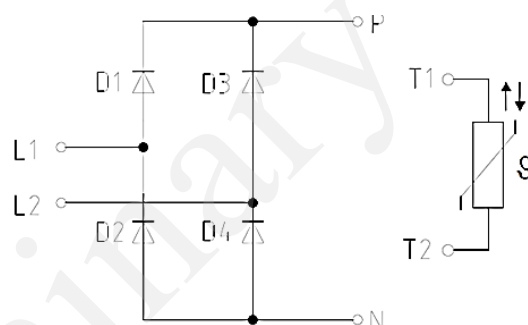


SiC Module PDIB12120AM

1200V SiC Schottky Diode

Features

- Qualified to AEC-Q101
- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation
- Positive Temperature Coefficient on V_F
- High Surge Current
- 100% UIS tested



Benefits

- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway



Application

- Consumer SMPS
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters



Order Information

Part Number	Package	Marking
PDIB12120AM	EASY 1B	PDIB12120AM

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1. Maximum Ratings

At $T_J = 25^\circ\text{C}$, unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	$T_C = 25^\circ\text{C}$
Surge Peak Reverse Voltage	V_{RSM}	1200	V	$T_C = 25^\circ\text{C}$
DC Blocking Voltage	V_R	1200	V	$T_C = 25^\circ\text{C}$
Forward Current	I_F	200 120	A	$T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$
Repetitive Peak Forward Surge Current per chip	I_{FRM}	370	A	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$
Non-Repetitive Forward Surge Current	I_{FSM}	540 440	A	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$ $T_C = 110^\circ\text{C}$, $t_p = 10\text{ms}$
Power Dissipation	P_{tot}	300	W	$T_C = 25^\circ\text{C}$
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$	

2. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.42	$^\circ\text{C}/\text{W}$

3. Electrical Characteristics

At $T_J = 25^\circ\text{C}$, unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.6	/	V	$I_F = 120\text{A}$, $T_J = 25^\circ\text{C}$
			2.4	/		$I_F = 120\text{A}$, $T_J = 150^\circ\text{C}$
Reverse Current	I_R	/	1	100	μA	$V_R = 1200\text{V}$, $T_J = 25^\circ\text{C}$
			100	/		$V_R = 1200\text{V}$, $T_J = 150^\circ\text{C}$
Total Capacitance	C	/	3246	/	pF	$V_R = 10\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
			765			$V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
			647			$V_R = 800\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
Total Capacitive Charge	Q_C	/	834	/	nC	$V_R = 800\text{V}$
Capacitance Stored Energy	E_C	/	210	/	μJ	$V_R = 800\text{V}$

4. NTC Thermistor Characteristics

Parameter	Symbol	Value			Unit	Test Conditions
		Min.	Typ.	Max.		
Rated Resistance	R_{NTC}	/	5	/	k Ω	$T_{NTC} = 25^{\circ}\text{C}$
Resistance Tolerance	$\Delta R/R$	-5	/	5	%	$T_{NTC} = 25^{\circ}\text{C}$
B-value	$B_{25/50}$	/	3380	/	K	$T_2 = 50^{\circ}\text{C}$
B-value	$B_{25/85}$	/	3435	/	K	$T_2 = 80^{\circ}\text{C}$
B-value	$B_{25/100}$	/	3485	/	K	$T_2 = 100^{\circ}\text{C}$
Power Dissipation	P_{NTC}	/	/	10	mW	$T_{NTC} = 25^{\circ}\text{C}$

5. Typical Performance

At $T_J = 25^\circ\text{C}$, unless specified otherwise

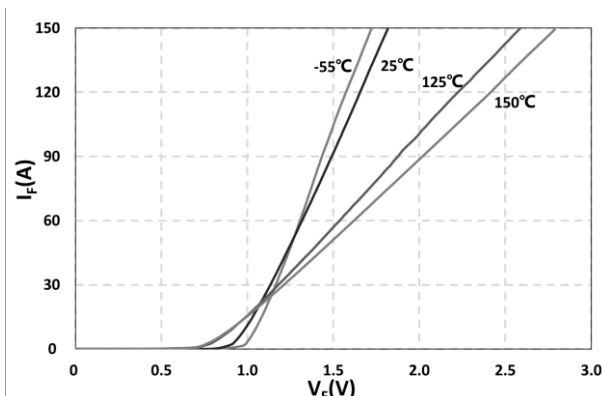


Fig. 1 Typical Forward Characteristics
 $I_F = f(V_F)$; $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 150^\circ\text{C}$

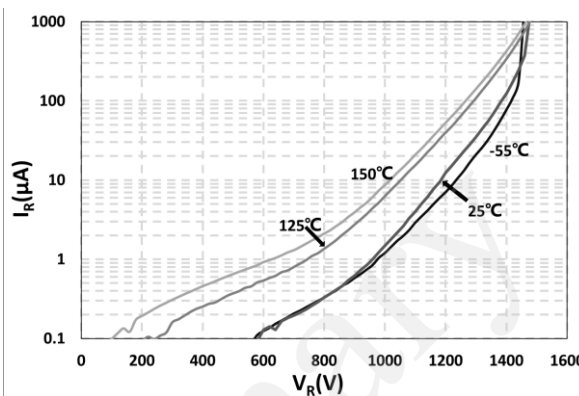


Fig. 2 Reverse Characteristics
 $I_R = f(V_R)$; $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 150^\circ\text{C}$

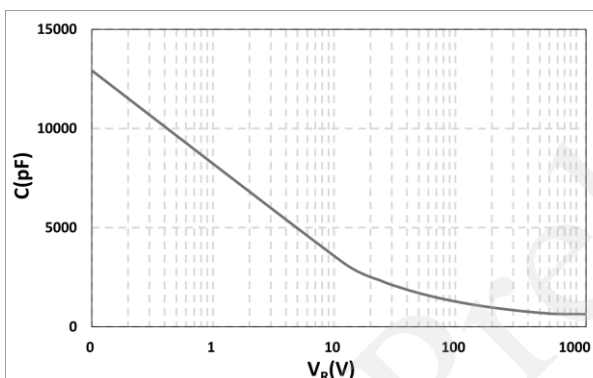


Fig. 3 Typical Total Capacitance $C = f(V_R)$

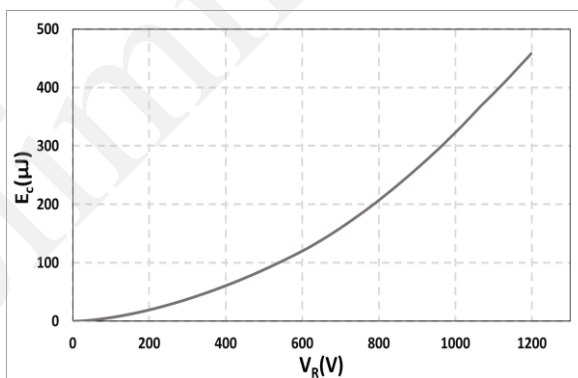


Fig. 4 Capacitance Stored Energy $E_C = f(V_R)$

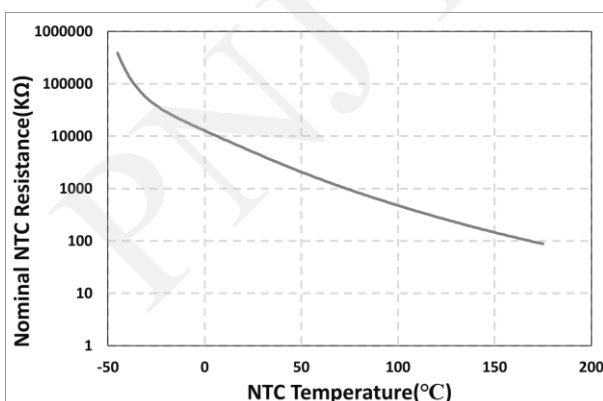


Fig. 5 Nominal NTC Resistance vs. NTC Temperature

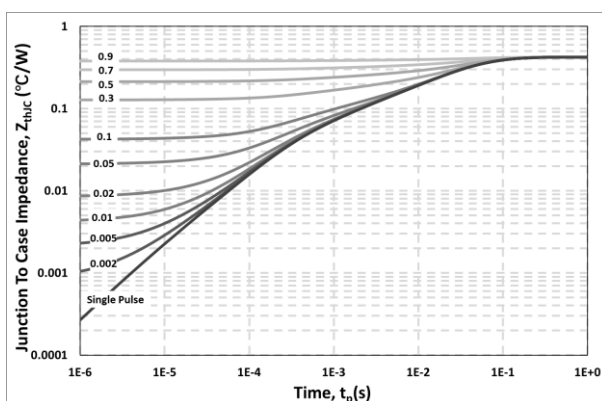
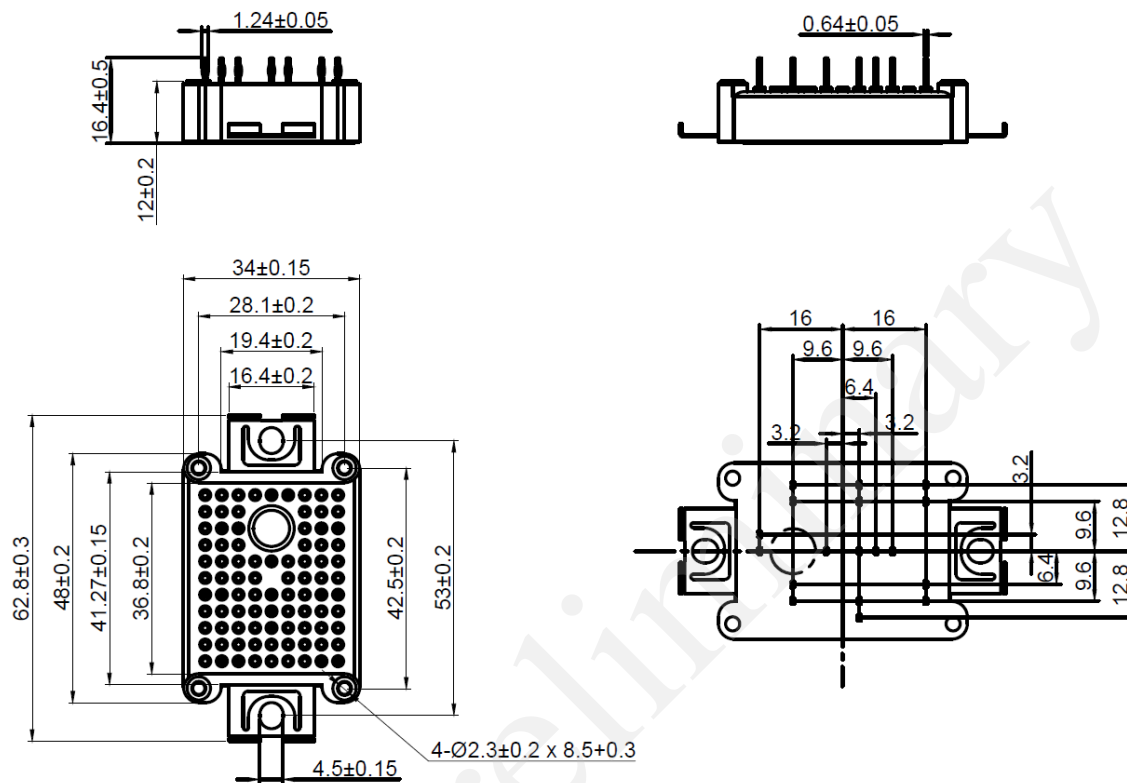


Fig. 6 Transient Thermal Impedance

6. Package Outlines



Drawing and Dimensions

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