

# TD5G06065M

## Silicon Carbide Schottky Diode

$V_{RRM}$	=	650 V
$I_F (T_C=159\text{ }^\circ\text{C})$	=	6 A
$Q_C$	=	22 nC

### Features

- 650 V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching

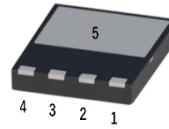
### Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- High Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

### Applications

- Switching Mode Power Supply
- Boost Diodes in PFC
- DC/DC Converters
- AC/DC Converters
- Free Wheeling Diodes in Inverter

### Package



DFN 8\*8



Part Number	Package	Marking
TD5G06065M	DFN 8*8	TD5G06065M

### Maximum Ratings (T<sub>c</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V		
$V_{RSM}$	Surge Peak Reverse Voltage	650	V		
$V_R$	DC Peak Reverse Voltage	650	V		
$I_F$	Continuous Forward Current	28 13 6	A	$T_C=25\text{ }^\circ\text{C}$ $T_C=135\text{ }^\circ\text{C}$ $T_C=159\text{ }^\circ\text{C}$	Fig. 3
$I_{FSM}$	Non-Repetitive Forward Surge Current	48	A	$T_C=25\text{ }^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	
$P_{tot}$	Power Dissipation	143 63	W	$T_C=25\text{ }^\circ\text{C}$ $T_C=110\text{ }^\circ\text{C}$	Fig. 4
$T_J$	Operating Junction Range	-55 to +175	°C		
$T_{stg}$	Storage Temperature Range	-55 to +175	°C		

### Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.38 1.8	1.65 2.4	V	$I_F = 6\text{ A}, T_J = 25\text{ }^\circ\text{C}$ $I_F = 6\text{ A}, T_J = 175\text{ }^\circ\text{C}$	Fig. 1
$I_R$	Reverse Current	2 15	50 180	$\mu\text{A}$	$V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$ $V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$	Fig. 2
$Q_C$	Total Capacitive Charge	22		nC	$V_R = 400\text{ V}, I_F = 6\text{ A},$ $T_J = 25\text{ }^\circ\text{C}$	Fig. 6
$C$	Total Capacitance	398 43 33		pF	$V_R = 0\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$ $V_R = 200\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$ $V_R = 400\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	Fig. 5
$E_C$	Capacitance Stored Energy	2.8		$\mu\text{J}$	$V_R = 400\text{ V}$	Fig. 7

Note: This is a majority carrier diode, so there is no reverse recovery charge.

### Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case		1.05		$^\circ\text{C/W}$	Fig.8

### Typical Performance

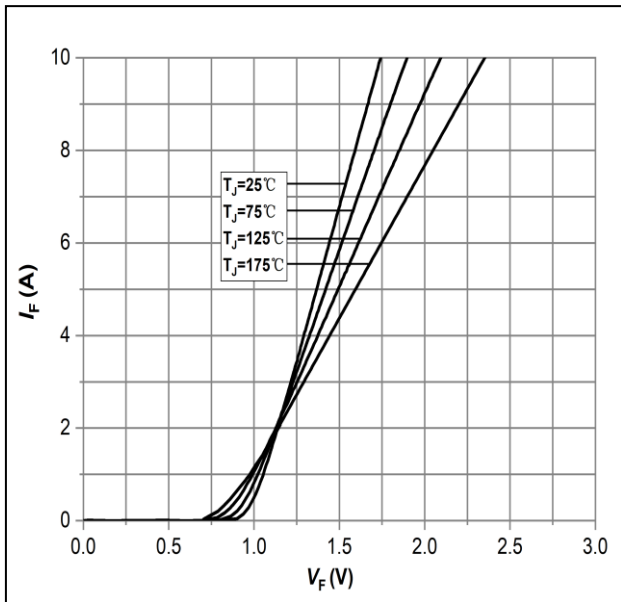


Figure 1: Forward Characteristics

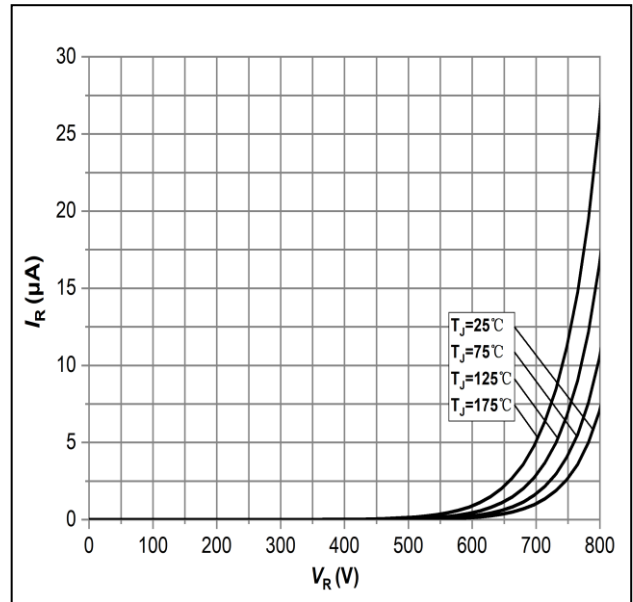


Figure 2: Reverse Characteristics

Typical Performance

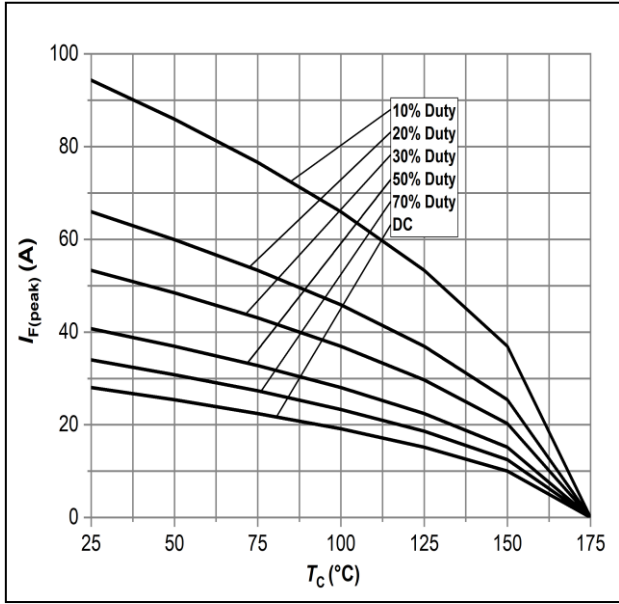


Figure 3: Current Derating

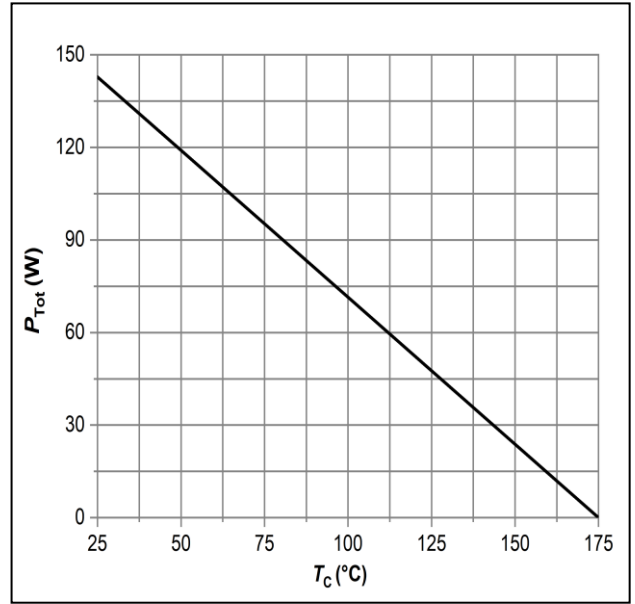


Figure 4: Power Derating

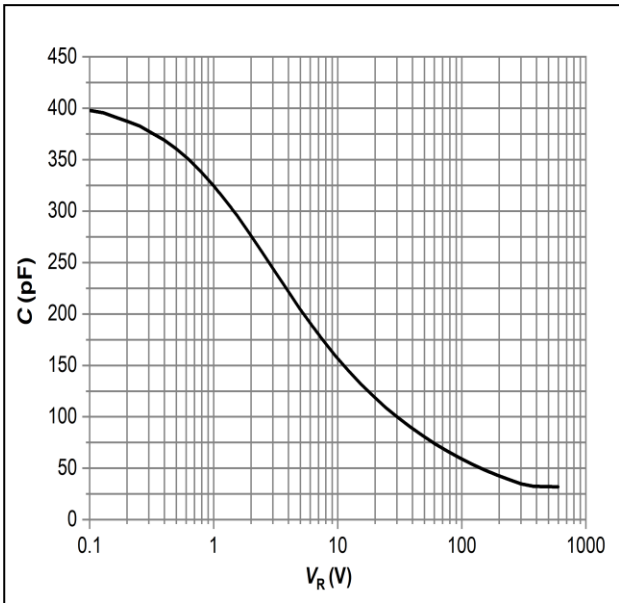


Figure 5: Capacitance vs. Reverse Voltage

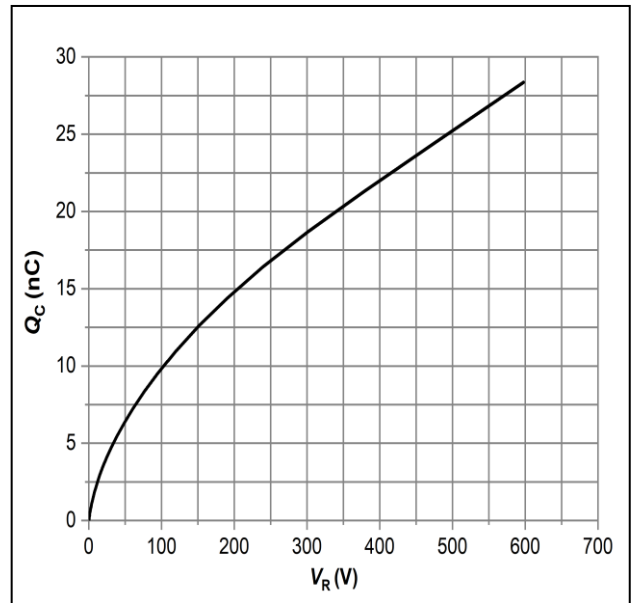


Figure 6: Total Capacitance Charge vs. Reverse Voltage

Typical Performance

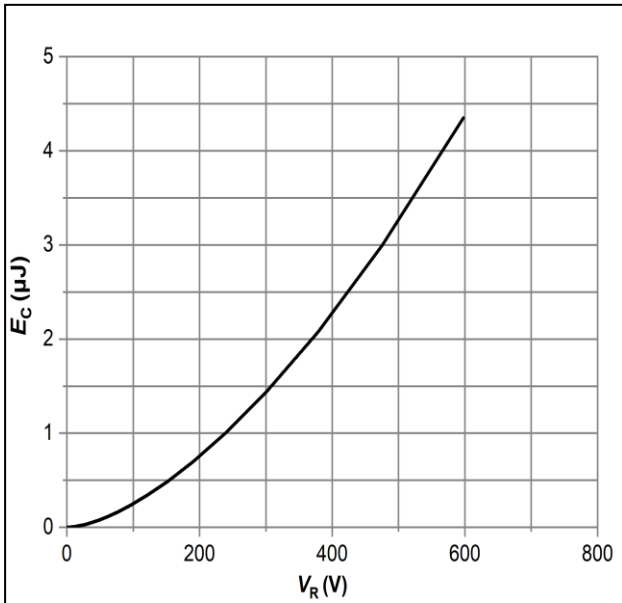


Figure 7: Typical Capacitance Stored Energy

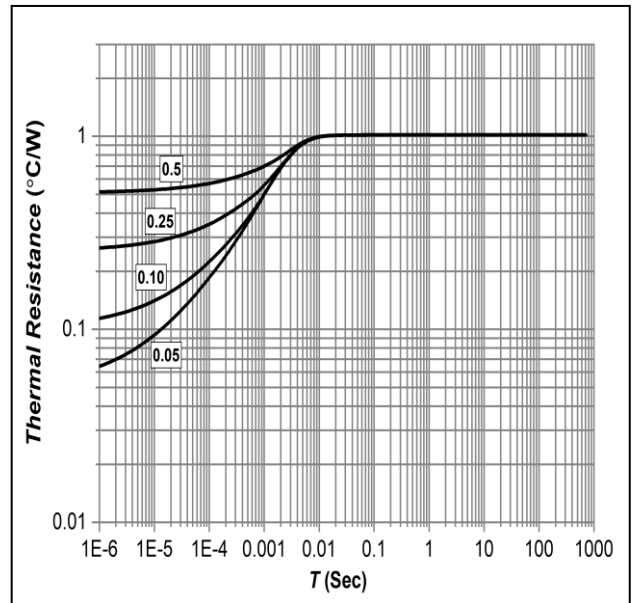
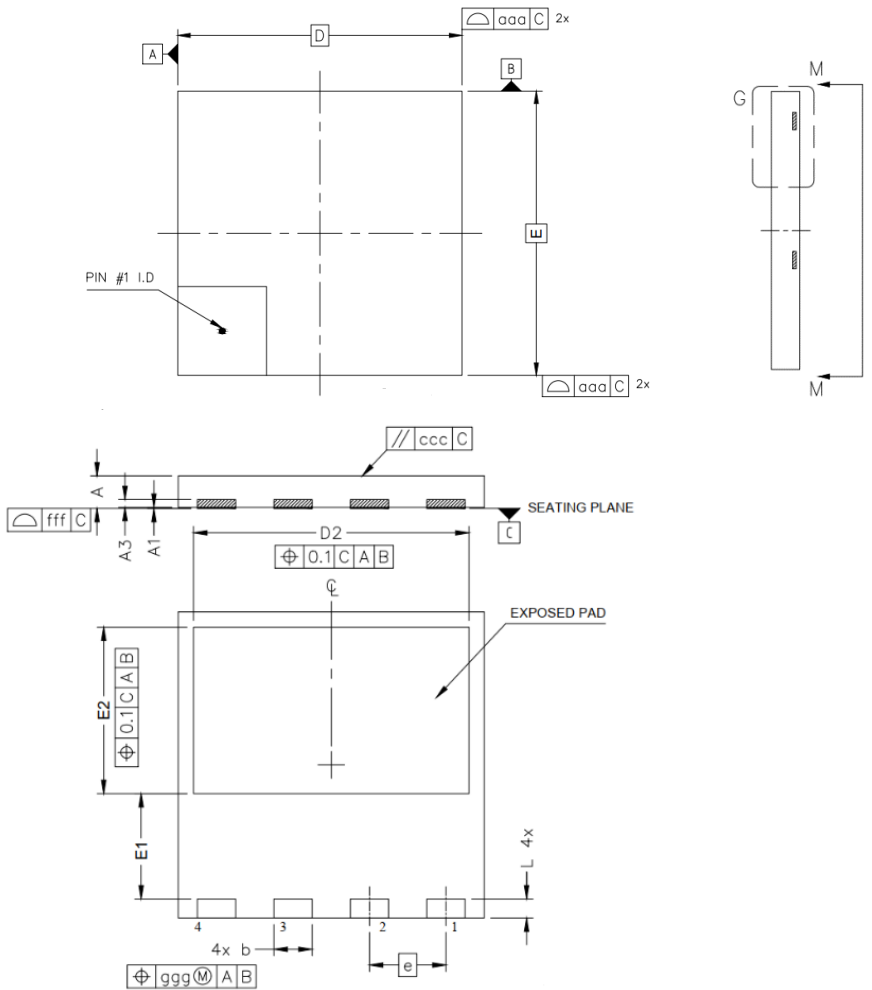


Figure 8: Transient Thermal Impedance

## Package Dimensions

Package: DFN 8\*8



SYMBOL	DIMENSIONS		
	Min.	NOM	Max.
A	0.75		0.95
A1	0.00		0.05
A3	0.10		0.30
b	0.90		1.10
D	7.90		8.10
E	7.90		8.10
D2	7.10		7.30
E1	2.65		2.85
E2	4.25		4.45
e	2.00 BSC		
L	0.40		0.60
aaa	0.10		
ggg	0.05		
ccc	0.05		
fff	0.05		

**Note:**

1. ALL DIMENSION ARE IN MM. ANGLES ARE IN DEGREES. All Dimension Are In mm. Angle Are In Degrees.
2. DIMENSION b APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.90mm AND 1.10mm FROM TERMINAL TOP.
3. DIMENSIONS DO NOT INCLUDE BURRS OR MODL FLASH.
4. COPLANARITY APPLIES TO THE EXPOSED HEAT SLUG AS WELL AS THE TERMINAL.
5. RADIUS ON TERMINAL IS OPTIONAL.

## Revision History

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Document Version	Description of Changes
Rev.1.0	Released

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