire diameter.	в		· ·	1.0	-				•		•			•				-	1.		1.1			-	
	PAS-ALU-DE-02	Dhanges of termination, surface finish, shape, color, appearance or dimension structure - Termination	1	P Change of termination appearance For welded Al capacitors only.	e.g. change from malt lin into bright lin.	в		· ·	1.0				1.1	1.1									-	1.1			() ÷	•	- ÷ -	
	PAS-ALU-DE-03	Changes of termination, surface finish, shape, color, appearance or dimension structure - Appearance		P Change of appearance Note: Marking on device is defined as separate change (PAS-ALU-PV-02).	e.g. change of colour/appearance e.g. change of safety vent shape	в		- •	1.1					- e - e									-		1.1		1.1	/ · //		
	PAS-ALU-DE-04	Appearance Changes of termination, surface linish, shape, color, appearance or dimension structure - Rubber Sealing	1	P Change of rubber sealing stand-off shape (for radial)	e.g. change of profile / design	A		• •	1.0	1.1				• •	· ·	•										· .			-	
	PAS-ALU-DE-05 PAS-ALU-DE-05	Changes of inner construction - Aluminum Foll Changes of inner construction - Separator		P Charge of Al foil width	e.g. charge of width e.g. charge of width	c c				:						•		B -										-		
	PAS-ALU-DE-07	Changes of inner construction - Separator Density	-	p Charge of seperator density	e.g. charge of seperator density/resistivity	с		· ·		•			•		1.		• •	в .		- · ·		-	•						•	
	PAS-ALU-DE-08 PAS-ALU-DE-09	Changes of inner construction - Inner Connection Changes of inner construction - Closing Tape		P Charge of inner connection P Charge of closing tape	e.g. charge of shape/dimension	c c		· ·			•				· ·	• •		В -	-			•					-	43	-	Terminal Strength (11) not for axial components without paddle tabs.
		Changes of inner construction - Foll	-	P Change of foil type	e.g. charge of dimension e.g. charge of etching level e.g. charge of thickness	c												в -	-			•						-	•	
		PROCESS				с												в -	•		1				T			T	-	Terminal Strength (11) and Vibration
	PAS-ALU-PR-01 PAS-ALU-PR-02	Changes in process technology or manufacturing methods - Terminal Attach Changes in process technology or manufacturing methods - Winding			e.g. change of stitching / welding layout e.g. change of material disposition	C B							•		•				•								4	4-4	•	Terminal Strength (11) and Vibration (14) not for axial components without paddle table.
	PAS-ALU-PR-02 PAS-ALU-PR-03	Changes in process technology or manufacturing methods - Winding Changes in process technology or manufacturing methods - Impregnation		p Charge of impregation	e.g. change of bulk process into individual impreciation	с			•		-						• • •				-	•							÷	Surge voltage test for high voltage components only.
	PAS-ALU-PR-OI	Changes in process technology or manufacturing methods - Assembly	-	p Charge of assembly process	e.g. change of bulk process into individual impregnation e.g. change of assing method e.g. change of assembly process sequence	с		• •		•				•		•								1.0	· ·]	1.	1			R: Depends on process change
	PAS-ALU-PR-05	Changes is process technology or manufacturing methods - Aging / Testing		P Change of aging/listing process	e.g. change of timing, voltage or temperature of process	с		• •	1.0				1.1	1.1				в -						1.0	· ·					R: Depends on process change
	PAS-ALU-PR-06	Dhanges is process technology or manufacturing methods - Trim & Form Leaded			e.g. change of looing shape or bending procedure	в		• •	1.0	-	-		1.1	• •	1.1	1.0		1.1					-	1.0				1 .		Solderability may be influenced
	PAS-ALU-PR-07	Changes in process technology or manufacturing methods - Trim & Form SAID	-	P Change of trim & form process (SMD)	e.g. change of looling shape or bending procedure	в		•	1.0	-	-			•		•			•						1 · 1			4.		Solderability may be influenced
	PAS-ALU-PR-08	Process integrity: hining within specification PACIONG / SHPPING - NEW MATERIAL, CRITICAL DIMENSIONS	Ŀ	P Variation within process specification.	e.g. process control	с											· · ·	· · ·		1 · 1			•				<u> </u>	لمعيل	•	
	PAS-ALU-PN-01	Packing / shipping specification change (loosening of tolerances)	Р	P Charge of packing specification.	e.g. number of pieces on reel.	в			1.1		-		1.1	1.1									-						-	
	PAS-ALU-PN-02	Dry pack requirements change	Р	P Change of drypack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HIC, MBB)	в																								
	PAS-ALU-PN-KG	Change of carrier (tray, ree)		P Change of carrier	e.g. charge in dry pack assurance (HC, MBB) e.g. charge by material e.g. charge by geometry.	в																					-			
		PACKING / SHIPPING - VISUAL INSPECTION			÷		1			1		_			1 1			1 1 -	1 1		_	_								_
	PAS-ALU-PV-01	Change of labeling	Т	P Change of labeling, also on reel.	(8 e.g. additional information (RoHG stamp) (P) e.g. change of customer specific information	в		1 A A	1.1																	· ·			•	
				P Marking on device.	e.g. change of content of marking e.g. change of method of marking	в		1.0	1.1										-						· ·	· .				
	PAS-ALU-PV-02	Change of product marking					1			-	1 1														4		_			
					e.g. change of appearance of marking e.g. change of documentation in packing																									
	PAS-ALU-PV-02 PAS-ALU-PV-03	Charge of packing/shipping specification		P Change in packing specification which does not described a change of dreamines or material of the packing.	e.g. change of appearance of marking e.g. change of documentation in packing specification	•		- -	1																•			•	•	
-	PAS-ALU-PV-Q3	Durge of packing/hileping specification		P Change in packing specification which does not described a change of dmensions or material of the packing.	e.g. charge of documentation in packing specification							• •	· ·		· ·	· ·	• • •				•		•						-	Test effort depends on final risk
		Charge of packing/shipping specification		P Change in packing specification which does not described a change of dmensions or material of the packing.	e.g. charge of documentation in packing specification	c		•••		•	-	· ·	•	••••	· ·	• •	· · ·	в.		•	•		•	· ·			· ·		•	Test effort depends on final risk assessment. Performance test according to affectes process charge.
	PAS-ALL-PV-03	Dange of publicative generations in a second se	P	P Change in packing specification which does not described a change of dimensions or material of the packing. P Change in process technique which is not already covered above. Note: Overges affecting the product net covered by the table register abo a PCN.	e.g. change of documentation in packing specification e.g. nee equipment supplier with different process concept	c		• •		•		· ·	•	•••	· ·	•		в -				•	•	· ·					•	Test effort depends on final risk assessment. Performance test according to affecte process change. Test effort depends on final risk executions.
	PAS-ALU-PV-Q3	Durge of packing/hileping specification	P	P Change in packing specification which does not described a change of dimensions or material of the packing. P Change in process technique which is not already covered above. Note: Overges affecting the product net covered by the table register abo a PCN.	e.g. change of documentation in packing specification e.g. new equipment supplier with different process concept			· ·		•		· ·	•	• •	· ·	• • •	· · ·	B -		-	· ·		-	· ·			· ·		•	Test effort depands on final risk assammet. Performance set according to affecte process change. Test effort depands on final risk assammet. Performance set according to affecte process change.

REALIZED	Charoe in final test equipment true that uses a different technology	P P Change of final last equipment which use different technology. PON required for dedicated equipment for annative parameters.	e.g. change of tester platform	с														. B													Gara BAR /
_	LOGISTICS / CAPACITY / TESTING - PROCESS FLOW	PCN required for dedicated equipment for sensitive parameters.																													
PAS-ALU-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site	P P Note: Reception inside one particular is not affected	Movement or transfer of manufacturing site or process step(s) to a different location/site.	в					•						•			• в								. 1				•	
PAS-ALU-PT-02	Elimination or addition of a manufacturing process step	plantinile is not affected P Charge of manufacturing process sequence.		с																							_		_	•	Characterisat production for
PAS-ALU-PF-03		I P Reduction of final testing. PCN required for dedicated final test reductions for sensitive parameters.	e.g. washing / cleaning process e.g. change of order of processes e.g. elemination of additional impedance control	c									-	-		-	-			-	-	-	-	-						•	
	Elimination of final electrical measurement / last flow block LOGISTICS / CAPACITY / TESTING - O GATE	 PCN required for dedicated final test reductions for sensitive parameters. 		Ľ																		· .							<u> </u>		Characterisat final test flow
PAS-ALU-QG-01	Change of test coverage used by the supplier to ensure data sheet compliance (e.g., elimination/addition of electrical measurement/test flow block, relaxation/enhancement of monitoring procedure or sampling)	. p Change of test coverage.	e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements e.g. change in burn inhun in process.	с		-	1.1																					1.		-	R (electr. fun R (reliability) process.
	NTC		e.g. change in burn inhun in process.	<u> </u>								<u> </u>							<u> </u>		<u> </u>				<u> </u>						
PAS-NTC-AN-01 PAS-NTC-AN-02	Way Key change with impact on special customer characteristicativentischail agreements Key change with impact on processability/manufacturability at customer, which is not covered in the matrix sites BATAGHEET	P P	Not relevant for technical evaluation. Technical interface means component terminals.	B																	1						ŦŦ			- :	=
	he matrix balow. DATASHEET Diarge of datasheet paramelen/electrical specification (min./max/typ. values) and / or ACIDC specification	Change of application relevant	1		*						-			1					1					+		=	=	-	+	=	
PAS-NTC-DS-01	Unings of distance parameters as a people of the people of		e.g. lighten of electrical parameter distribution	A	Risk assessment depending on change for each application.	- e - e -																•				-			· ·	<u> </u>	4
PAS-NTC-DS-02	Connection of data sheet	No technical change of the product, only correction in description (wording, drawing,) (0: In case of editorial changes. (0): In case of impact on product integrity.	e.g. data sheet correction because of new information about component behavior	*		н. Т											-				-	•	•			•				•	
PAS-NTC-DS-03	Specification of additional parameters.	Description of a new not previously covered parameter. Not stochical change of the product. If pp. (Rin a summer to depending on change for each application to provide evidence of additional parameter (stat. evaluation).	n.g. adding new (sasied) parameter.	A											-																
PAS-NTC-MA-01	MATERIAL Change of material composition - Ceramic Binder	p p Change of Binder Material to bind ceramics.		с		• •	•					· ·		•		• •	•		· · ·				-			•		· 1			
PAS-NTC-MA-02	Change of material composition - Geramic	p p Charge of ceramic composition	e.g. charges in addities amount	с			•							•		• •		• в	•	s ·			-							•	Parameter an an anticipateo performance. S = SMD dev
PAS-NTC-MA-03	Change of material composition - Inner Electrode	P P Change of inner electrode material (ink material). Valid in case of multisyer structures ofk	e.g. change from AgPt material to AgPd material	с			•				•						•	- в												•	3 = 340 del
PAS-NTC-MA-04	Change of material composition - Encapsulation	P P Change of encapsulation material.	e.g. charge of costing e.g. charge of additives in an insulation.	в	& Risk assessment on application level, If interaction with other material expected.	· •	•	• •		•						• •	•	- в	•										· .	•	Parameter an an anticipated performance
PAS-NTC-MA-05	Change of material composition - Lead material / Termination	P P Change of lead or outer termination. Change of lead (thish) material, termination material or attachment material.	e.g. change from SnPb to pure Sn	в	Risk assessment needed to evaluate compatibility of soldering process.	• •	•				•		•	•	•		•	• B		• •	-									•	
PAS-NTC-MA-05	Dhange of supplier of material	P Change to a new or additional material supplier at component manufacturer.	e.g. for 2nd source purpose	с		•	•	•	-	•	•	•	• •	•		• •	· ·	• B	•	• •		-	-			•			· ·	•	Assumption m remains unch change of ma
PAS-NTC-DE-01	DESIGN Charges of termination, surface finish, shape, color, appearance or dimension situcture - Lead Diameter	p Charge of lead dameter	e.g. change lead diameter from 0.5 to 0.4 mm	в						• •		•	•		•		· ·	- в	1 • 1	• •	·	•	-					•		•	
PAS-NTC-DE-02	Changes of lermination, surface finish, shape, color, appearance or dimension structure -	J P Change of termination area	a.g. change size damater hon U.S. to U.4 mm a.g. change of termination bayer hickness a.g. change in termination dimensions a.g. change from addance connection to velded connection	в		•	1.0					•		-				• B		• •			-			· .			· ·		SMD compon
PAS-NTC-DE-03	Changes of termination, surface finish, shape, color, appearance or dimension structure - Internal Connection	J p Change of inner connection	e.g. change from soldered connection to welded connection	с		•	1.0			• •	•		•	•			•	• B		• •									<u> </u>	•	
PAS-NTC-DE-04	Changes of termination, surface finish, shape, color, appearance or dimension structure - Appearance	 P Note: Marking on device is defined as appende change (PAS-FLM-PV-02). 	e.g. change or adding of colour on component Mainly in combination with other changes!	в			100			· ·	•							1.1				-				•	- · ·		· ·	· ·	
PAS-NTC-DE-65	Dhanges of inner construction - Electrode	P Charge of electrode layer trickness or geometry. For multi-layer technology only.	e.g. change of electrode design	с		•	1.0		•			•		-						• •									· ·		
PAS-NTC-DE-06	Changes of inner construction - Layer Thickness	P Change of ceramic layer thickness. For multi-layer technology only.	e.g. change from 1.5µm into 1.0µm	с			1.0	•	•			•				• •				• •			-			•	· ·		· ·	<u> </u>	
PAS-NTC-DE-07	Changes of inner construction - Number of Layers	- P Change of number of centeric or electrode layers. For multi-layer technology cely. Always in combination with PAS-NIC-DE-06.	nee also layer thickness	с		· ·	1.0		•			•				• •	•			• •						•	· ·	•	· ·	·	
PAS-NTC-PR-01	Diarges in process technology or manufacturing methods - Lamination	- P Change of lamination / press technique technique	e.g. stamp press to isostatic press	с	1	• •	1.1		•	• •		· ·				• •		· В		• •			-			•		· ·	1 1	•	
PAS-NTC-PR-02	Changes is process technology or manufacturing methods - Firing	. p Change of firing / sintering profile	e.g. temperature and / or time and / or atmosphere. e.g. from tunnel to batch kin.	с		• •	1.0		•		•	•		-		•	•	· В				-	-			÷			e	•	
PAS-NTC-PR-03	Charges in process technology or manufacturing methods - Dicing	. P Charge of dicing / slicing	e.g. change from cutting to sawing	с		• •		• •		• •	_	•						- в	_							<u> </u>	<u> </u>	· -	<u>·</u> ·	•	4
PAS-NTC-PR-04	Changes in process technology or manufacturing methods - Termination	P Change for termination preparation like plating or apply of termination base layer	e.g. change in plating technology (final termination) e.g. change from dp in paste to plating (apply)	в		• •	1.1				•	-	•	•			•			•••						·	<u> </u>		· ·	•	
PAS-NTC-PR-05	Changes in process technology or manufacturing methods - Decirode apply	P Change of electrode apply. For multi layer technology only. Change in assembly process for leaded	e.g. change of inver electrode lay down method. e.g. soldering method for lead attach to element or	в		· ·		•			•	•			•	• •	•	• в	•	•									<u></u>	•	+
PAS-NTC-PR-07	Process integrity: tuning within specification Process integrity: tuning within specification PACKING / SHPPING - NEW MATERIAL, CRITICAL DIVENSIONS	P Change in assembly process for leaded or encapsulated devices. P Variation within process specification.	coating / encapsulation process e.g. process control	c																							_			1	
PAS-NTC-PN-01		P P Change of packing specification.		в								·			•		· ·		· · 1		·		-					· •		-	
PAS-NTC-PN-02	Dry pack requirements change	P P Change of drypack requirements.	e.g. change of MSL e.g. change in dry pack assurance (HIC, MBB)	в		1. A. 1. A. 1.	1.1					- I						1.1		1.1						•		· · /	· •		
PAS-NTC-PN-03	Change of carrier (tay, reel)	p p Change of carrier	e.g. charge by material e.g. charge by geometry.	в			1.1																-								
	PACIONG / SHIPPING - VISUAL INSPECTION				1						-		_	-				-													
PAS-NTC-PV-01 PAS-NTC-PV-02	Change of labeling	I P Charge of labeling, also on reel. I P Marking on device.	(8) e.g. additional information (RoHS attamp) (P) e.g. change of customer specific information e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	в																	-							H-H-		+	
PAS-NIC-PV-02	Charge of product marking Charge of packinghtpping specification	I P Marking on device. P P Change in packing specification which does not described a change of dimensions or material of the packing.	e.g. change of appearance of marking e.g. change of appearance of marking e.g. change of documentation in packing	в																											
	Change of packing/ah/pping specification LOGISTICS / CAPACITY / TESTING - EQUIPEMENT	where the difference a change of dimensions or material of the packing.	specification		l																										
PAG-NTC-ED-01	Production from a new equipmentited which uses a different technology or which due to its unique form or function can be supected to influence the integrity of the final product	P P P Change in process technique which is n already covered above. Note: Changes affecting the product not covered by the table require also a PCN	at e.g. change from wet to dry technology.	с		•																	-					-		•	Test effort de assessment. Performance process chan
PAS-NTC-EQ-02	Production from a new equipment/lool which uses the same basic technology (replacement equipment or extension of existing equipment pool)	- P PCN required for dedicated equipment for sensitive component production.	e.g. elmination of manual handling processes	с		•	1.1							-																•	Test effort de assessment. Performance process char
PAS-NTC-EQ-03	Dange in final test equipment type that uses a different technology	P P Change of final test equipment which use different technology. PCN required for dedicated equipment for senaltive parameters.	a.g. charge of tester platform	с		•			-								-	- в	-		•		-					•		•	
PAS-NTC-PF-01	LOGISTICS / CAPACITY / TESTING - PROCESS FLOW Menufacturing alle transfer or movement of a part of production process to a different location/alle	P P Change of manufacturing alle. P P Note: Reorganization inside one plantistle is not affected	Movement or transfer of manufacturing site or process step(s) to a different location/site.	в						• • •		•	•				•	• в	1.1			.								•	
PAS-NTC-PF-02	Elimination or addition of a manufacturing process step	p Change of manufacturing process sequence.	process step(s) to a different location/site. e.g. sesthing / cleaning process e.g. change of order of processes	c																											Characterizat production for
	Lamano of action a manuscript process sep Locastical CARACYT TESTING - OANTE During of their counting used by the septert to ensure data sheet compliance (e.g., elementary proceeding on exercise) material and the sector measurementies the block, indextorive/hancement of materializing of the counting of the sector of t	P Charge of test coverage.	e.g. change from 100% to sample inspection e.g. test Reviblock, reduction from three to teo	c																						Ŧ	t	\vdash	Ŧ		Characterisat test coverage R (electr. furv R (reliability)
Proventile-Gardet	monitoring procedure or sampling)	- P. Consequence Base Coverage.	temperature measurements e.g. change in burn initun in process.	c							1			Ľ																	R (relability) process.
PAS-PTC-ANO1	Any Any change with impact on special customer characteristics/contractual agreements.	P P	Not relevant for technical evaluation.	•	1							1.1					1.1		1.1		1.1				1.1		_	. T			—
PAS-PTC-AN-02	Any change with impact on processability/manufacturability at customer, which is not covered in the matrix below.	P P	Not reavant for technical evaluation. Technical interface means component terminals. See processability on board level.						-														-					•	•		
	DATADJET		1	1	Data annual dar or fra an aba																					-		H			-
PAS-PTC-DS-01	Dhange of datasheet parameters/electrical specification (min./max./kps. values) and / or ACIDC specification	P P Information Not included: Editorial changes.	e.g. lighten of electrical parameter distribution	A	Risk assessment depending on change for each application.		1.1			1.1								1.1	1	1.1											

PAS-PTC-DS-02	Connection of data allwet	П	No technical change of the product, only correction in description (wording, drawlaw)	V e.g. data sheet correction because of new Information about component behavior																														
	Contriction of otals linker	+	(P): In case of impact on product		^														<u> </u>									_						
PAS-PTC-DS-03	Specification of additional parameters	÷	 Image:p: coverage of a new not previously coverage prevanter. No technical change of the persoluti. (P): Rich assessment depending on change for each application to provide midmice of additional parametes (intel meduation) 	n.g. adding new (tasked) parameter.	*				-	-							•	•		-		-	-		-	-	•	-		•		•	-	
		Р	P Change of Binder Material to bind ceramics.		с			•		· ·				•			•	• •								•							-	
PAS-PTC-MA-02	Change of material composition - Geramic		p Change of certamic composition	e.g. changes in additives amount	с												•	• •		в	• s				1.1								Par an a per	ameler a inticipale formance
PAS-PTC-MA-03	Change of material composition - Polymer	Р	P Charge of polymer composition		с																													SND de
PAS-PTC-MA-04	Change of material composition - Encapsulation		p Charge of encapsulation material.	e.g. change of coating e.g. change of additives in an insulation.	в				•		•						•			в	•												Par an 1	ameler a
PAS-PTC-MA-05	Charge of material composition - Lead material / Termination	-	Change of lead (Tinish) material, P termination material or attachment material.	e.g. change of addsvill in an insulation.	в				_					•		_			•			•	-	_									per	ormance
			P termination material or attachment material	e.g. change from SnPb to pure Sn					_	-									_													-	Aaa	umption
PAS-PTC-MA-06	Change of suppler of material DESIGN	·	P Change to a new or additional material supplier at component manufacturer.	e.g. for 2nd source purpose	с		• •	•	•	1.1	•	•	1.1	•	•	1.1	•	•	•	в	• •	•	-		1.1		1.1			1.1	1.1	1	• Ferr cha	umption ains und ngs of m
PAS-PTC-DE-01	DESIGN Charges of lermination, surface linish, shape, color, appearance or dimension structure - Lead Discussion		p Charge of lead dameter	e.g. charge lead dameter from 0.5 to 0.4 mm	в					· · [•		• •	• •						в		•											•	
PAS-PTC-DE-02	Charges of termination, surface finish, shape, color, appearance or dimension structure - Lead Darneter Charges of termination, surface finish, shape, color, appearance or dimension structure - Termination Area	1	p Charge or sermination area	e o change in termination dimensione	в		· ·						• •			1.1	-			в		•				-		-					• 34	D compo
PAS-PTC-DE-03	Changes of termination, surface finish, shape, color, appearance or dimension structure - Internal Connection	4	P Change of inner connection Change of appearances. P Note: Marking on device is defined as assertate change IPAS-PTC-PV-021.	e.g. change of termination layer thickness e.g. change in termination dimensions e.g. change from acidered connection to welded connection	с		•				•	• •		•		1	-	•	•	в	•	•			1.1					1.1			•	
PAS-PTC-DE-04	Changes of termination, surface linish, shape, color, appearance or dimension structure - Appearance		P Note: Marking on device is defined as severals charge (DAC-PTC-PS-02)	e.g. change or adding of colour on component Mainly in combination with other changes!	в			1.1					• •			1.1	-									-						÷.,	÷	
PAS-PTC-DE-05	Changes of inner construction - Electrode	-	P Charge of electrode layer thickness or geometry.	e.g. change of electrode design	с		•						•					•				•	-			-					-		•	
PAS-PTC-DE-06	Changes of inner construction - Layer Thickness	-	P Charge of ceramic layer thickness. For multi-layer technology only.	e.g. charge from 1.5µm into 1.0µm	с		•	1.1	•	•	1.0		•			1.1	•	•	1.1		•	•				-						÷	÷	
PAS-PTC-DE-07	Changes of inner construction - Namber of Layers	1.T	Change of number of ceramic or	nee also byer thickness	с			1.		•							•	•																
L	PROCESS	لنط	technology only. Always in combination with PAS-PTC-DE-06.	1	Ľ																													_
PAS-PTC-PR-01	PROCESS Ohanges in process technology or manufacturing methods - Lamination	1.1	P Change of lamination / press technique technology	e.g. stamp press to isostatic press	с		• •	1.1		•	•	•		•			•	• •		в	• •	•				•					•		•	
PAS-PTC-PR-02	Changes in process technology or manufacturing methods - Firing		p Change of firing / sintering profile	e.g. temperature and / or time and / or atmosphere. e.g. from tunnel to batch kiln.	c		• •		•							1.1				в										1.1			•	
PAS-PTC-PR-03	Ohanges in process technology or manufacturing methods - Dicing	1.1	p Change of dicing / slicing	e.g. change from cutting to sawing	с		• •		•		• •		• •							в			-										•	
PAS-PTC-PR-04	Changes in process technology or manufacturing methods - Termination		P Change for termination preparation like	e.g. change in plating technology (final termination)	в			1.1						•		-			•	в		•								1.1			•	
PAS-PTC-PR-05	Changes in process lectrology or manufacturing methods - Dischools apply	++	P Change of electrode apply. For mall	 a.g. change of inner electrode lay down method. 	с												•																•	_
PAS-PTC-PR-06	Changes in process technology or manufacturing methods - Assembly	1.1	P Change in assembly process for leaded	a.g. acidering method for lead attach to element or coating / encapsulation process					•							•			•		•													
PAS-PTC-PR-07	Process Integrity: tuning within specification	+ . +	P Variation within process specification.	coating / encapsulation process e.o. process control	с																													
	PADIONS / SHIPPING - NEW MATERIAL, ORTICAL DIMENSIONS		*												_				-		-				-					-		-		
	Packing / shipping specification change (loosening of tolerances)	P	P Change of packing specification.	e.g. number of pieces on reel.	в			1.0						-			-																	
PAS-PTC-PN-02 PAS-PTC-PN-03	Dry pack requirements change Change of carrier (tray, reel)	P	P Change of drypack requirements. P Change of carrier	e.g. charge of MSL e.g. charge in dry pack assurance (HIC, MSB) e.g. charge by material	в			1.1												•						-		-						
PADP IC-FIEld	PACKING / SHEPPING - VISUAL INSPECTION			e.g. change by material e.g. change by geometry.					- ·								-															<u> </u>		
PAS-PTC-PV-01	Change of labeling	1	P Change of labelling, also on reel.	(8 e.g. additional information (RoHG atamp) (P) e.g. change of customer specific information	в		1. A.	1.1	1.1							1.1	-	· .	1.1							-						÷.,	÷	
PAS-PTC-PV-02	Change of product marking		P Marking on device.	e.g. charge of content of marking e.g. charge of method of marking e.g. charge of method of marking	в		1. A.	1.0																										
PAS-PTC-PV-03	Change of packing inhipping specification	Р	P Change in packing specification which does not described a change of dmensions or material of the packing.	e.g. charge of documentation in packing																														
	LOGISTICS / CAPACITY / TESTING - EQUIPEMENT								-										_		_									_			_	
PAS-PTC-EQ-01	Production from a new equipment/tool which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	и р	P Change in process technique which is not already covered above. Note: Changes affecting the product not covered by the table require also a PCN.	not e. g. change from wet to dry technology. 4	с		•	${\bf r}_{i} = {\bf r}_{i}$																									Tes ass Per pro	t effort de esament formance cess cha
PAS-PTC-EQ-02	Production from a new equipment/ool which uses the same basic technology (replacement equipment or extension of existing equipment pool)				с		•	1.																									• Tes ann Per	t elfort de esament. formance cess cha
PAS-PTC-EQ-03	Change in final test equipment type that uses a different technology	Р	P P PCN regized for decated equipment for aenative parameters.	e.g. change of teater platform	с		•	1.												в													• Gas	pe R&R /
	LOQISTICS / CAPACITY / TESTING - PROCESS FLOW																																	
PAS-PTC-PF-01	Manufacturing site transfer or movement of a part of production process to a different location/site	e P	P Note: Reorganization inside one plantialie is not affected	Movement or transfer of manufacturing site or process step(s) to a different location/site.	в		• •		•		•	•	• •	•		•	•	• •	•	в	• •	•				-	1.1					•	•	
PAS-PTC-PF-02	Elimination or addition of a manufacturing process step	-	P Change of manufacturing process sequence.	e.g. seshing / cleaning process e.g. change of order of processes	с			1.1					1.1			1.1														1.1			• Cha	racteria duction fi
<u> </u>	LOGISTICS / CAPACITY / TESTING - O-GATE	 			-	1					1				1								1		-			1		1				
PAS-PTC-QG-01			p Charge of test coverage.	e.g. change from 100% to sample inspection	1																					T							• R (s	coverage electr. fur elability)
- same number01	Change of set coverage used by the support to ensure data inset compliance (e.g., elimination/addition of electrical measurement/test flow block, relaxation/enhancement of environment research and the set of t		p Change of test coverage.	 g. test flow block, reduction from three to two temperature measurements 	с			1.1					1.1							-													R	en3Ditf/) C683.
	Change of test coverage used by the suppler to ensure data sheet compliance (e.g., almostachishdishor of electrical measurement/test flow block, nelskoston/enhancement of monitoring procedure or ampling). VOR	$\left \cdot \right $	p Change of test coverage.	 e.g. change from 100% to sample inspection e.g. test flow block, reduction from three to two temperature measurements e.g. change in burn inhun in process. 	c					•		•											_		1						_		pro	
	VDR				с		• •		·		•		• •				- 1													1.				
	Von Ray Any charge with impact on special culturer characteristics/contractual agreements. Any charge with impact on processability/manufacturability at culturer, which is not covered in	Р Р			с в				- -		· ·	· ·	· ·		· ·		-	· ·					- 1					-		-		•		
PAS-VDR-ANO1 PAS-VDR-ANO2	VOR Any Any charge with regard on special customer characteristic/contractual agreements Any charge with regard on processability/menducanabily at customer, which is not covered in the memory biology and traped on processability/menducanabily at customer, which is not covered in the memory biology and the memory biology an	P	P P	Not relevant for technical evaluation. Technical interface means component terminals. See processability on board level.	• B			· ·	· ·		· ·	· ·			· ·	· ·	·								· ·			•		•		•		
PAS-VER-AN-01 PAS-VER-AN-02 PAS-VER-OS-01	Bit Bit <td>P</td> <td>P P P Charge of spolication neuronal Hotomation Net industrie Ecliptication</td> <td>Not nérvent for inclusical exelution. Tachricid interface means component leminale. See processabilly on board level. e.g. lighten d'electrical parameter distribution</td> <td>- B</td> <td>Risk samesmeri digending on change for auch application</td> <td></td> <td>· ·</td> <td></td> <td></td> <td>· ·</td> <td>· ·</td> <td>· ·</td> <td></td> <td></td> <td></td> <td></td> <td>· ·</td> <td></td> <td></td> <td>· ·</td> <td></td> <td>-</td> <td>· ·</td> <td>· ·</td> <td></td> <td></td> <td></td> <td>· · ·</td> <td>· ·</td> <td></td> <td>•</td> <td></td> <td></td>	P	P P P Charge of spolication neuronal Hotomation Net industrie Ecliptication	Not nérvent for inclusical exelution. Tachricid interface means component leminale. See processabilly on board level. e.g. lighten d'electrical parameter distribution	- B	Risk samesmeri digending on change for auch application		· ·			· ·	· ·	· ·					· ·			· ·		-	· ·	· ·				· · ·	· ·		•		
PAS-VDR-ANO1 PAS-VDR-ANO2	VOR Any Any charge with regard on special customer characteristic/contractual agreements Any charge with regard on processability/menducanabily at customer, which is not covered in the memory biology and traped on processability/menducanabily at customer, which is not covered in the memory biology and the memory biology an	P P I	P P Control of sofication relevant P Control of sofication relevant P Ref bedaufier Editivist Answire Ref bedaufier Editivist Answire Ref bedaufier Editivist Answire Ref bedaufier Editivist Answire Ref bedaufier Ref Bedaufier Ref	No network for technical evolution. Technical instruction analycomposite features are processarily on hard from the seg processarily on hard from the seg processarily on hard from the seg processarily on hard from the segment of the segment and the segment and the information also composed tables or information also composed tables or	• B						· ·	· · ·			· · ·		· · ·	· · ·			· · ·	· · ·		· · ·		•			· · ·		· · ·	•		
PAS-VDR-AN-01 PAS-VDR-AN-02 PAS-VDR-DS-01 PAS-VDR-DS-02 PAS-VDR-DS-02	ADD Per My charge with regard to append to append to the standard dyname in the stan	P P I	P P Control of sofication relevant P Control of sofication relevant P Ref bedaufier Editivist Answire Ref bedaufier Editivist Answire Ref bedaufier Editivist Answire Ref bedaufier Editivist Answire Ref bedaufier Ref Bedaufier Ref	No network for technical evolution. Technical instruction analycomposite features are processarily on hard from the seg processarily on hard from the seg processarily on hard from the seg processarily on hard from the segment of the segment and the segment and the information also composed tables or information also composed tables or	- B			· · ·				· · · · · · · · · · · · · · · · · · ·			- · ·			· · ·			· · · · · · · · · · · · · · · · · · ·			· · ·	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
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PAS-VDR-DE-04	Changes of termination, surface linish, shape, color, appearance or dimension structure - Accessmone	I P	Change of appearance. Note: Marking on device is defined as	e.g. change or adding of colour on component Mainly in combination with other changes!	в	•	1.1																	-		-							
PAS-VOR-DE-05	Changes of inner construction - Electrode	- P	separate change (PAS-VDR-PV-02). Change of electrode layer thickness or geometry.	e.g. change of electrode design	с					•		•	•						в		•	• •											
PAS-VDR-DE-06	Changes of inner construction - Layer Thickness	. р	Change of ceramic layer thickness. For multi-layer technology only.	e.g. charge from 1.5µm into 1.0µm	с	•				•		•	•						. в		•	• •					• •						
PAS-VOR-DE-07	Changes of inner construction - Number of Layers	. Р	Change of number of ceramic or electrode layers. For multi-layer technology only. Always in combination with PAG-VDR DE-06.	see also byer trickness	с	· •	1.1			•		• •	•			•	• •			-	•	• •					•						
PAS-VOR-DE-DB	Changes of inner construction - Grain size	. р	Change of grain size. Grain size is a result of process and / or material change.	e.g. change of grain size.	с	•	1.1	-		-		•							в				-	-	-		• •			-	+		
PAS-VDR-DE-09	Changes of inner construction - Grain boundary size	. р	Change of grain boundary size. Grain boundary size is a result of process and or material change.	e.g. change of grain boundary size.	с	•	1.1			•		•						•	. в					-			•			-			
	PROCESS		o minimumor																				_					-				_	
PAS-VDR-PR-01	Changes in process technology or manufacturing methods - Lamination	- P	Charge of lamination / press technique method	e.g. pressures or temperature	с	• •	1.1		•		•		1.1				• •		в		•					-		1 1 1		-			
PAS-VDR-PR-02	Changes in process technology or manufacturing methods - Firing	- P	Change of firing / sintering profile	e.g. temperature and / or time and / or atmosphere. e.g. from tunnel to batch klin.	с	• •	1.1	•	• •	•		•	•			1.1	•	•	в					-		-	•	1 1 1		-			
PAS-VDR-PR-03	Changes in process technology or manufacturing methods - Dicing	. Р	Charge of dicing	e.g. change from cutting to sawing	с	• •	1.00	•	•	•	•	•	•	•	•		•		в	1.1	•	•					•	1.1	1.1				
PAS-VDR-PR-04	Changes in process technology or manufacturing methods - Termination	. Р	Change for termination preparation like plating or apply of termination base layer	e.g. change in plating technology (final termination) e.g. change from dp in paste to plating (apply)	в	• •	1.1	•	•			•	•	•	-	•		· -	в		•	•	1				•	1.			-		
PAS-VDR-PR-05	Changes in process technology or manufacturing methods - Electrode apply	- P	Change of electrode apply. For multi layer technology only.	e.g. change of inner electrode lay down method.	с	• •	1.1	•	· .		•						• •	•	в		•		1.1	-		-		1.1					
PAS-VDR-PR-06	Changes in process technology or manufacturing methods - Assembly	- P	Change in assembly process for leaded or encapsulated devices.	e.g. soldering method for lead attach to element or coating / encapsulation process	в	• •	1.1	•	•			•	•	•		•			•	•		•		-				1.1					
PAS-VDR-PR-07 p	Process integrity: tuning within specification	- P	Variation within process specification.	e.g. process control	с	1. A. 1. A. 1.	1.00														-			-		-		1					
	PACKING / SHIPPING - NEW MATERIAL, CRITICAL DIMENSIONS																																
PAS-VDR-PN-01 p	Packing / shipping specification change (loosening of tolerances)	P P	Change of packing specification.	e.g. number of pieces on real.	в	1.0	1.1					1.0	1.1	1.1	-					1.1			1.1		-	-		1.1			-		
PAS-VDR-PN-02	Dry pack requirements change	P P	Change of drypack requirements.	e.g. charge of MSL e.g. charge in dry pack assurance (HIC, MBB)	в	1.0	1.1	-	÷					1.1	-				-	1.1				-	-	-		1		-	-		
	Change of carrier (tray, reel)	ΡΡ	Charge of carrier	e.g. change by material e.g. change by geometry.	В	1.1	1.00						1.0		-	1.1								-		-		1.1					
4	PACKING / SHIPPING - VISUAL INSPECTION				_																		-										
PAS-VDR-PV-01	Change of labeling	I P	Change of labelling, also on reel.	(8 e.g. additional information (RoHG stamp) (P) e.g. change of customer specific information	В	1.0	1.1		· ·					1.1								• •		-		-		<u> </u>					
PAS-VDR-PV-02	Change of product marking	I P	Marking on device.	e.g. change of content of marking e.g. change of method of marking e.g. change of appearance of marking	в	1990 - 1990 1990 - 1990	1.1	-	· ·	-					-								1.1	-	-	-					-		
PAS-VDR-PV-03	Change of packing shipping specification	P P	Change in packing specification which does not described a change of dmensions or material of the packing.	e.g. change of documentation in packing specification	•	1.	1.1																1.1			-		1.1					
1	LOGISTICS / CAPACITY / TESTING - EQLIPEMEMENT		•	•													-																
PAS-VOR-EQ-01	Production from a new equipmentitool which uses a different technology or which due to its unique form or function can be expected to influence the integrity of the final product	P P	Change in process technique which is no already covered above. Note: Changes affecting the product not covered by the table require also a PCN.	f e.g. change from wet to dry technology.	с	• •	1.1		• •			•		•		•		•	в					+	•	-				-			Test effort depen- assessment. Performance test process change.
4																								_				/					Test effort depend
PAS-VDR-EQ-02	Production from a new equipment/loci which uses the same basic technology (replacement equipment or extension of existing equipment pool)	- P	PCN required for dedicated equipment for sensitive component production.	e.g. elmination of manual handling processes	с	• •	1.1		•	•		•		•	-	•		•	в			• •			•	-		1.1	1	- 1 - I	1		
	Poduction from a new equipmentifical which uses the same basic technology (replacement equipment or extension of existing equipment pool) Change in final sequipment type that uses a different technology	. р р р	PCN required for dedicated equipment for sensitive component production. Change of linal less equipment which use different lexhonologu. PCN required for dedicated equipment for sensitive parameters.	 a g elimination of manual handling processes a g, change of tester platform 	c c	•••		-	• •	•	-	• •	•	• •	•	•		•	в	•	•	· ·	•	•	•		· ·		•		•		process change.
PAS-VDR-ED-03	equipment or extension of existing equipment pool)	. р р р	for sensitive component production. Change of final last equipment which use different technology. PON required for disclassif equipment for sensitive parameters.			•••••••••••••••••••••••••••••••••••••••		-	• •	•	•	• •	•	• •	-	•		•	в	•	•	· ·	-	-	•	-	· ·	•	-				process change.
PAS-YOR-EQ-03	equipment or extension of existing equipment pool	. р р р р р	for sensitive component production. Change of final last equipment which use different technology. PCN required for descated equipment			•			• .	•	•	• •	•	• •	•		· ·	•	- B - B	· ·	•	· ·	· ·	-	•	-	· ·		•	-	-		Pertornance see process change.
PAS-YOR-EQ-03	epipment or elements of existing equipment pool Drange in final equipment type that uses a different lac-hology LIDIASTICS / CAPACITY / TESTING - PROCESS FLOW	. р р р р р	for auxilius component production. Change of tinal test equipment which use different technology. PON required for dedicated equipment for sensitive parameters. Change of manufacturing site.	e.g. change of isater platform Novement or transfer of manufacturing ails or	c	· · ·				•	•	• •	· ·	• · ·	•	•	· ·	•	• B • B	· ·	• •	· ·	· ·	- - -	•	- · ·	· ·		-	-	- - -		Characterisation
PA5-VDR-00-03 C PA5-VDR-PF-01 8 PA5-VDR-PF-02 E	espener or valenin of ability septembran) Carage in find also espannesi type the axes a different factorology CORENCIAL ORIGINATIV (INSTREE - PROCEED FLOW Neutracturing this handler or mounted of a peri of productor process to a different locationship	- Р Р Р Р Р	for aenative corponent production. Charge of that are explorent which use different scherology. PCN required for reductand explorent for sensitive parameters. Charge of manufacturing site. Note: Recognization inside one plantimit is not articular Charge of manufacturing process	e.g. charge of laster platform Moviement or transfer of monifacturing siles or process adoptio to a different location/sile. e.g. washing/ charding process	СВ	• • •				•	•	• .	•	• ·	•	•	· ·	•	- B - B		•	· ·	· ·	-	•		· ·		-	-			Characterisation
PAS-VDR-EQ-03 C PAS-VDR-PF-01 8 PAS-VDR-PF-02 E PAS-VDR-PF-02 E PAS-VDR-G501 5	exponent or whinch of while geogram/pack Charge Inford lark exponent type for care a different fact-hology constructs (convectors / convectors in convector	. P P P . P . P	for aenative corponent production. Charge of that are explorent which use different scherology. PCN required for reductand explorent for sensitive parameters. Charge of manufacturing site. Note: Recognization inside one plantimit is not articular Charge of manufacturing process	e.g. charge of laster platform Moviement or transfer of monifacturing siles or process adoptio to a different location/sile. e.g. washing/ charding process	С	· · · · · · · · · · · · · · · · · · ·				•	· (• · ·		• · ·	· · · · · · · · · · · · · · · · · · ·		· · ·	• • • •	B B		•	· · ·		· · · · · · · · · · · · · · · · · · ·	•		· · ·			· ·	· ·		Performance see process change. Gage R&R / delta
PAS-VDR-EQ-03 C PAS-VDR-PP-01 8 PAS-VDR-PP-02 E PAS-VDR-PF-02 E	espensa minar di valla geophiera poli Chargo ha far da espensari yen da sa sa farfare taknatagi Calastra i panovary i strategi , inotsta i nota Mandalaragi da taknatagi , inotsta i nota a far di palati palati ka si Bran takataka Dinakara a sakatakara geosan de Calastra i panovary i strategi , Gosta	. P P P P P . P	for earthin composer production. Charge of trait sex explores which as diterest technical and explores which as diterest technical and the provide and the provide and the constraints are and the constraints is and attacked Charge of manufacturing size. Alter & Receptor and the constraints is and attacked Charge of manufacturing process apparent.	4.9 dange di leater platform Monerer di tracifica di modificazione alla se processa distripi di a differenti scatarivita. 4.9 dange di solo di solo di processa 4.9 dange di solo di processa 4.9 dange hono ROPs to seregia impectore 4.9 dange hono ROPs to seregia impectore seregenziari masseventi hono ta bio temperatori masseventi hono ta bio temperatori masseventi hono ta bio	в					•	•	• · ·		• · ·	· · ·		· · ·		B B B		•	· · ·		· · · · · · · · · · · · · · · · · · ·	•		·			· ·	· · ·		Characterization and Charge RER / defa
PAS-VDR-02-03 C PAS-VDR-PT-01 8 PAS-VDR-PT-02 E PAS-VDR-0501 C	espensa minar di valla geophiera poli Chargo ha far da espensari yen da sa sa farfare taknatagi Calastra i panovary i strategi , inotsta i nota Mandalaragi da taknatagi , inotsta i nota a far di palati palati ka si Bran takataka Dinakara a sakatakara geosan de Calastra i panovary i strategi , Gosta	. P P P . P	for earthin composer production. Charge of trait sex explores which as diterest technical and explores which as diterest technical and the provide and the provide and the constraints are and the constraints is and attacked Charge of manufacturing size. Alter & Receptor and the constraints is and attacked Charge of manufacturing process apparent.	4.9 dange di leater platform Monerer di tracifica di modificazione alla se processa distripi di a differenti scatarivita. 4.9 dange di solo di solo di processa 4.9 dange di solo di processa 4.9 dange hono ROPs to seregia impectore 4.9 dange hono ROPs to seregia impectore seregenziari masseventi hono ta bio temperatori masseventi hono ta bio temperatori masseventi hono ta bio	в					•	• •	• · ·		• · ·	· · · · · · · · · · · · · · · · · · ·			• • • •	B B B 		•	· · ·		· ·	• • • •					· ·			Characterization and Charge RER / defa

Tests, which should be considered for the appropriate process change after selection of condition table.	
Suppliers parformed tests (mark with an 'X' for done or 'Q' for generic)	
Reason for exception of tests and/or usage of generic data:	

-	Not required
1	Information Note required
Р	PCN required

	CONDITIONS	No
A	Termination equipment only	
с	Ceramics only	
в	Comparative data (unchanged vs. changed) required	
E	Capacitive trimmers only	
F	Film products only	
N	Networks only	
R	Resistors only	
s	SMD components only	
w	Winewound products only	
Y	Component not hermitically sealed	
Note 1:	For parts marked with ink only. Laser and stamp marked parts shall be exempt.	
	=> Please mark 'NO' with 'x', default is 'YES'	-

Worked on: me, Function) Date:	-																										
N number:		Basis: IEC 60810													Device	ovoluot	lon										
													MATE					on the basis of	EC 60810	0							
Signature:				2			_	-												<i>'</i>			_				
	1			Evituation Inv A/ B/C	-	(Jack	0400		5		cq Maria	1														ur) acais	9
Assessment of Inspect on Supply Chain regarding following aspects - ontractual agreements - ontractual agreements - ontractual agreement of the second se	Remaining risks on Supply Chain?	Understanding of semiconductors experts	Examples to explain	A Application level 10 Disordition level 10 Compresent level 1 Northinsont forconsidination matrix	Further applicable conditions	versionaley and conversion of	Hgh Yerqeahim Opealeg Ib	Terspendure Opting	Merindan kerpanan Operation	Powe Tergerature Cydleg	CSD Characterization Numan D	150 Claratero Madere	Phy size (Dimension	Vito et las Veriable Fençueros	Most lavinal ShiceA	Period. In States H and Ecolomic Labo	The enail (Proch	Nector gan Study Note	Pulset de Teat	Dan Teal	Flow Minut Gas Creator	The errol file out as co-	Wheelbood Directors	Die Deur	Noime (Pannada a	render tert FLC 6068-12 e.t. JCDEC JESO Parameter Analysis Corporation of correct with char	Remarks
ID Type of change	No Yes			1201		9	1	я	1	а			а	3	я	a a		в	a	a	1		а.				
	p p	Nat relevant for technical evaluation.								-	-	•	-	-				-	-	-							
LED-80-62 Any change with impact on technical interface or processability/manufacturability of currunner, which is not solvered in the matrix below	p p	See processability on board level technical interface means component terminals		8	Check if LED-09-01 is affected Processability should be assessed.	• • •	1.	т	-		-	-	-		-	S,T -	-	-	-	-	-						
DATA SHEET LED-05-01 Charge of database parameters/electrical specification (min.hear.hys. values) and/or Pulse/DC	i i	Change of application relevant information (e.g. maximum pulse			1		E	F	F		E	F	<u> </u>	<u> </u>		8 .	1	r	<u> </u>			F	1	1	-	. F	
LED-05-01 Diarde of distance parameters execution geometry rates by rate of parameters of the paramete	p p	Change of application relevant information (e.g. maximum pulse barrent) Not included: Editorial changes.		*			E	E	E		E	E				s -	-		E	1.1		E				- E	
LED-05402 Currection of data sheet	1 P	Data sheet (editorial changes) has to checkit application effected 1. In case of editorial changes. Pits case of import on product integlity	e.g., change of ESD level			· · ·	-	-	-	+			-	÷.,	-	• •	-	-		-	-	1					
LED-08-03 Specification of additional garanteens	I P	b In case of editional changes pharases of episodian translations pharases of episodian translations before helics. In a click on supply-balance of the change changes of the changes of the edition of the changes changes of the changes of the P IT energy of the device is not attracted. P IT energy of the device is not attracted. P IT energy of the device is not attracted. In the change changes of the changes of the changes of the tracted of the changes of the changes of the changes of the changes of the tracted of the changes of the changes of the changes of the tracted of the changes of the tracted of the changes of the chang	1 e.g.: adding new tested parameter	c			-			-	-		-	-	-		-		-	-	-	-			•	•	Formation since this is not a product change, ony addito Classification: C
LED-DE-01 Design changes in spitasy.	р р	Any device relevant changes in design / layout of epitasial layers Not included: Changes within design nues and design specification without affecting specified functions, parameters	e.g. change from Double-Instero to Quantum wells. e.g. change of Bastler thickness	c	A change from Double herers to Quantum wells —= spectrum is affected		•		•										•	н							
LED-0640 Design changes in source by out	p p	speciation were arrested application devices, parameters and reliable. Any change in chip design / layout. Net leadeds. Changes within design rules and design specification whoat atheding specified functions, parameters and reliability.	e.g. change in layout of current spreader; thickness of current spreader e.g. reduction of band pad size	c	A change in layout of current spreader radiation pattern changes		•		•	•						• .	B,D,M	м	•	м	м		в	B D,M			The might be considered for complex die band technolog
LED-0642 De statek	P P	operation works annung species rations, passesses and mission Shrink of active area. Not included: sawing street/writicrite ine	Typical shrink of die.				•					•										•		в.			
Life Defed			e.g. change of dimensions e.g. change of size sizes of the package		Check if LED-05-02 is affected which leads to a charge of the elchooptic parameters or distributions.		•			•			•	v	v	• T		D		D	D	-		в р			
LED 2444 LED 344424 (LED 3444424 (LED 344424 (LED 344424 (LED 344424 (LED 344424 (LED 344424 (LED 3444424 (LED 34444444) (LED 34444444 (LED 344444444444 (LED 34444444444 (LED 3444444444444444444444444444444444444		any change in housing trickness any change in term or dimensions. any change of leadhome / carrier dimensions any change of outer dimensions	e.g. change of x, y, or 2 dimension of the package e.g. change in leadhame / carrier dimensions in xy, or 2 direction e.g. change inner design of the leadhame not attracting the eith performance. It whoships with the device				•			•	•	•	•	v	v	• т	-						_	8 D		2	
PROCESS - WAFER PRODUCTION			elo performance & reliability of the device	-																							_
LED-PW-01 New/ change of water substrate or carrier material	p p	New water substrate material.	e.g. different water material to currently released material (change from Sapphre to Silcon)	c	Check if LED-05402 is affected which leads to a change of the elchooptic parameters or distributions.		•	Ρ	Ρ	•	Ρ	Ρ		-		•	Ρ	Р	•	Р	Ρ	•			•	•	
LED-FW-92 Plater character		change of eater dameter resulting in equipment and process changes	49.4° 104'	c	In case other type of changes are affected i.e equipment/process technology - they need to be identified in addition	• • •	•	-	•		Ρ	Ρ	-	-	-	•	-	-	•	-	-	•			-	•	
LED-PW-03 New Stat author Thickness			e.g. change in final chipidie thickness		Check if LED-05-02 is affected which leads to a change of the elchooptic parameters or distributions.		•		Ρ	•	Ρ	Ρ	-		-		-	-	•	-	-		в	в •		•	
LED-PW-04 Change of electrically active dispingimplantation element	P P	Change in electrically active doping / implantation element resulting in a new technology.	e.g. change from ite to C as dopart	c			•	-	с	с	•	•	-	1		· ·	-	-	•		-	•	•		1.1	· •	
LED-PW-95 Change of moting	p p	change in layer sequence or thickness	e.g. change of isolation layer thickness between in- and p- material		sustance application needs to be checked due to potential system voltage differences		•	F	•	·	·	•		1			-	-	•	F	-					•	
LED-FW-98 New/ change of metalization (specifically chip formaide)	p p	Change in metallization of bondpads, material, layer thidness	e.g. change in bond pad metalization thickness	с			•	•	•	•	M,B	M,B	-		-		в	м	•	м	м		•	•			
LED-FW-07 New/ change of metallization (specifically chip backlicks)	p p	Change of bottom layer of die (between die and kadtametcarier): Change is process, material, or dimensions excessary.	e.g. change from Au to Aurlie	c	A customer application needs to be checked due to potential system voltage differences	· • •	•	•	•	•	D,M	D,M		-	-	•	D,M	D,M	•	D,M	D,M	D,M		•		•	
LED-FW-GE Change in process technique (e.g. significant process changes like intrography, with, colde deposition, de tack surface preparation/backgrint,)	P	Change trum wet to dry exhing, change from horizontalto vertical oven far oxidation, change from contact litho into Mapper litho,	e.g. change from wet eich to diy eich e.g. change from taxes cutting taxes gi to plasma cutting (qualing) e.g. change from contact title to stepper liths	c	LED-PA-14 is also affected.	• • •	-		- ÷ -	+			+			• •		-		-	-						Qualification effort depends on type of change.
LED-PW-09 Process Integrity: Tuning within specification	P	Variation within process specification	e g. prodest control	c		• • •		-	-			-	-				-	-	-		-				· ·	· -	
LED-PR-10 Charge of numerial supplier with no ingent on agreed specifications. LED-PR-11 Charge of specified water process sequence idention and/or addisoral process treat	P	Change of water supplier. Change of supplier for chemicals needed for water production. Any change which is not sovered by another type of change. Risk is to be assessed.	e.g. Change of water supplier.	c		• • •		-	-			-	-				-	-	-		-				· ·		Qualification effort depends on type of change. Qualification effort depends on type of change.
	P	Risk is to be assessed.	e.g. additional cleaning process in water production										-		-		-	-	-	-					-		PPAP has to be updated.
		Change in material, thickness, and process for coating and passivation	e.g. change from SIC2 to SIMI	c					•	Ρ	Р	Ρ	-	-			-	Р	-	Р	Р		P F	_	<u> </u>		
LED-996-12 Newwater production location or transfer of water production to a different not previously released location/intersubcontractor		New water propluction location or transfer of water production with possible additional changes.		c	A or B: Impact on other type of changes described under PROCESS - WHFER PRODUCTION and EQUIPMENT categories. or the DWCMM	• • •	•	•	•		•	•	-			• •	-		•		-	а.	•	• •	1.1	· •	
BARE DEL DELTARRES LED-BD-41 Terry/ change of those side installation		Change introndpads, material, pad pitch, surface changes,	a contractor from its to its allow	в			•				M.B	M,B						•									
LED-80-41 New/ drange of horst side metalization LED-80-40 New/ drange of blackside metalization		Dange monoper, manua, per pers, sociale compet, bye fickness Change of bottom layer of die (between die and isattiane/carrier). Change is process, resental, or dimensions.	e.g. change in over pad metallation		Check If LED-05-02 is affected which leads to a change of the elchooptic parameters					•	D.M	D,M				-					· ·						dustioner application needs to be checked due to po
	r P	exathame/carrier). Change in process, material, or dimensions. Needed information for pick & place machine.			er distributions.		-			•	U,M	D,M	-	-			•	•	-	•	•	 +		-		-	voltage differences
LED-BD-03 Change of water samp or number of dies on water.	I P		e.g. information change for pick & place machine.			1 1			· ·	•	-	-		-			-		-			· ·		•	· ·		
LED-80-64 Newfast water trackness	P P	Proceeding in reaction streams click any scheduling Changes in final Chip height (including carrier) very sale and streams) controlled with a material change (change of carrier transition) Change in material, thickness, and process for stanling and passivation	e.g. change on converter thickness		Check if LED-0541 is also affected.				Р	•	Р	Р	•			•	-	-	•			•			•	•	
LED-40-45 Change in de casting or passionton PROCESS - ASISEMENTY	p p	Change in material, thickness, and process for stating and passivation	e.g. change from SIC2 to SIMI		Check if LED-05-01 is also affected.		•	•	•	Ρ	Р	Р	-			• •	-	Р	-	Р	Р	1 · [P P	Р.	· .	• •	
PROCESS - ASSEMULY LED-PA41 Change of Inactiant Later Institute	P P	New leadframe/carrier naterial (new in composition)	e.g. change from copper alky to bare copper		Check if LED-05-02 is affected which leads to a charge of the elchooptic parameters or distributions.		Р	•	•							• •		A		A	A	P,1	•			р.	Explanation should be provided in case H2 ⁴ rent in n
LED-PA42 Change of Inactions carrier failabiling material (Internal)	p p	Change of surface numerical of die attach pad and second bond area (s.g. influence in adhesion to incid compound, wedge bond reliability)	e.g. change from Ag flash to NPd protection layer e.g. change from Ag spot to Au spot				P		•	•		-	-	-			-	A	-	A	A .	-			•		Replanation should be provided in case HDS test is r HDS test should be considered for automotive extern september should be provided in case HDS test is r
LED-PA43 Change of load and hear skip plating manekal/plating trickness (external)	p p		e.g. change in heat slug ttack e.g. change hom Sn Val Alfrana e.g. change of layer thickness	8			Р	•	к	-		-	1	-	-			A	-	A	A	P,1			-	к.	Replanation should be provided in case HDR test is r
LED-PA-64 Burrip Material / Metall System (exerce)			e.g. change to Po-tee material	A					•	•				-		•	•	w		w	w	•				· ·	
LED-PA45 De attach material	P P	Change of die attach material (e.g. soft solder, epoxy, etc). Thermal managment must be respected.	e.g. change of Ag glue to Au glue;	8			•		•	•	-	-		N		•	N	Q	-	N	Q	•					
LED-PA46 Change of bond wire material	p p	Material, wire diameter, change in process technique	e.g. change from 30y to 25y	A			•		P,D	•	-	-		D	D	•	D	P,D	•	-	P,D		•	•			Site audit for material change with impact on bondpro to Cu) recommended.
LED-PA47 Charge in nameal for sub-components (subuding LED chip & LED package related being with impact on agreed spectrumons	P P		e.g. using a different ESD-dode in technology and material than previously		Check if LED-05-01 is also affected.	• • •					-	-		1.1			-		-								Qualification effort depends on type of change.
LED-PAGE Die Oversont / Underfill	P	Supporting layers for complex packages like flip chip. - No change in product imaginy P: change can influence the integrity of final product	P. e.g. charge of underfit with change of thermal resistance	в	Check if LED-09-01 is also affected.		•	•	Р	•	-				Р	• •	Р	Р	•		Р	U		. U			
LED-PA49 Charge of notif corpound-incapeutation/sealing material	p p	P. change can influence the integrity of this pooluci Change of note compound, encapeutation, or saving manetal ingints a discussion dynamic vision of poolucies extend effect (e.g. toruwing). Component assembly and loand coating has to be assessed. MSL might be changed.	e.g. PPA mold compound	A	Check if LED-0541 is also affected.		•	-	•	•			D	D	D	• т	Р	Р	Р	Р	р	р					
LED-P.8-19 Change of convencion material	p p	has to be assessed. Mill: might be changed. Change of material class.	e.g. change from granats to nitides	с	Check if LED-05-01 is atteased for optical/photometric parameters		•	Y						Y	Y	• •	Y	Р	р	Р	Р	Y					
LEPRA1 Charge of direct supplier for convertier material	P	New supplier with same material specification		c			÷			•					P		P	P	P	P	P	P					
LED-PA-12 Change of converter process technology	1 P	new technology für converter production 8. no influence on eils performance of product	e.g. change from volume conversion to layer conversion; e.g. change from stamping to printing of layer				•		•	•				Y	Y	• •	Y	z	z	z	z	Y					
LED-PA-12 Change of product marking	1 P	Pt in case of impact on product integrity Maxing on device. E change in appearance; readability not affected Pt change of simtem or change of appearance of data matic code	e.g. making of cathode;					0						-		тт			-								
	1 1	code	1					-				_					1				_				++	-	
LED-PA-14 Change in process technique (e.g., die attach, bonding, moulding, plating, trim and form,)	p p	Any change in assembly process technique	e.g. change die attached from gluing to sublering.		A or B: Please check 7 EQUIPMENT and other type of changes of material (LED-PA- DAIDSON'STORIDS' are affected							-	-	-				-	1.1								Qualification effort depends on type of change.
LEDPANE Charge is process technique (e.g., de attach, bonding, modeling, plating, trimane farm,) LEDPANE Process transport, Turing within specification.	р р Р		e.g. change die attached fom gluing to soldering: e.g. process control	с	A or III: Peake check 7 EQUIPMENT and umer type of changes of minimal (EID-Pa- batistical/TEB/BIT10) are affected Assumption that change material specification remains unchanges.	• • •	1	-				-	-				-		-		-	-			•		Qualification effort depends on type of change.

	1		Addition or deletion of a process step in assembly process sequence with optentially significant impact on the product	1							1	1		1 1						1												
LED-PA-17	Change of specified assembly process sequence (additional and/or deletion of process step)	1	Expense with potentially agrindant impact on the product performance E-no influence on product integrity Pi influence on product integrity expected	e.g. additional or deletion plasma cleaning process.	c	Single case assessment necessary to identify possible interactions or risk.	•			-			-		-	-	-		-	-	1	-	-		-			-		- 0	alification effort depends on type of shange.	
LEDPANE	New assembly location or transfer of assembly to a different not previously released location/state/udocs/tractor	р	P New assembly location, assembly transfer or relocation. Transfer of known technology and equipment.	e.g. Dual source strategy	c	A or its impact on other type of changes described under PROCESS ASSEMBLY and EQUIPMENT	•			-		-	-	-	-	-	+		-	-	-		-		-	-	-	+		-	alification effort depends on type of change.	
	PACKINGTERPPING																															(
LED-PS-01	Inner Packing-Ishipping specification change	P	P dimension change of direct product packing	e.g. SMIT packet in tape changes				- P		-		P	P	-	-		-	т				-								-		2 - C
LED-PS-02	Outer Packing/Mrlipping specification citiange	I.	dimension changes indirect product packing P 1. small changes in dimension or appearance Pi number of melti in the packing are changing	eg pitts box	•					-			-	-	-	-	+		-	-	-			-	-	-		÷	1	-		
LED-P5-03	Change of labeling	1	Change of labeling also on met. P E additional information no change of previous information Pi change in content of previous information	(b) e.g. additional internation (RoHL stamp) (P) e.g. change of customer specific internation	8	Check if LED-05-01 is also affected.				÷			-		-	-	-		+	÷				-	-	-				-		
LED-PS-64	Dry pack requirement change	Р	P Change of dry pack requirements (change in MSL)	e.g. change from MiL3 to MiL1		Check if LED-05-02 is also affected.				-		-						-										-				7
LED-EQ-61		Р	P Change in process technique which is not already covered above. Note: Major changes affecting the product not covered by the table require about a PCN.	e.g. change trom single water to taach process e.g. over pad metalization e.g. dambar cutting (mechanical to laser cutting		Check if LED-05-01 is also affected. Consider stability should be assessed.						-	•	-			-	-		•	-		-			-	-	-	-	- 0	alfication effort depends on type of change.	
LED-6Q-62	Production from a new equipment/bod which uses the same basic technology (replacement equipment or extension of existing equipment pool) without change of process.	-	PCN required for dedicated equipment for sensitive component production.	⁶ e.g. change from single site to multi site handler.	c			1.1		÷		-										-		1.1			-	1	-	- 0	alification effort depends on type of change.	
LED-60-63	Change in final test equipment type that uses a different technology		Change of tester platform (e.g. reajor test program changes , new tester interface,) E product specification is not affected P product specification is affected	e.g. change in test method from of to lumen								•	•	-			+	т					-	-		-				•	ge R&R / delta correlation	
NUTLON																																
LED-19-01	Nove of all or part of electrical earlier test and/or final test to a different location/stellud-contractor	р	P Texter transfer or relacation.	e.g. Dual source statlegy	c		•	- В		•	• в		•	1.			•	т	в		в	-			В	в	в	4	-	•	ge RBR / delta correlation; additional specification d' Jouid be considered for Water testing	edi
	0-0476																															(
LED-QD-01	Change of the test soverage testing process flow used by the supplier to ensure data sheet compliance (in g. elimination/addition of electrical measurementment flow block; relaxation/enhancement of monitoring procedure or sampling)	-	P Reduction or additional scintul steps, test coverage within the process flow	e.g. test flowblock like Final test / final clearance	c					-		-	-	÷	-		÷	+	-	-	-				-	-				•		
																								_		_						
Tests, which	hould be considered for the appropriate process change.									-			-	-			-	-		-					-	-		-	-			
Tests, which	should be considered for the appropriate process change after selection of condition tab	ée.														•																
Suppliers per	ormed tests (mark with an 'X' for done or 'G' for generic)																															
Reason for e	ception of tests and/or usage of generic data:					1				_			-	-			<u> </u>	-	_							1			-	_		

