

## Silicon Carbide Schottky Diode

$V_{RRM}$	=	650	V
$I_F (T_C \leq 135^\circ C)$	=	18	A
$Q_C$	=	36	nC

### Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on  $V_F$
- Temperature-independent Switching
- 175°C Operating Junction Temperature

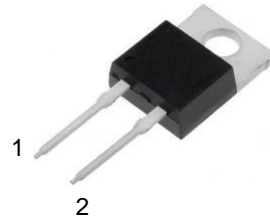
### Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

### Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station

### Package



TO-220-2



Part Number	Package	Marking
H3D15065B2	TO-220-2	H3D15065B2

### Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V	$T_C = 25^\circ C$	
$V_{RSM}$	Surge Peak Reverse Voltage	650	V	$T_C = 25^\circ C$	
$V_R$	DC Blocking Voltage	650	V	$T_C = 25^\circ C$	
$I_F$	Forward Current	18 15	A	$T_C \leq 135^\circ C$ $T_C \leq 149^\circ C$	
$I_{FSM}$	Non-Repetitive Forward Surge Current	135	A	$T_C = 25^\circ C, t_p = 8.3ms, \text{Half Sine Wave}$	
$P_{tot}$	Power Dissipation	158	W	$T_C = 25^\circ C$	Fig.3
$T_C$	Maximum Case Temperature	149	$^\circ C$		
$T_J, T_{STG}$	Operating Junction and Storage Temperature	-55 to 175	$^\circ C$		
	TO-220 Mounting Torque	1	Nm	M3 Screw	

**Electrical Characteristics**

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.4 1.7	1.65 2.3	V	$I_F = 15A, T_J = 25^\circ C$ $I_F = 15A, T_J = 175^\circ C$	Fig.1
$I_R$	Reverse Current	2 10	20 200	$\mu A$	$V_R = 650V, T_J = 25^\circ C$ $V_R = 650V, T_J = 175^\circ C$	Fig.2
C	Total Capacitance	865 88 72	/	pF	$V_R = 0V, T_J = 25^\circ C, f = 1MHz$ $V_R = 200V, T_J = 25^\circ C, f = 1MHz$ $V_R = 400V, T_J = 25^\circ C, f = 1MHz$	Fig.5
$Q_C$	Total Capacitive Charge	36	/	nC	$V_R = 650V, I_F = 15A$ $di/dt = 200A/\mu s, T_J = 25^\circ C$	Fig.4

**Thermal Characteristics**

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.95	$^\circ C/W$	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	$^\circ C/W$	
$T_{sold}$	Soldering Temperature	260	$^\circ C$	

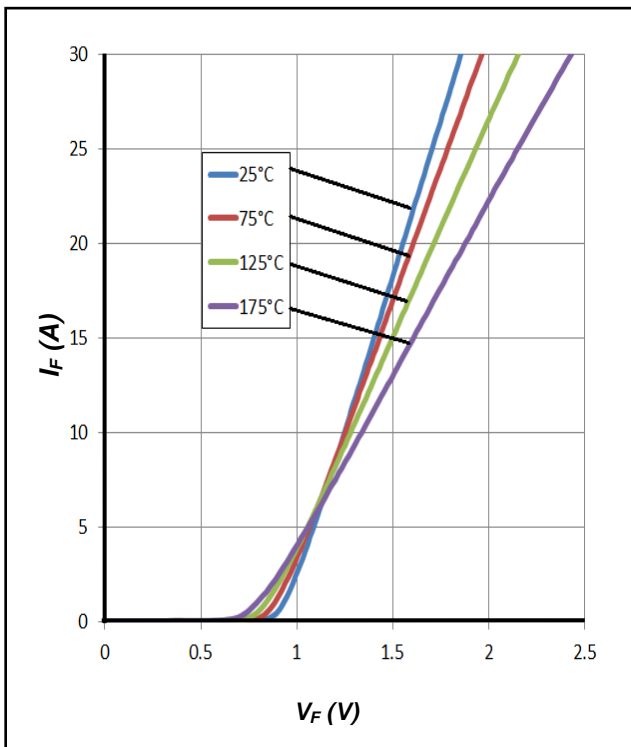
**Typical Performance**


Figure 1. Forward Characteristics

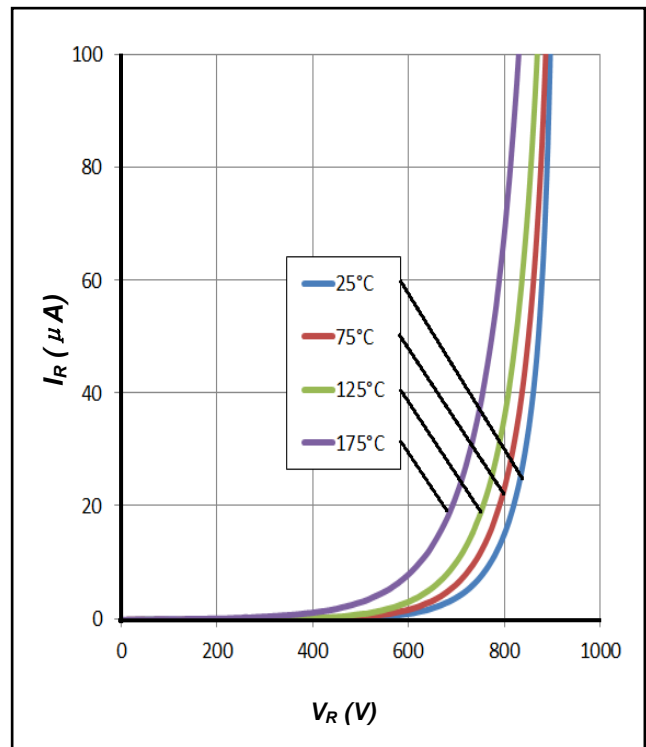


Figure 2. Reverse Characteristics

Typical Performance

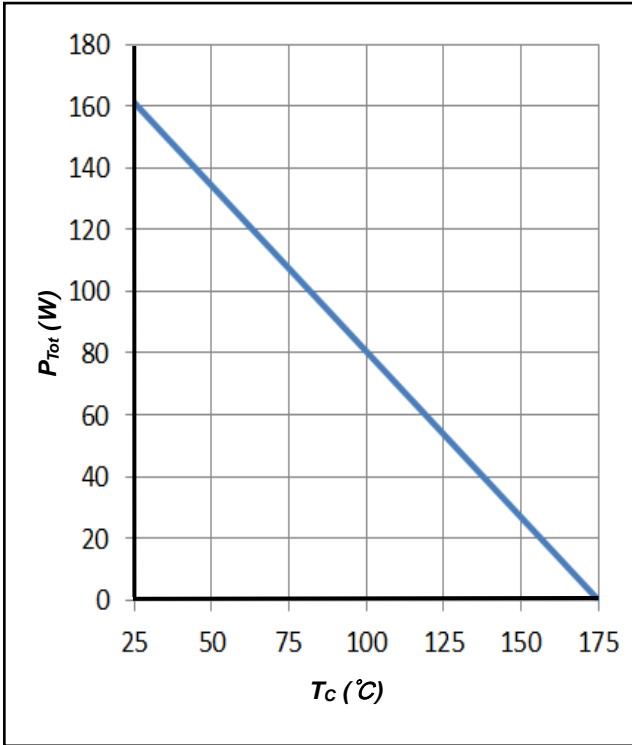


Figure 3. Power Derating

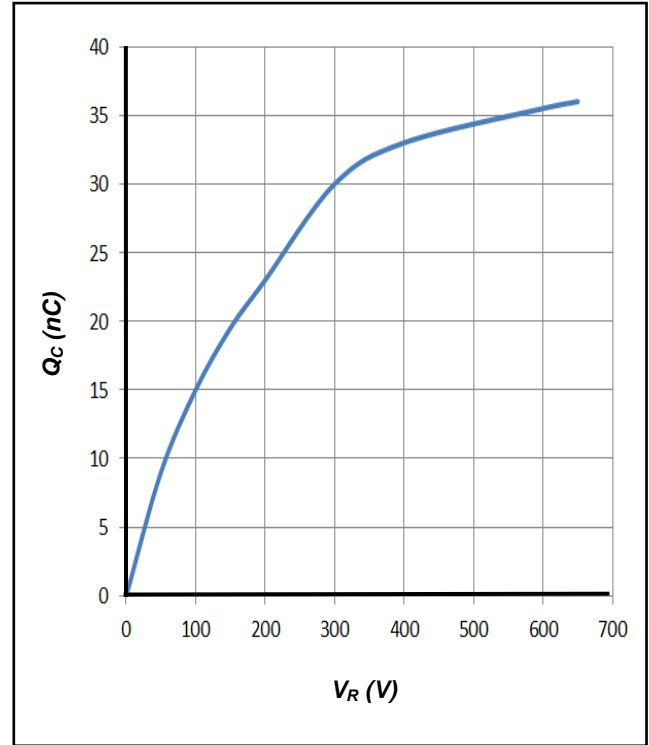


Figure 4. Total Capacitive Charge vs. Reverse Voltage

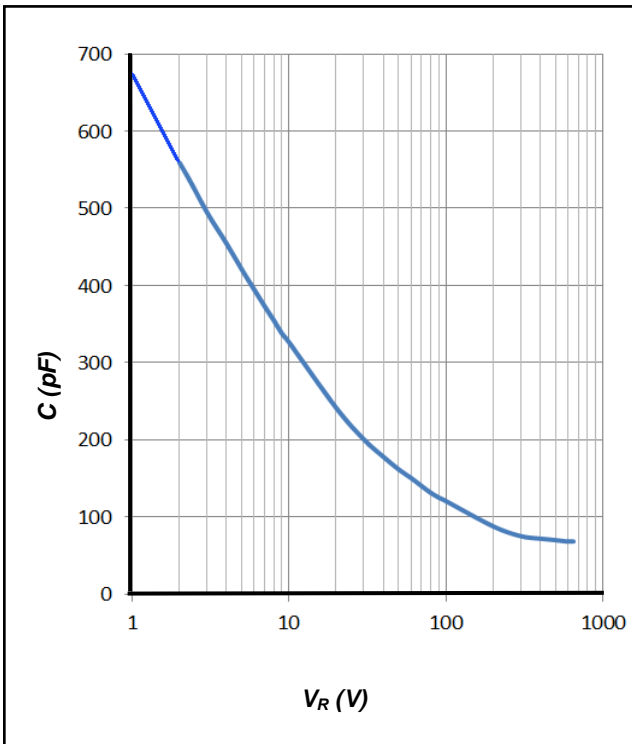


Figure 5. Total Capacitance vs. Reverse Voltage

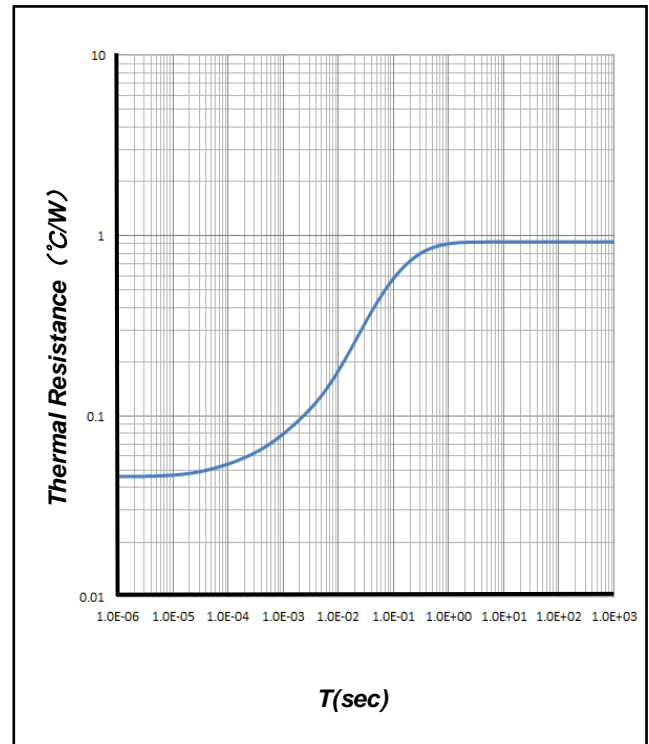
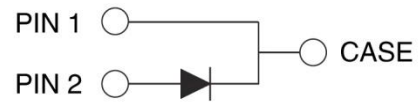
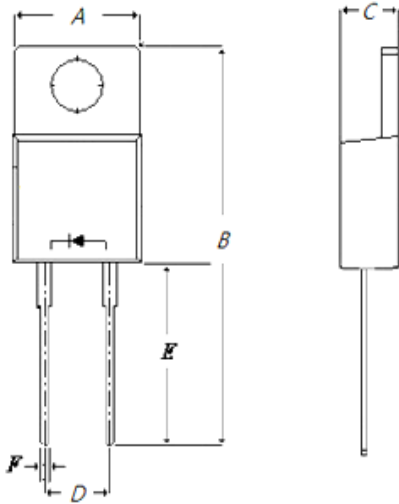


Figure 6. Transient Thermal Impedance

## Package Dimensions

Package TO-220-2



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	9.17	10.08	10.91
B	27.00	28.58	30.00
C	3.89	4.50	5.00
D	4.20	5.10	5.80
E	11.70	13.30	14.97
F	0.50	0.80	1.21