

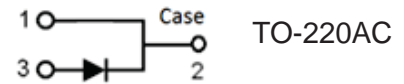
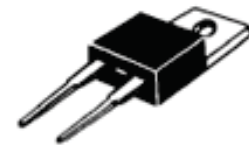
◆ **Features**

- Negligible reverse recovery
- High surge current
- Positive Temperature Coefficient
- Higher frequency
- Halogen-free / RoHS compliant

650V SILICON CARBIDE  
SCHOTTKY DIODE  
 $V_{RRM}$  650V  
 $I_F$  6A ( $T_C=153^\circ\text{C}$ )  
 $Q_C$  18nC

◆ **Benefits**

- High-speed switching
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability



**Maximum Ratings (Tc=25°C unless otherwise noted)**

Symbol	Parameter	Value	Unit	Note	
$V_{RRM}$	Repetitive peak reverse voltage	650	V		
$I_F$	Continuous forward current	Tc=25°C	20	A	Figure 3
		Tc=135°C	9	A	
		Tc=153°C	6	A	
$I_{FSM}$	Non-repetitive forward surge current	Tc=25°C, $t_p=10\text{ms}$ , Half sine pulse	66	A	
		Tc=110°C, $t_p=10\text{ms}$ , Half sine pulse	57	A	
$I_{FRM}$	Repetitive Peak Forward Surge Current	Tc=25°C, $t_p=10\text{ms}$ , Half sine pulse	60	A	
$\int i^2 dt$	$i^2t$ value	Tc=25°C, $t_p=10\text{ms}$	21	A <sup>2</sup> S	
		Tc=110°C, $t_p=10\text{ms}$	16	A <sup>2</sup> S	
$P_{tot}$	Power Dissipation	Tc=25°C	87	W	Figure 4
		Tc=110°C	37	W	
		Tc=150°C	14	W	
$T_j, T_{stg}$	Operating and Storage Temperature	-55 to +175	-55 to +175		

**Electrical Characteristics (Tc=25°C unless otherwise noted)**

Symbol	Parameter	Test Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
V <sub>DC</sub>	DC blocking voltage		650	-	-	V	
V <sub>F</sub>	Forward voltage	I <sub>F</sub> =3A	-	1.16	-	V	Figure 1
		I <sub>F</sub> =6A, Tc=25°C	-	1.34	1.5	V	
		I <sub>F</sub> =6A, Tc=175°C		1.67		V	
I <sub>R</sub>	Reverse current	V <sub>R</sub> =650V, Tc=25°C	-	1.2	50	uA	Figure 2
		V <sub>R</sub> =650V, Tc=175°C		4.5		uA	
Q <sub>C</sub>	Total capacitive charge	V <sub>R</sub> =400V	-	18	-	nC	Figure 6
C	Total capacitance	V <sub>R</sub> =1V, f=1MHZ	-	261	-	pF	Figure 5
		V <sub>R</sub> =200V, f=1MHZ	-	35	-	pF	
		V <sub>R</sub> =400V, f=1MHZ	-	33	-	pF	
E <sub>C</sub>	Capacitance Stored Energy	V <sub>R</sub> =400V	-	2.9	-	uJ	Figure 7

**Thermal Characteristics**

Symbol	Parameter	Value		Unit	Note
		Typ.	Max.		
R <sub>th(j-c)</sub>	Thermal resistance (Junction to case)	1.73	-	°C/W	Figure 8

**Electrical Characteristic Curves**

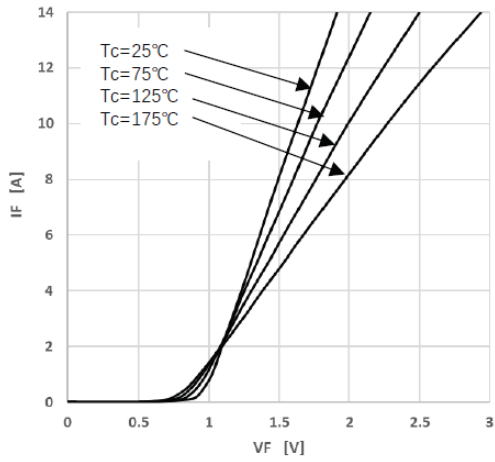


Figure 1 Forward Characteristics

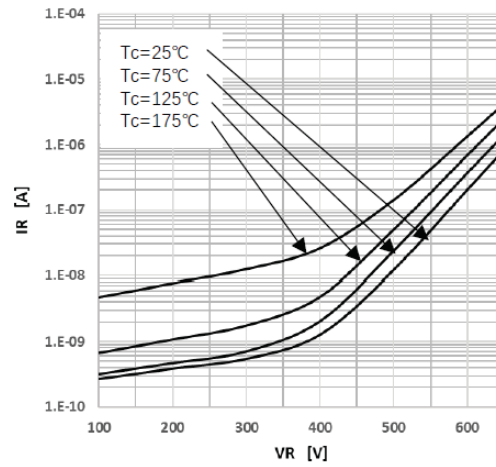


Figure 2 Reverse Characteristics

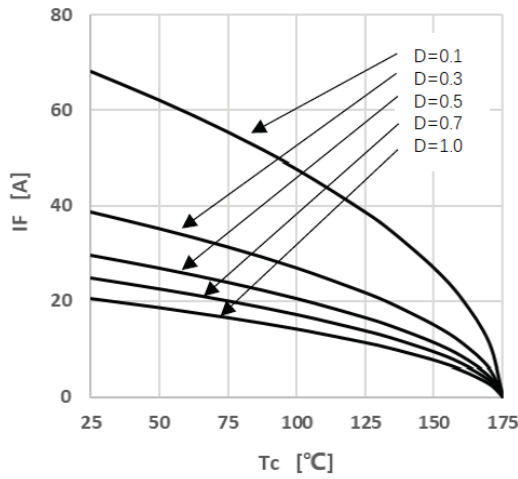


Figure 3 Peak Forward Current Derating

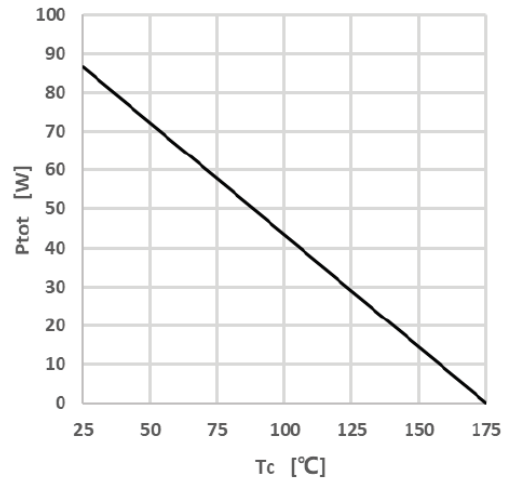


Figure 4 Power Dissipation

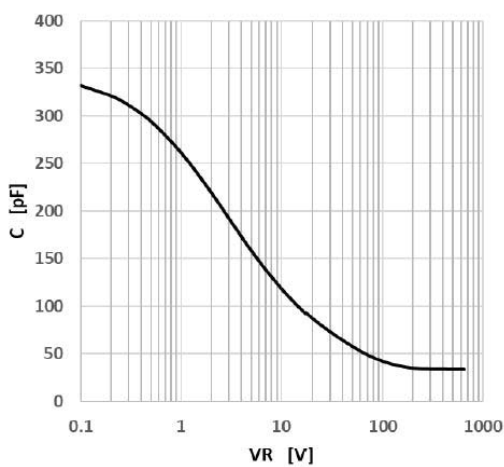


Figure 5 Capacitance vs. Reverse Voltage

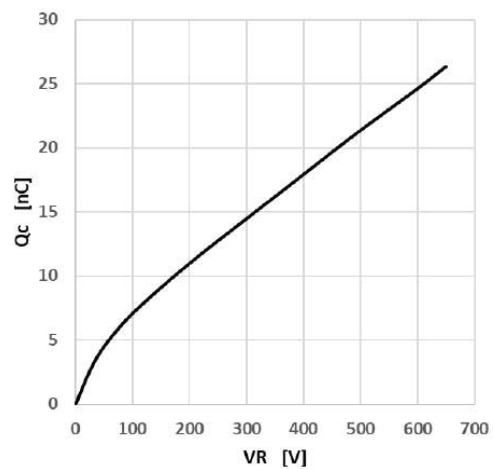


Figure 6 Capacitance Charge vs. Reverse Voltage

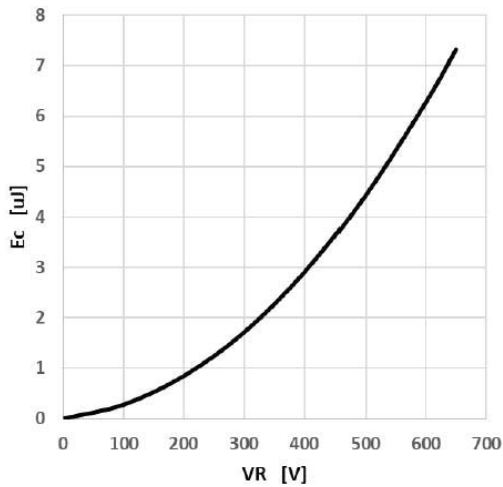


Figure 7 Capacitance Stored Energy

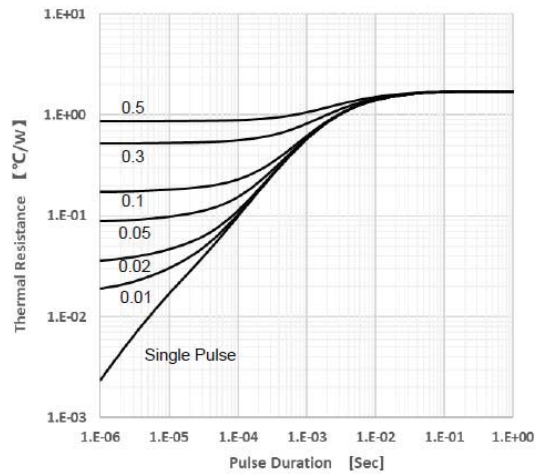
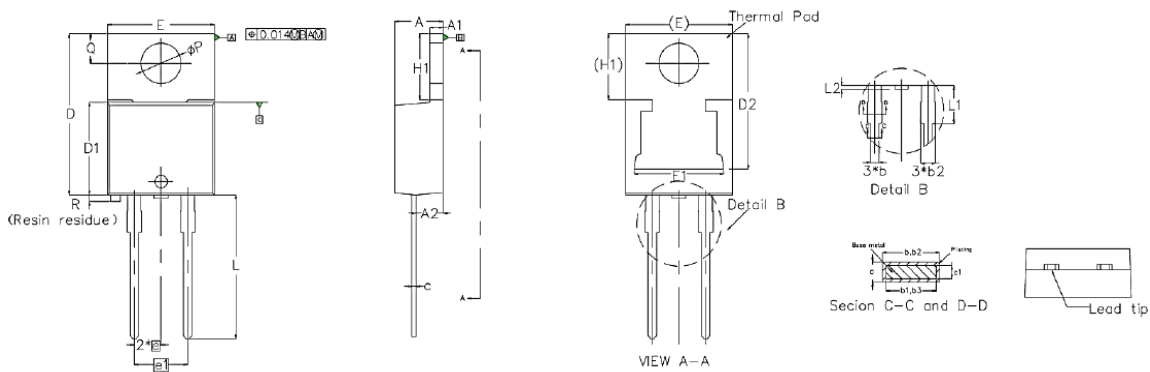


Figure 8 Transient Thermal Impedance

TO-220AC Package Dimensions : (Unit : mm)



SYMBOL	MILLIMETERS			NOTES	SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.			Normal	MIN.	MAX.	
A	4.55	4.44	4.65		E1	8.57	8.25	8.89	
A1	1.27	1.14	1.39		e	2.54	2.41	2.67	
A2	2.60	2.54	2.79		e1	5.08	4.95	5.20	
b	0.85	0.69	0.94		H1	6.20	6.09	6.40	
b1	0.83	0.38	0.97		L	13.60	13.52	14.00	
b2	1.33	1.20	1.45		L1	3.60	3.56	3.80	
b3	1.33	1.20	1.45		L2	-	0	0.35	
c	0.50	0.36	0.56		phi P	3.80	3.70	3.91	
c1	0.48	0.36	0.56		R			0.2	
D	15.25	14.95	15.32						
D1	8.75	8.50	8.89						
D2	12.85	12.20	13.30						
E	10.18	10.11	10.40						