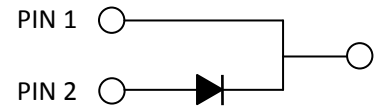


# THCS10120A

## Silicon Carbide Schottky Diode



### Maximum Ratings ( $T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	1200	V		
$V_{RSM}$	Surge Peak Reverse Voltage	1200	V		
$V_{DC}$	DC Blocking Voltage	1200	V		
$I_F$	Continuous Forward Current	29 14 10	A	$T_C=25^\circ\text{C}$ $T_C=125^\circ\text{C}$ $T_C=140^\circ\text{C}$	Fig. 7
$I_{FRM}$	Repetitive Peak Forward Surge Current	50	A	$T_C=25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=0.3$	
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	70	A	$T_C=25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=0.3$	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	600	A	$T_C=25^\circ\text{C}$ , $t_p=10$ $\mu$ s, Pulse	
$P_{tot}$	Power Dissipation	139 60	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	Fig. 6
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		

### Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.5 2.2	1.8 3	V	$I_F=10$ A $T_J=25^\circ\text{C}$ $I_F=10$ A $T_J=175^\circ\text{C}$	Fig. 1
$I_R$	Reverse Current	10 50	100 400	$\mu\text{A}$	$V_R=1200$ V $T_J=25^\circ\text{C}$ $V_R=1200$ V $T_J=175^\circ\text{C}$	Fig. 2
$Q_C$	Total Capacitive Charge	50		nC	$V_R=600$ V, $T_J=25^\circ\text{C}$ $Q_C=\int C(V)dV$	Fig. 4
C	Total Capacitance	610 46 40		pF	$V_R=0$ V, $T_J=25^\circ\text{C}$ , $f=1$ MHz $V_R=400$ V, $T_J=25^\circ\text{C}$ , $f=1$ MHz $V_R=600$ V, $T_J=25^\circ\text{C}$ , $f=1$ MHz	Fig. 3
$E_C$	Capacitance Stored Energy	15		$\mu\text{J}$	$V_R=600$ V	Fig. 5

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.09	$^{\circ}\text{C}/\text{W}$	Fig. 8

## Typical Performance

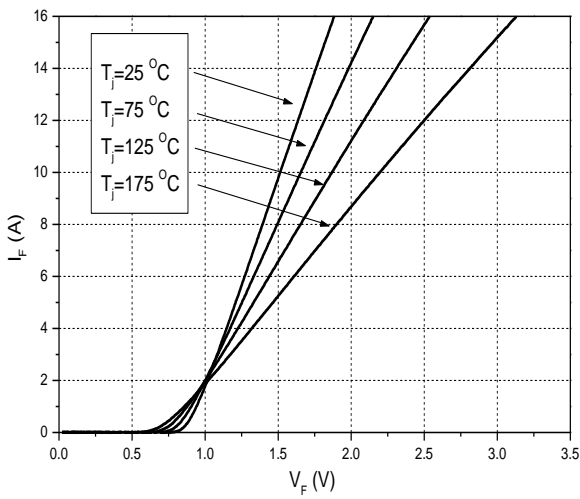


Figure 1. Forward Characteristics

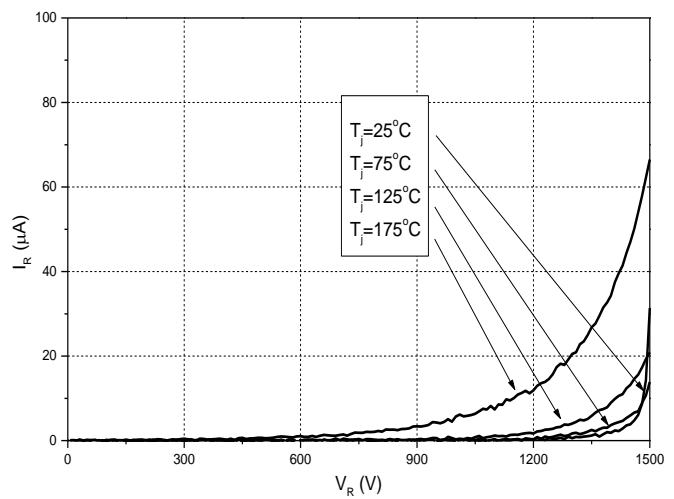


Figure 2. Reverse Characteristics

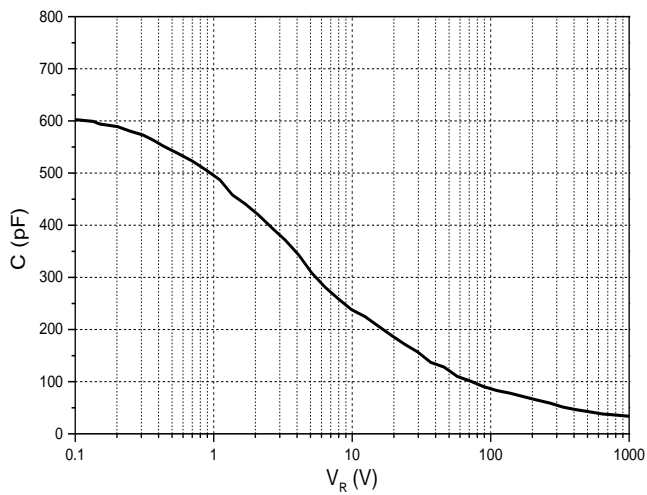


Figure 3. Capacitance vs. Reverse Voltage

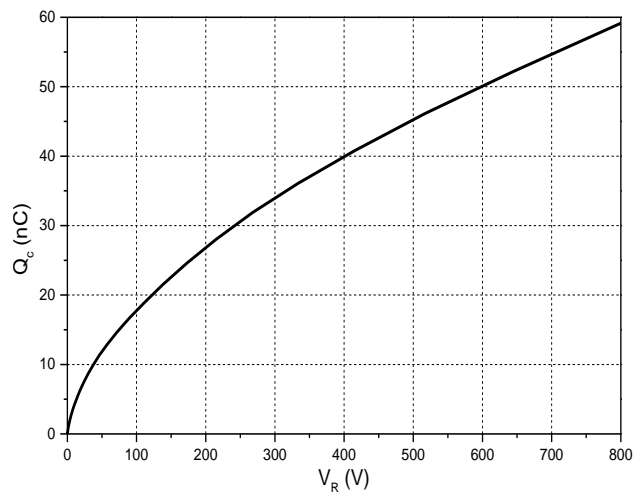


Figure 4. Total Capacitance Charge vs. Reverse Voltage

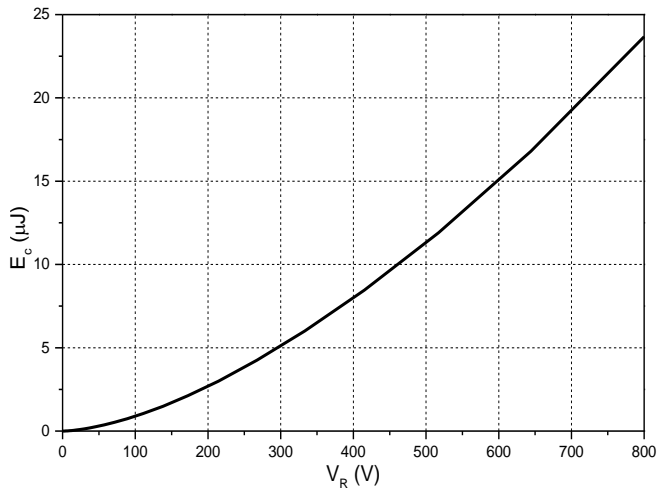


Figure 5. Capacitance Stored Energy

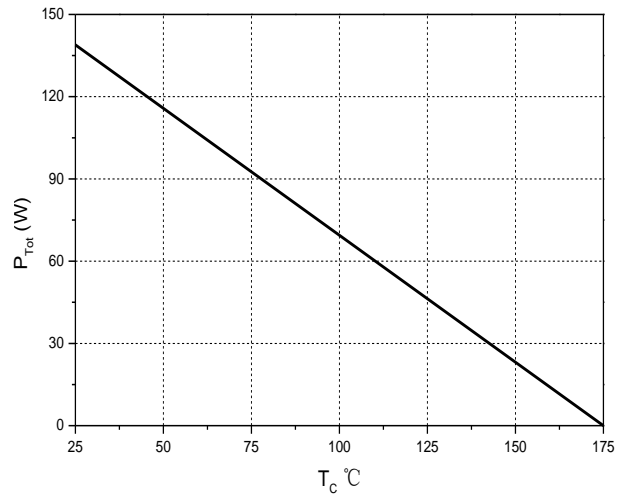


Figure 6. Power Derating

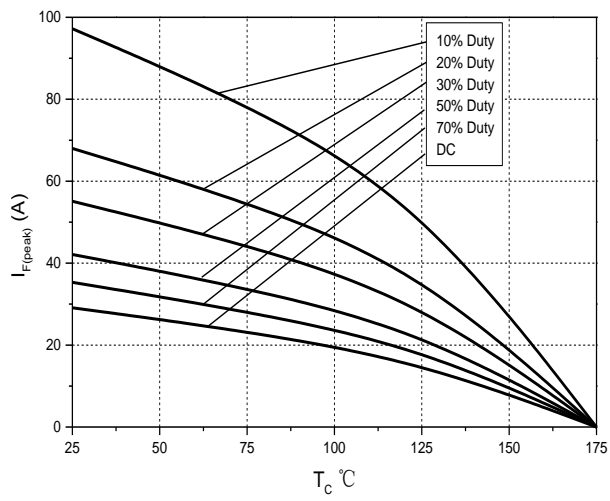


Figure 7. Current Derating

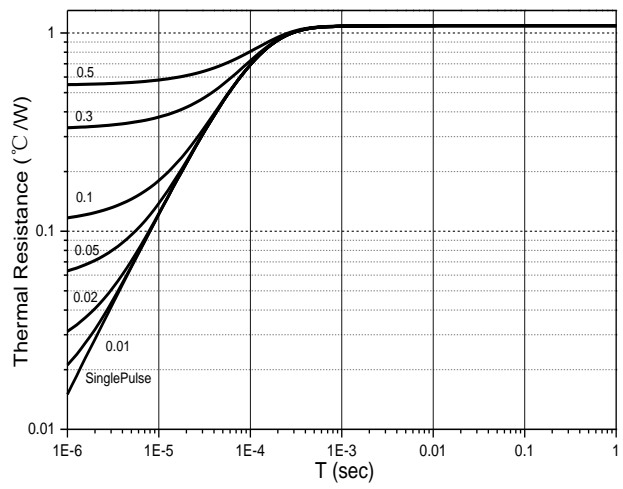


Figure 8. Transient Thermal Impedance

**Package Dimensions**

TO-220-2