TD5G10065E

Silicon Carbide Schottky Diode

V_{RRM}	=	650 V
I_F (T_C=153 ℃) =		10 A
Q_C	=	36 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
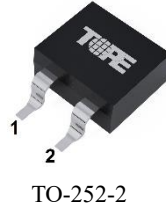
TO-252-2

Part Number	Package	Marking
TD5G10065E	TO-252-2	TD5G10065E

Maximum Ratings （Tc = 25 ℃ 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	33 15 10	A	T_c=25 ℃ T_c=135 ℃ T_c=153 ℃	Fig. 3
I_{FSM}	Non-Repetitive Forward Surge Current	80	A	T_c=25 ℃, t_p=10 ms，Half Sine Pulse	
P_{tot}	Power Dissipation	120 52	W	T_c=25 ℃ T_c=110 ℃	Fig. 4
T_J	Operating Junction Range	-55 to +175	℃		
T_{stg}	Storage Temperature Range	-55 to +175	℃		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.4 1.65	1.7 2.2	V	$I_F = 10$ A，　$T_J = 25$ °C $I_F = 10$ A，　$T_J = 175$ °C	Fig. 1
I_R	Reverse Current	2 10	50 200	μA	$V_R = 650$ V，$T_J = 25$ °C $V_R = 650$ V，$T_J = 175$ °C	Fig. 2
Q_C	Total Capacitive Charge	36		nC	$V_R = 400$ V，$I_F = 10$ A， $T_J = 25$ °C	Fig. 6
C	Total Capacitance	695 69 52		pF	$V_R = 0$ V，　$T_J = 25$ °C，$f = 1$ MHz $V_R = 200$ V，$T_J = 25$ °C，$f = 1$ MHz $V_R = 400$ V，$T_J = 25$ °C，$f = 1$ MHz	Fig. 5
E_C	Capacitance Stored Energy	4.6		μJ	$V_R = 400$ V	Fig. 7

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

Thermal Characteristics

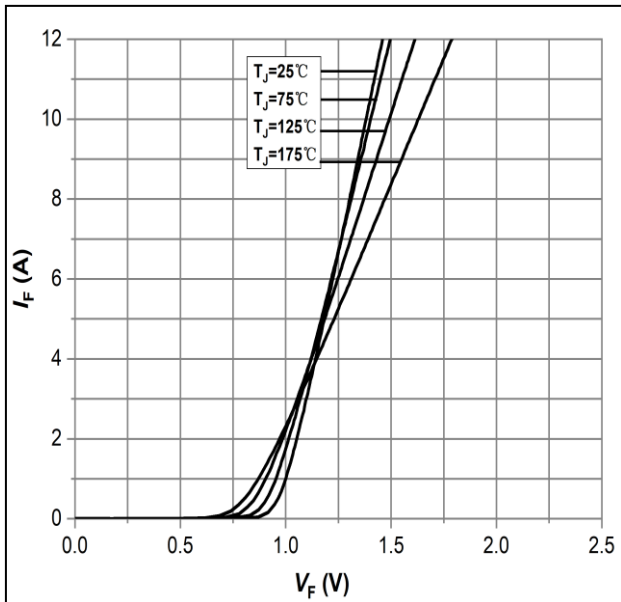| Symbol	Parameter	Min.	Typ.	Max.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case		1.25		°C/W	Fig.8

Typical　Performance
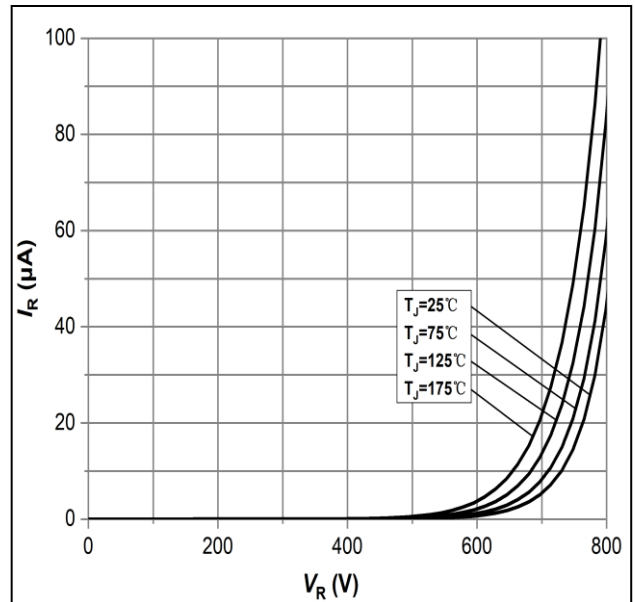

Figure 1: Forward Characteristics

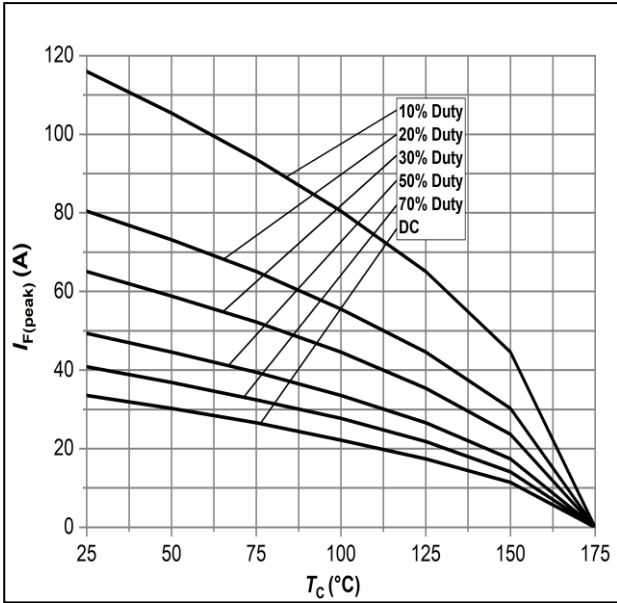Figure 2: Reverse Characteristics

Typical　　Performance
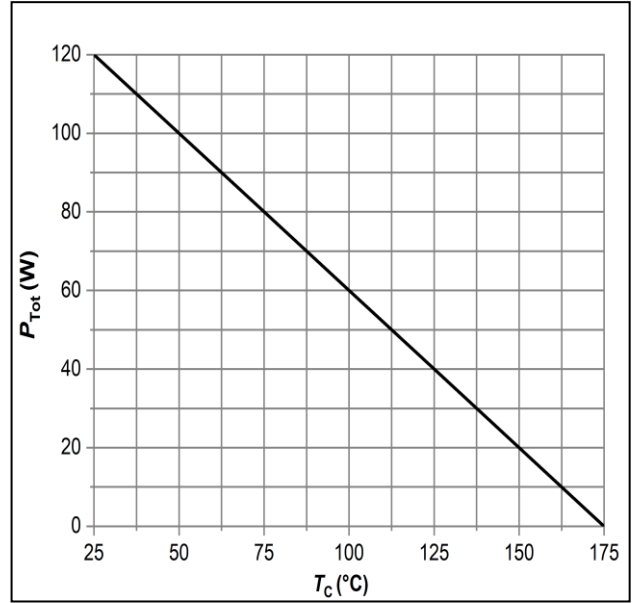

Figure 3: Current Derating
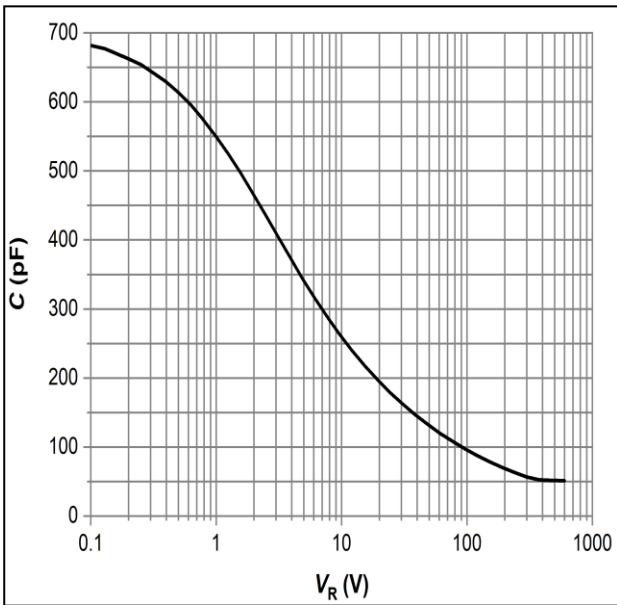

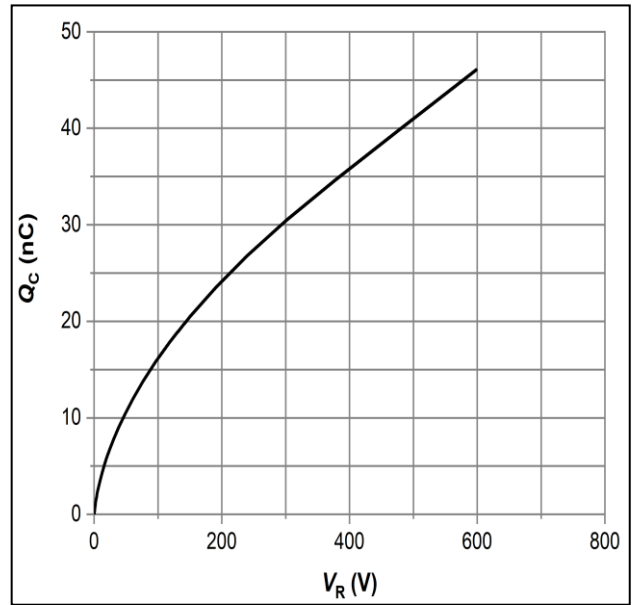Figure 4: Power Derating

Figure 5: Capacitance vs. Reverse Voltage
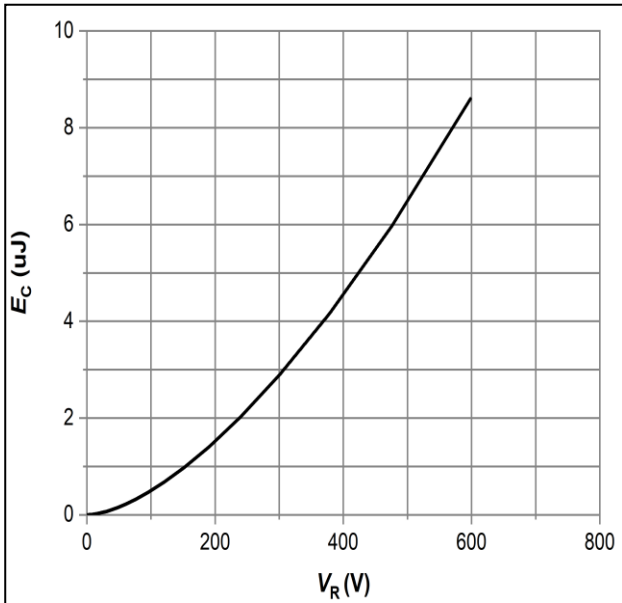

Figure 6: Total Capacitance Charge vs. Reverse Voltage

Typical   Performance
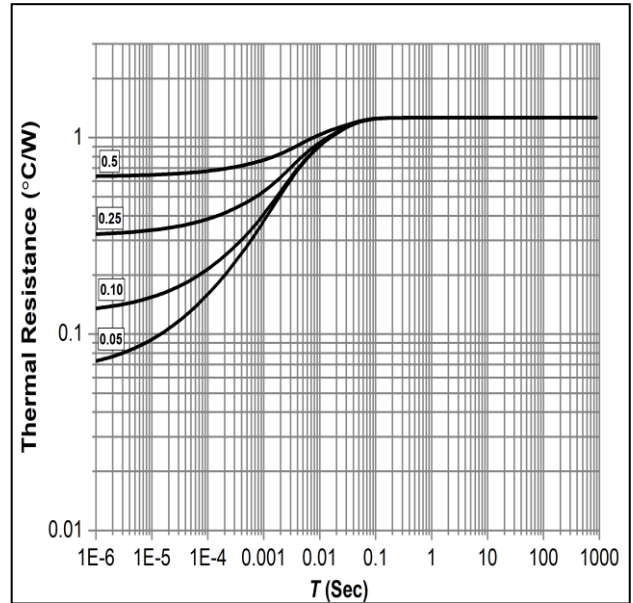

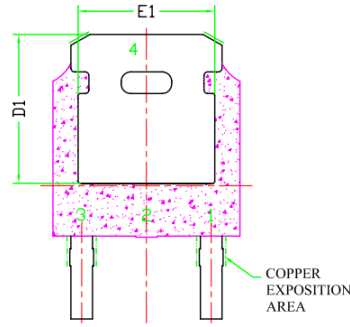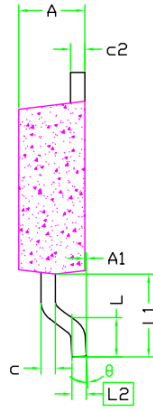Figure 7:Typical Capacitance Stored Energy

Figure 8: Transient Thermal Impedance

Package Dimensions

Package：TO-252-2
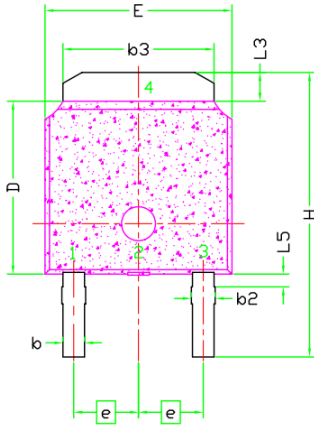
SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1	2.743 REF		
L2	0.508 BSC		
L3	0.89	--	1.27
L5	--	--	--
D	6.00	6.10	6.223
H	9.40	10.00	10.40
b	0.64	0.76	0.88
b2	0.77	0.84	1.14
b3	5.21	5.34	5.46
e	2.286 BSC		
A	2.20	2.30	2.38
A1	0	--	0.127
c	0.46	0.50	0.60
c2	0.46	0.50	0.58
D1	5.21	--	--
E1	4.40	--	--
θ	0°	--	10°

Note:
1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash, Protrusion Or Gate Burrs.
   Mold Flash, Protrusion Or Gate Burrs Shall Not Exceed 0.10 mm Per Side.
3. Package Body Sizes Determined At The Outermost Extremes Of The Plastic Body
   Exclusive Of Mold Flash, Gate Burrs And Interlead Flash, But Including Any
   Mismatch Between The Top And Bottom Of The Plastic Body.
4. The Package Top May Be Smaller Than The Package Bottom.
5. Dimension "b" Does Not Include Dambar Protrusion. Allowable Dambar
   Protrusion Shall Be 0.10 mm Total In Excess Of "b" Dimension At Maximum
   Material Condition. The Dambar Cannot Be Located On The Lower Radius Of The Foot.

Land Pattern
(Only for Reference)
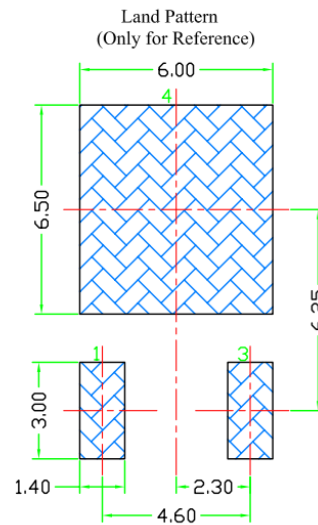
Revision History

Document Version	Description of Changes
Rev.1.0	Released

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