

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$. $AGND - V_{EE} = 54\text{V}$ and $V_{DD} - DGND = 3.3\text{V}$ unless otherwise noted. (Notes 3 & 4)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	
V_{EE}	Main PoE Supply Voltage	$AGND - V_{EE}$	●	45	57	V	
		For IEEE Type 1 Compliant Output	●	51	57	V	
		For IEEE Type 2 Compliant Output For LTPoE++ Compliant Output	●	54.75	57	V	
	Undervoltage Lock-Out	$AGND - V_{EE}$	●	20	25	30	V
V_{DD}	V_{DD} Supply Voltage	$V_{DD} - DGND$	●	3.0	3.3	3.6	V
	Undervoltage Lock-Out	$V_{DD} - DGND$		2.7			V
V_{CAP1}	Internal Regulator Supply Voltage	$V_{CAP1} - DGND$		1.84		V	
V_{CAP2}	Internal Regulator Supply Voltage	$V_{CAP2} - V_{EE}$		4.3		V	
I_{EE}	V_{EE} Supply Current	$(AGND - V_{EE}) = 55\text{V}$	●	9	15	mA	
R_{EE}	V_{EE} Supply Resistance	$V_{EE} < 15\text{V}$	●		12	$k\Omega$	
I_{DD}	V_{DD} Supply Current	$(V_{DD} - DGND) = 3.3\text{V}$	●	10	15	mA	

Detection

	Detection Current – Forced Current	First Point, $AGND - V_{OUTn} = 9\text{V}$ Second Point, $AGND - V_{OUTn} = 3.5\text{V}$	●	220	240	260	μA
			●	143	160	180	μA
	Detection Voltage – Forced Voltage	$AGND - V_{OUTn}$, $5\mu\text{A} \leq I_{OUTn} \leq 500\mu\text{A}$	●	7	8	9	V
		First Point	●	3	4	5	V
		Second Point					
	Detection Current Compliance	$AGND - V_{OUTn} = 0\text{V}$	●		0.8	0.9	mA
V_{OC}	Detection Voltage Compliance	$AGND - V_{OUTn}$, Open Port	●		10.4	12	V
	Detection Voltage Slew Rate	$AGND - V_{OUTn}$, $C_{PORT} = 0.15\mu\text{F}$	●			0.01	$\text{V}/\mu\text{s}$
	Min. Valid Signature Resistance		●	15.5	17	18.5	$k\Omega$
	Max. Valid Signature Resistance		●	27.5	29.7	32	$k\Omega$

Classification

V_{CLASS}	Classification Voltage	$AGND - V_{OUTn}$, $0\text{mA} \leq I_{OUTn} \leq 50\text{mA}$	●	16.0		20.5	V
	Classification Current Compliance	$V_{OUTn} = AGND$	●	53	61	67	mA
	Classification Threshold Current	Class 0-1	●	5.5	6.5	7.5	mA
		Class 1-2	●	13.5	14.5	15.5	mA
		Class 2-3	●	21.5	23	24.5	mA
		Class 3-4	●	31.5	33	34.9	mA
		Class 4-Overcurrent	●	45.2	48	50.8	mA
V_{MARK}	Classification Mark State Voltage	$AGND - V_{OUTn}$, $0.1\text{mA} \leq I_{CLASS} \leq 5\text{mA}$	●	7.5	9	10	V
	Mark State Current Compliance	$V_{OUTn} = AGND$	●	53	61	67	mA

Gate Driver

	GATE Pin Pull-Down Current	Port Off, $V_{GATEn} = V_{EE} + 5\text{V}$	✗	0.4 0.3			mA
		Port Off, $V_{GATEn} = V_{EE} + 1\text{V}$	✗	0.09 0.06	0.12		mA
	GATE Pin Fast Pull-Down Current	$V_{GATEn} = V_{EE} + 5\text{V}$			30		mA
	GATE Pin On Voltage	$V_{GATEn} - V_{EE}$, $I_{GATEn} = 1\mu\text{A}$	●	8	12	14	V