Product Change Notification (PCN)

N° LFPCN230811

Date: August 11th, 2023

Subject: ***PCN for E2 BIPOLAR Power Modules Inhouse Assembly Location Transfer*** ***(Refer to the list of affected parts in page 4)***

Dear Valued Customer,

Littelfuse would like to notify you about the transfer of the backend manufacturing of our Bipolar modules in E2 package to our Outsourced Semiconductor Assembly and Test (OSAT) factory in Laguna, Philippines.

This OSAT facility, a Littelfuse Back End partner since many years, build in mass production E2 products for Littelfuse already. This transfer refers to all our E2 BIPOLAR products, which have only been built in our Lampertheim facility so far until now.

Our clear focus being to bring high levels of service to our customers and quality products to support future growth of the power semiconductor business.

This PCN will first cover only E2 Bipolar products (mostly MCMA/MDMA/MDNA-series) and will be followed shortly by a second one for E2 IGBT Modules (MIXG-series) and then another one for E3 products.

Please find enclosed all details related to this PCN.

Important information for your attention and according to JEDEC STANDARD "JESD46":

- Please acknowledge receipt of this PCN. In your acknowledgement, you can grant approval or request additional information.
- Littelfuse will assume the change is acceptable if no acknowledgement is received within 30 days from the date of this PCN. Lack of any additional response within 90 days of PCN issuance further constitutes acceptance of change.

Your prompt reply will help Littelfuse to assure a smooth and well executed transition.
Your attention and response to this matter is greatly appreciated.

Thank you very much.
Best Regards,

Mirko Vogelmann
Product Manager
Medium Power Modules
mvogelmann@littelfuse.com

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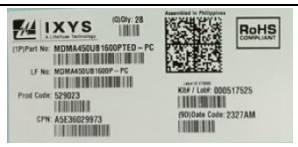
Contact Information:	Contact your local Littelfuse Sales Partner or Mirko Vogelmann

SUBJECT OF CHANGE:	E2 Bipolar OSAT Backend Assembly Location Transfer	
PRODUCTS AFFECTED:	See page 4	
REASON OF CHANGE:	Set the right balance for power modules assembly between internal and outsourced Back End facilities. Extend the E2 packages assembly being built in this facility additionally to other E2 products already built there.	
DESCRIPTION OF CHANGE:	**ACTUAL SITE** **Lampertheim, Germany**	**TRANSFERRED SITE** **Laguna, Philippines**
■ Marking (on parts)		
• Type of marking	Laser marking	Laser marking
• Company Logo	Ixys Logo	Littelfuse IXYS Logo
• UL Logo	NO CHANGE	
• Date code + Site Assy code	YYWW**X**	YYWW**AM**
• Catalog Part Number	NO CHANGE	
• 2D Matrix	36 characters 1st to 19th digit: Official product part number 20th to 23rd digit: Date Code (YYWW) 24th to 25th digit: Assembly line 26th to 31st digit: Lot number 32nd digit: Split lot / extra digit for future reference 33rd to 36th digit: Individual module number within one lot	49 characters 1st to 25th digit: Official product part number 26th to 31st digit: Date code (YYWW) 32nt to 33rd digit: Assembly Line 34th to 43rd digit: Lot Number 44th digit: Extra digit for future reference 45th to 49th digit: Individual Module number within one lot
■ Labelling (on packing)		
• Inner Box		
• Master/Outer Box		
■ Bill of material	NO CHANGE	
■ Electrical characteristics	Electrical characteristics of qualification site matched to current production site	
■ Mechanical characteristics	Mechanical characteristics of qualification site matched to current production site	

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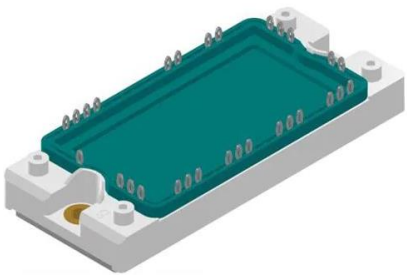
RELIABILITY DATA SUMMARY:
• Qualification done on module part structurally representative to the whole E2 Bipolar modules package family • The acceptance defining criteria for type tests of this product family are detailed in: IEC 60747-6 Edition 3.0, clause 7.5.5, table 10

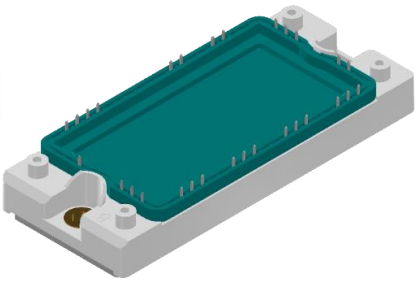
Results:	Test	Description	Conditions	Standard Use	# Lots	Qty /Lot	Result
MDMA450UB1600PTED							
1	HTRB	High Temp. Rev. Bias	1000hr., ≤125°C, 960V DC (IGBT), 1120 V AC (RECTIFIER)	IEC 60749-23	1	5	Passed
2	Humidity	High Temp. High Humidity Bias	1000hr., 85% rH., 85°C	IEC 60749-42	1	5	Passed
3	T/C	Temperature Cycling	100 cycles, -40°C/+150°C	IEC 60749-25	1	5	Passed
4	H3TRB	High Temp. High Humidity Bias	1000hr.,85%rH., 100°C, 100V DC	IEC 60749-5	1	5	Passed
5	HTGB	High Temp. Gate Bias	1000hr., ≤125°C, 16V DC	IEC60749-2	1	5	Passed
6	P/C	Power Cycling	10 000 cycles, ≤ 125°C, dT=80K	IEC 60749-34	1	5	Passed

TIME SCHEDULE:

■ Parts availability:	*Early September 2023*
■ Production ramp-up	*Early September 2023*
■ Last Shipment:	End of October from the actual assembly site
■ Last time buy:	N/A - Any new orders will be processed through the new assembly site



E2 package with press-fit pins



E2 package with solder pins

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ASSESSMENT:

- No influence in terms fit, form and function.
- No part number change.
- Data sheets remain unchanged.
- LF Qualification report available upon request.

LIST OF AFFECTED E2 BIPOLAR POWER MODULES (See Note below):

1	MCMA240UI1600PED
2	MCMA240UI1600PED-PC
3	MCNA120UI2200PED
4	MCNA120UI2200PED-PC
5	MCNA120UI2200TED
6	MDMA280UB1600PTED
7	MDMA280UB1600PTED-PC
8	MDMA360UB1600PTED
9	MDMA360UB1600PTED-PC
10	MDMA450UB1600PTED
11	MDMA450UB1600PTED-PC
12	MDNA210UB2200PTED
13	MDNA210UB2200PTED-PC
14	MDNA210UB2200TED
15	MDNA240U2200ED
16	MDNA280UB2200PTED
17	MDNA280UB2200PTED-PC
18	MDNA360UB2200PTED
19	MDNA360UB2200PTED-PC
20	VVZB135-16IOXT
21	VVZB170-16IOXT
22	VVZB170-16IOXT-PFP

NOTE: This PCN is related to E2 BIPOLAR modules only, a second PCN will be issued shortly for E2 IGBT modules. Third one related to E3 package product will be edited right after.

Customer information:

Forward-looking statements are intended to provide information about our expected future operations. These statements are not promises or guarantees, particularly with respect to any timelines provided in the schedule. All terms of delivery and rights to technical changes are subject to alteration by Littelfuse.