

Silicon Carbide Power Schottky Diode

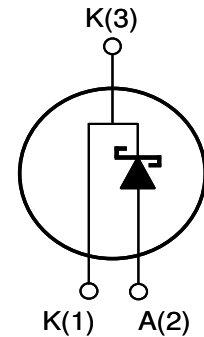
Features:

- Positive Temperature Coefficient for Ease of Paralleling
- Temperature Independent Switching Behavior
- 175 °C Maximum Operating Temperature
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage

Product Summary		
V_{DC}	1200	V
I_F	30	A
Q_C	130	nC

Applications:

- Solar Inverter
- SMPS
- Power Factor Correction
- Induction Heating
- UPS
- Motor Drive



Internal Schematic

MAXIMUM RATINGS

Parameter	Symbol	Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	$T_j = 25\text{ °C}$	1200	V
DC Blocking Voltage	V_{DC}		1200	
Continuous Forward Current ⁽¹⁾	I_F	$T_C = 145\text{ °C}$	30	A
		$T_C = 100\text{ °C}$	46	
Peak Repetitive Forward Current ⁽¹⁾	I_{FRM}	$T_C = 125\text{ °C}, D = 0.1$	120	
Non-Repetitive Surge Forward Current ⁽¹⁾	I_{FSM}	$T_C = 25\text{ °C}, t_p = 10\text{ ms}$	110	
		$T_C = 25\text{ °C}, t_p = 10\text{ us}$	700	
Power Dissipation ⁽¹⁾	P_D	$T_C = 25\text{ °C}$	313	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to +175	°C

⁽¹⁾ Limited by maximum junction temperature, $T_{j,max}$

THERMAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Thermal Resistance, junction-case	$R_{th,JC}$		-	0.48	-	°C / W
Thermal Resistance, junction-ambient	$R_{th,JA}$		-	62	-	

ELECTRICAL CHARACTERISTICS, at $T_j = 25\text{ °C}$ unless otherwise stated

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Forward Voltage	V_F	$I_F = 30\text{ A}, T_j = 25\text{ °C}$	-	1.6	1.8	V
		$I_F = 30\text{ A}, T_j = 175\text{ °C}$	-	2.4	2.9	
Reverse Current	I_R	$V_R = 1200\text{ V}, T_j = 25\text{ °C}$	-	30	300	uA
		$V_R = 1200\text{ V}, T_j = 175\text{ °C}$	-	600	-	
Total Capacitive Charge	Q_C	$V_R = 400\text{ V}, I_F = 30\text{ A}, di/dt = 500\text{ A/us}$	-	130	-	nC
Total Capacitance	C	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	3700	-	pF
		$V_R = 300\text{ V}, f = 1\text{ MHz}$	-	150	-	
		$V_R = 600\text{ V}, f = 1\text{ MHz}$	-	110	-	

Figure 1. Typical Forward Characteristics

$I_F = f(V_F)$; parameter: T_j

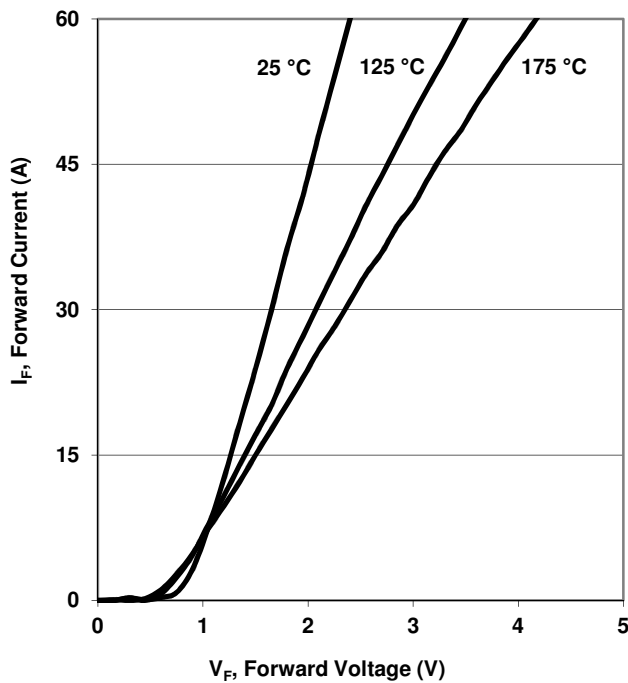


Figure 2. Typical Reverse Characteristics

$I_R = f(V_R)$; parameter: T_j

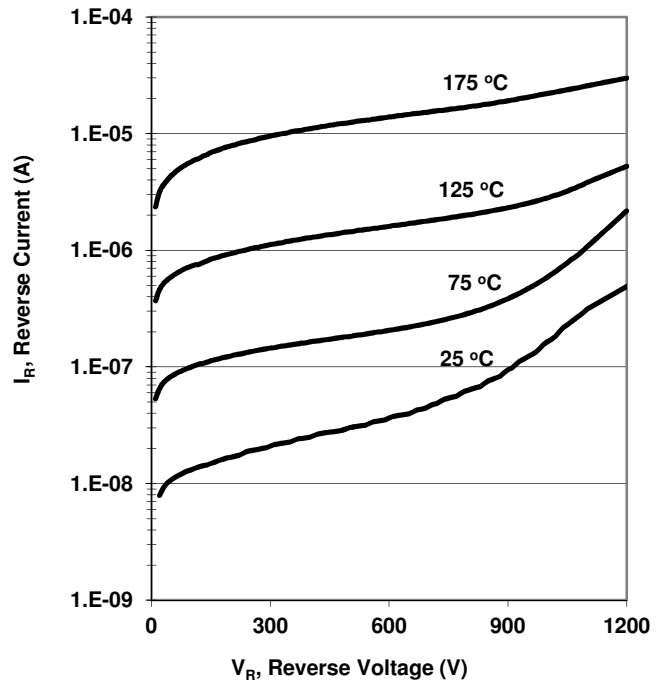


Figure 3. Diode Forward Current

$I_F = f(T_C)$; parameter: duty cycle, D

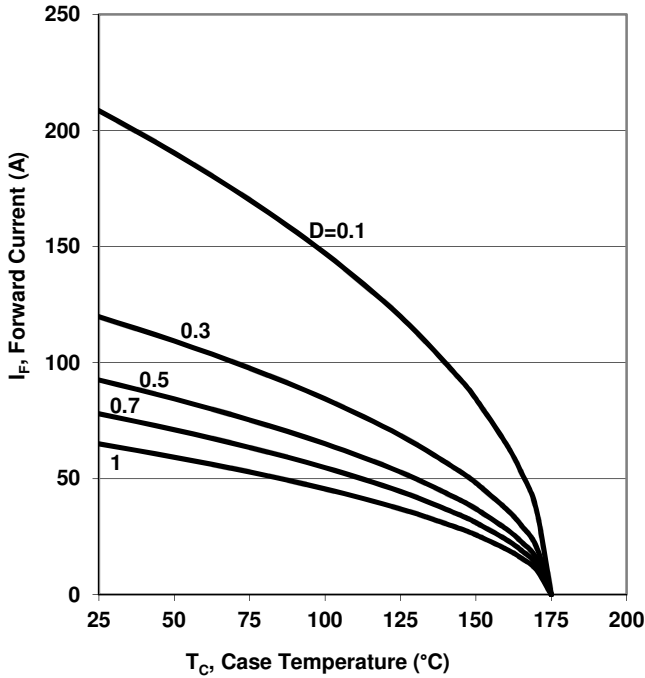


Figure 4. Typical Capacitance

$C = f(V_R)$; $T_C = 25^\circ\text{C}$; $f = 1 \text{ MHz}$

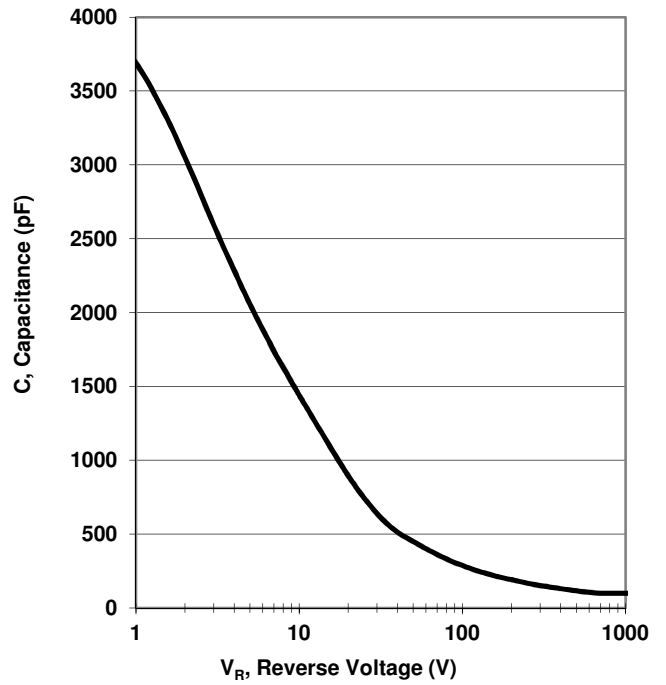
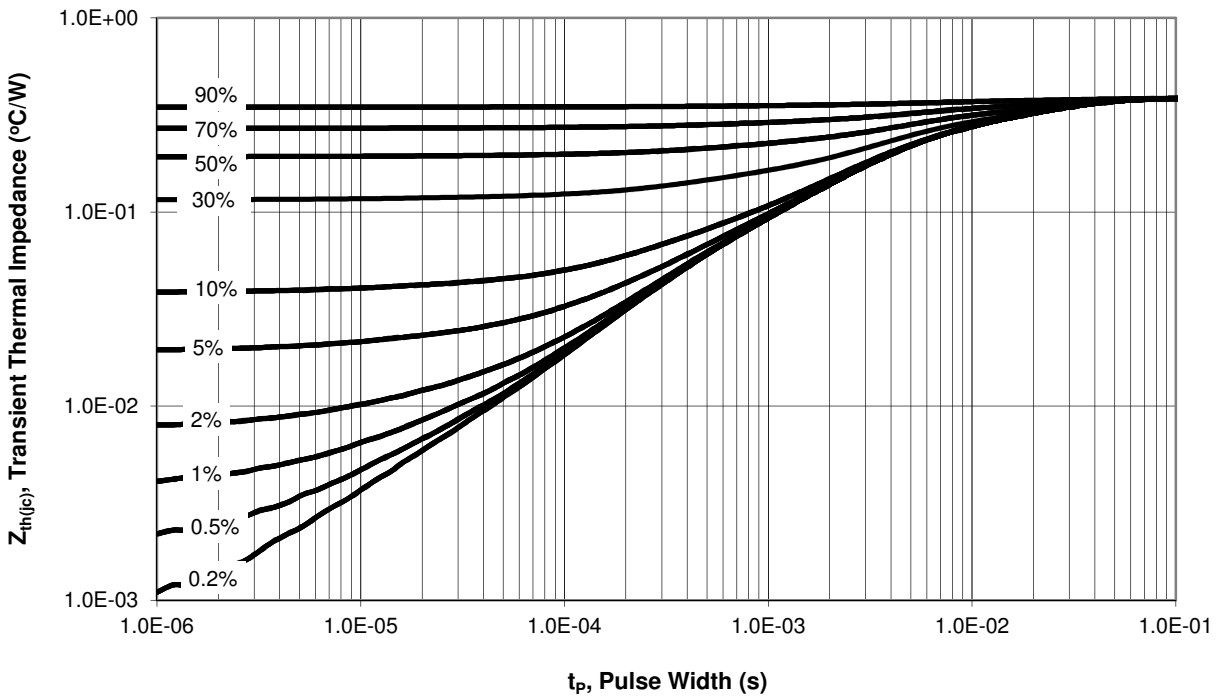
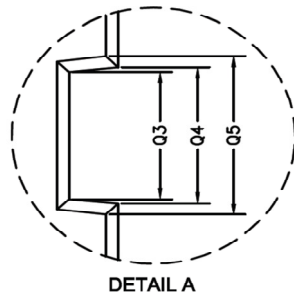
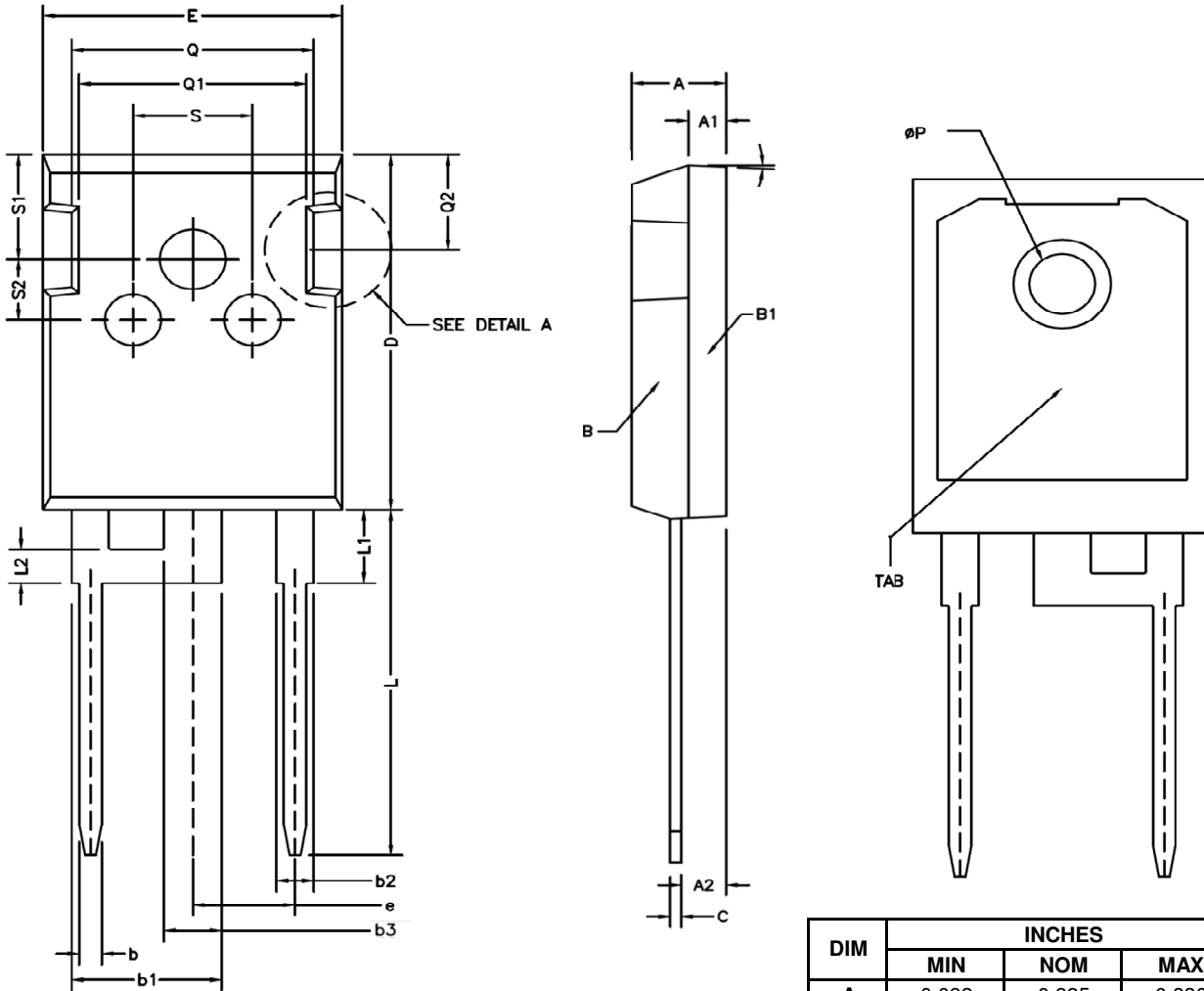


Figure 5. Transient Thermal Impedance

$Z_{th(jc)} = f(t_p)$; parameter: duty cycle, D



Package Dimensions: 2 Lead TO-247



DIM	INCHES		
	MIN	NOM	MAX
A	0.082	0.825	0.830
A1	0.077	0.079	0.081
A2	0.092	0.094	0.096
b	0.042	0.047	0.052
b1	0.310	0.315	0.320
b2	0.077	0.078	0.079
c		0.024	0.027
D	0.820	0.825	0.830
E	0.621	0.626	0.631
e		0.215	
L	0.789	0.794	0.799
L1	0.164	0.170	0.176
L2	0.077	0.078	0.079
ØP	0.138	0.139	0.140
Q	0.504	0.506	0.508
Q3	0.145	0.160	0.175

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