

High Temperature Silicon Carbide Power Bridge Rectifier

Silicon Carbide Schottky Diodes

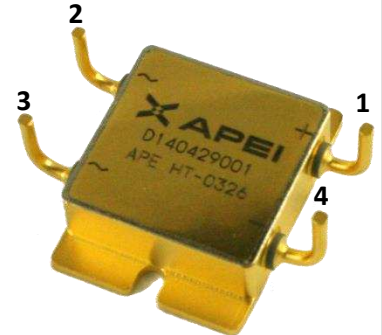
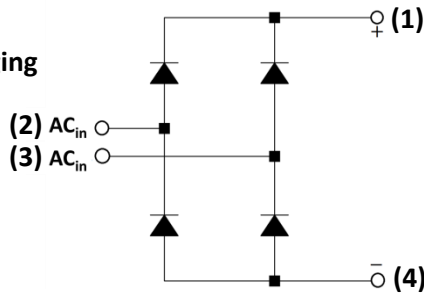
1200 V / 10 A / 35 nC

FEATURES

- High temperature: $T_{c(max)} = 225\text{ }^{\circ}\text{C}$, $T_{j(max)} = 225\text{ }^{\circ}\text{C}$
- AS9100:Rev. C-certified manufacturing, traceable throughout value chain
- Near zero forward and reverse recovery
- Extremely fast switching
- High system efficiency
- Hermetic seal; flux free, void free packaging
- Backside isolation
- High reliability

APPLICATIONS

- Downhole tools
- High efficiency converters
- Motor drives
- Aerospace: Military & Commercial
- Smart grid/grid-tie distributed generation



Absolute Maximum Ratings¹ (at $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated)

Symbol	Parameter	Condition(s)	Value	Units
V_{RRM}	Repetitive peak reverse voltage		1200	V
V_{DC}	DC blocking voltage		1200	
I_F	Average forward current	$T_j = 142\text{ }^{\circ}\text{C}$	10	A
I_{FSM}	Non-repetitive peak forward surge current	$T_c = 25\text{ }^{\circ}\text{C}$, $t_p = 8.3\text{ ms}$, Half Sine Pulse	80^2	
P_{tot}	Power dissipation	$T_c = 25\text{ }^{\circ}\text{C}$	167^3	W
		$T_c = 100\text{ }^{\circ}\text{C}$	104^3	
		$T_c = 200\text{ }^{\circ}\text{C}$	21^3	
T_j	Operating junction temperature		-50 to 225	$^{\circ}\text{C}$
T_{stg}	Storage temperature		-50 to 225	

¹ Obtained from United Silicon Carbide, Inc. UJ2D1210Z - datasheet

² Assumes thermal resistance of 1.1 $^{\circ}\text{C}/\text{W}$ or less

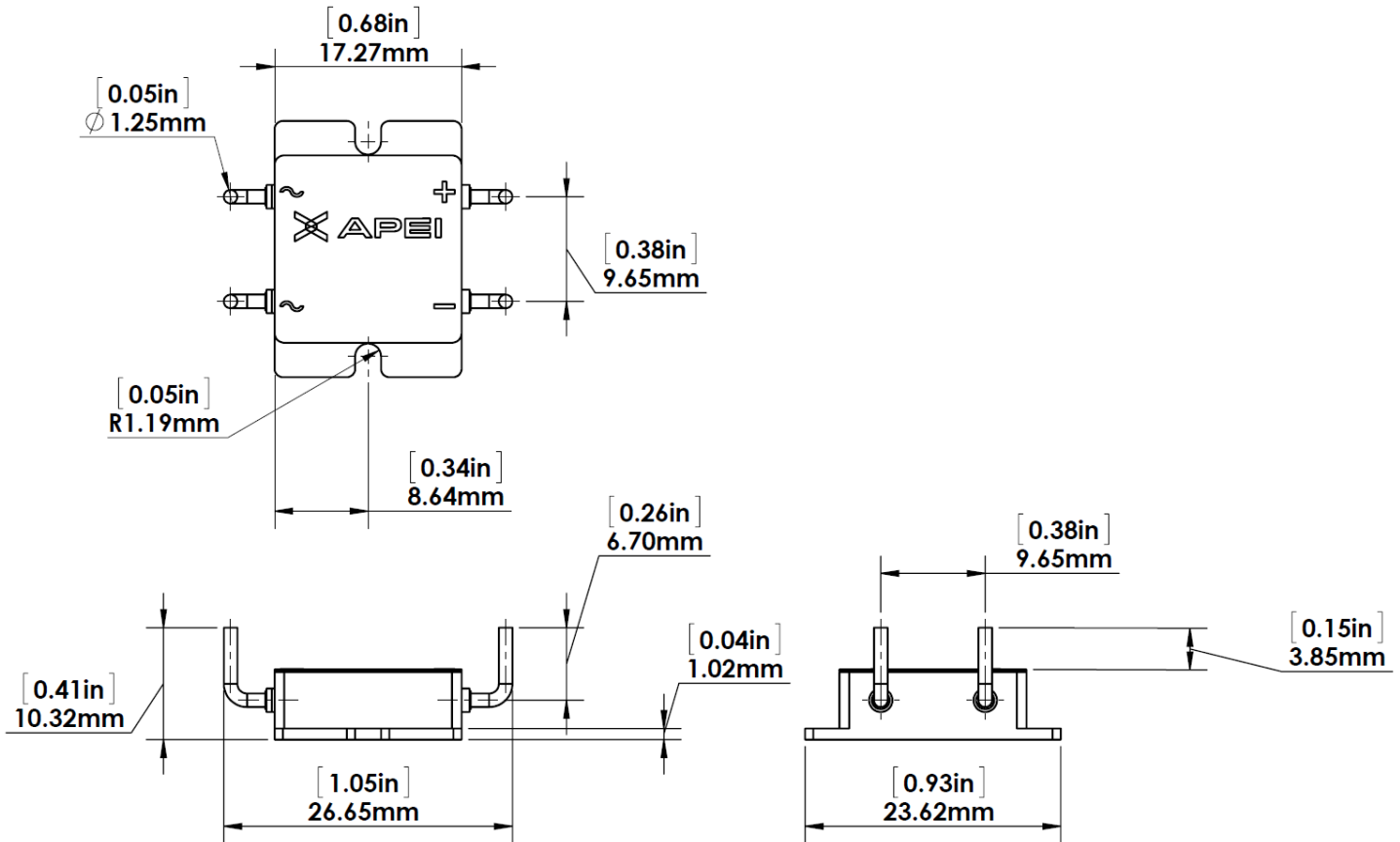
³ Data obtained through APEI experimentation and/or calculation

SiC Diode Electrical Characteristics ¹						
Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typical	Max.	
V _{SD} = V _F	Diode forward voltage	I _F = 10 A, T _j = 25 °C	-	1.5	1.7	V
		I _F = 10 A, T _j = 175 °C	-	2.5	3	
I _R	Reverse current	V _R = 1200 V, T _j = 25 °C	-	30	250	μA
		V _R = 1200 V, T _j = 175 °C	-	60	800	
Q _C	Total capacitive charge	V _R = 600 V, I _F = 10 A di _F /dt = 250 A/μs, T _j = 25 °C		35		nC
C	Total capacitance	V _R = 1 V, T _j = 25 °C, f = 1 MHz	-	500	-	pF
		V _R = 3400 V, T _j = 25 °C, f = 1 MHz	-	50	-	
		V _R = 600 V, T _j = 25 °C, f = 1 MHz	-	36	-	

Thermal Characteristics (Per Die)						
Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typical	Max.	
R _{θ(j-c)}	Thermal resistance junction-case	Calculated at 200 °C		1.2		°C/W

Mechanical Characteristics						
Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typical	Max.	
w	Weight			10.4		g
M _s	Mounting torque	2-56 screw into an Al heat sink		3		in-lb
		M2 screw into an Al heat sink		0.6		N-m



PACKAGE DIMENSIONS

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