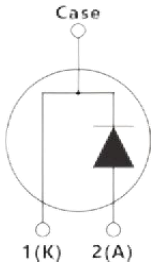
Silicon Carbide Schottky Diode 650V/10A

Parameter	Value	Unit
V_{RRM}	650	V
IF (TC = 158.5°C)	10	A
Qc	28	nC



TO-263

FEATURES

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

APPLICATIONS

- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction

MAXIMUM RATED VALUES (at TJ = 25 °C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	VRRM	650	V
Surge Peak Reverse Voltage	VRSM	650	V
Continuous Forward Current TC=25°C TC=135°C TC=158.5°C	IF	36.7 17.3 10	A
Repetitive Peak Forward Surge Current TC=25°C, tp=10ms, Half Sine Pulse, D=0.1, 1000Cycle	IFRM	40	A
Non-Repetitive Forward Surge Current TC=25°C, tp= 10ms, Half Sine Pulse	IFSM	80	A
i2t Value TC=25°C, tp=10ms, Half Sine Pulse	$\int i^2dt$	32	A2s
Power Dissipation TC=25°C TC=110°C	Ptot	155 67	W
Operating Junction Range	TJ	-55 to +175	°C
Storage Temperature Range	Tstg	-55 to +175	°C

ELECTRICAL CHARACTERISTICS (at TJ = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC Blocking Voltage	VDC		650	-	-	V
Forward Voltage	VF	IF = 10A TJ = 25°C TJ = 175°C	- -	1.37 1.74	1.7 2.5	V
Reverse Current	IR	VR = 650V TJ = 25°C TJ = 175°C	- -	0.2 2	50 100	μA
Total Capacitance	C	f = 1MHz VR = 0V VR = 200V VR = 400V	- - -	536 55 53	- - -	pF
Total Capacitive Charge	QC	VR = 400V TJ = 25°C	-	28	-	nC
Capacitance Stored Energy	EC	VR = 400V	-	6.8	-	uJ

THERMAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Thermal Resistance, junction-case	Rth(j-c)		-	0.97	-	°C/W

TYPICAL CHARACTERISTICS CURVES

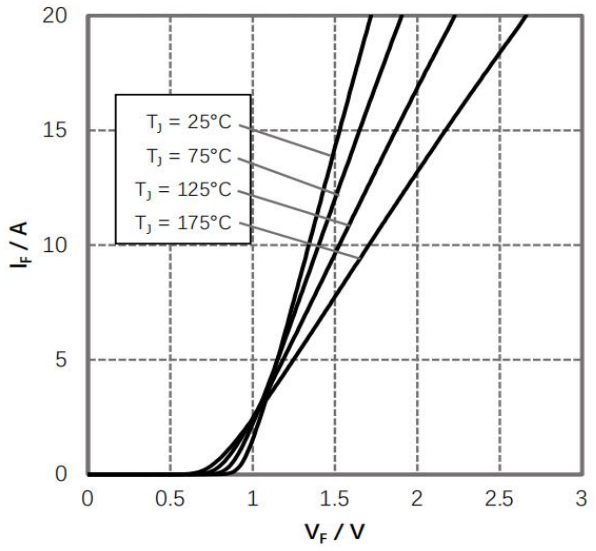


Figure 1. Forward Characteristics

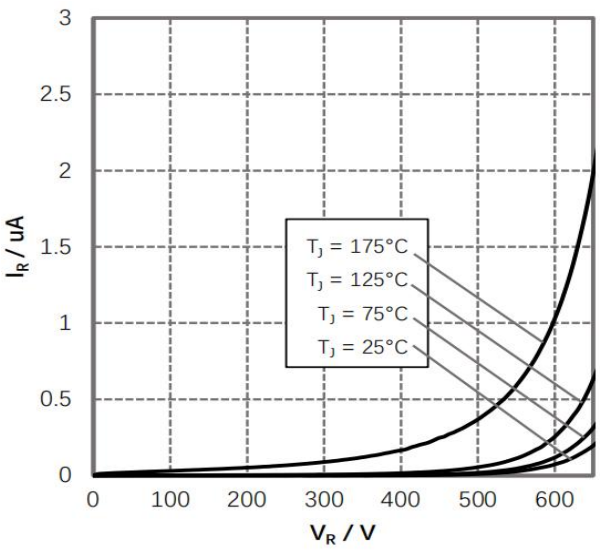


Figure 2. Reverse Characteristics

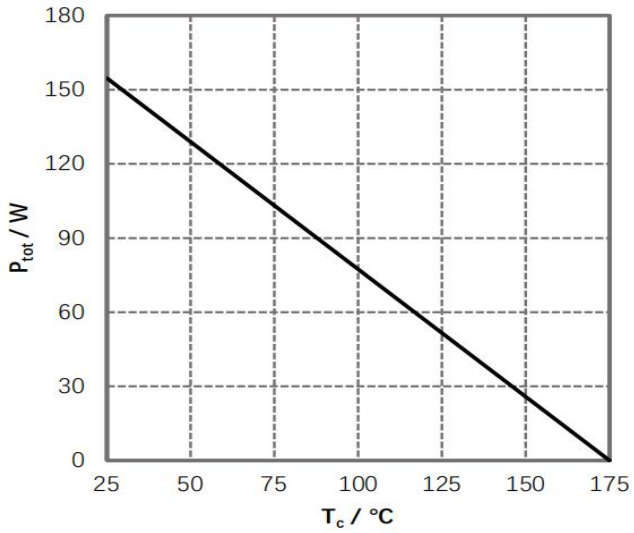


Figure 3. Power Derating

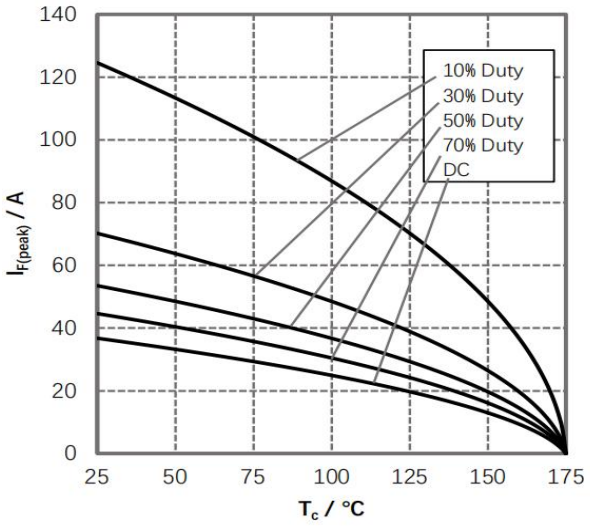


Figure 4. Current Derating
Valid for switching of above 20kHz,
excluding D.C. curve

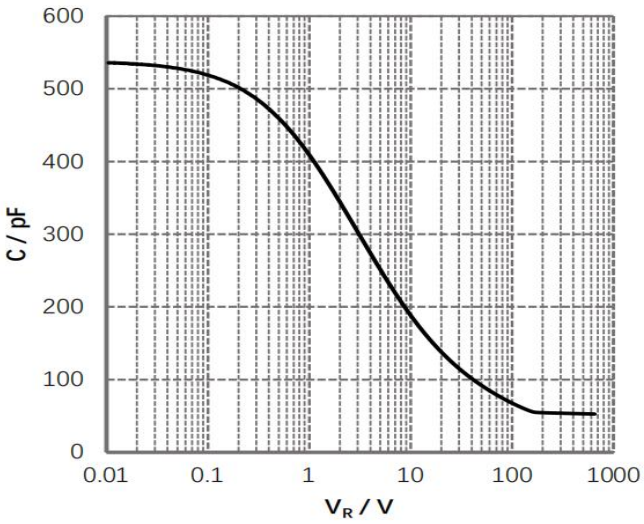


Figure 5. Capacitance vs. Reverse Voltage

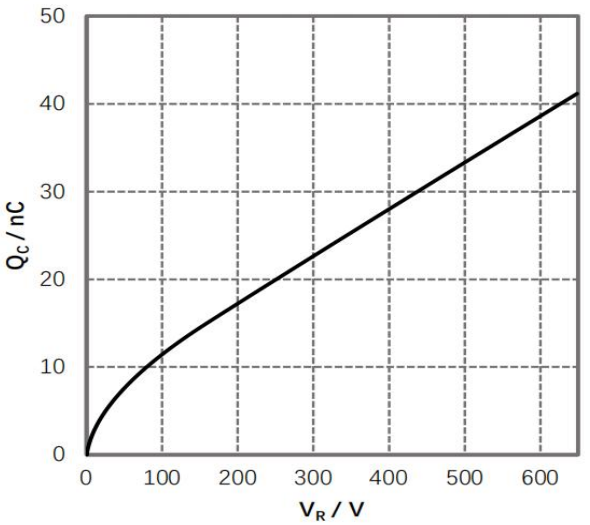


Figure 6. Reverse Charge vs. Reverse Voltage

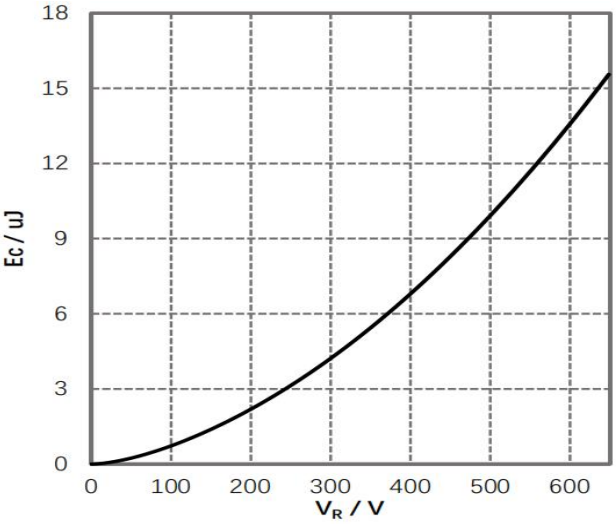


Figure 7. Capacitance Stored Energy

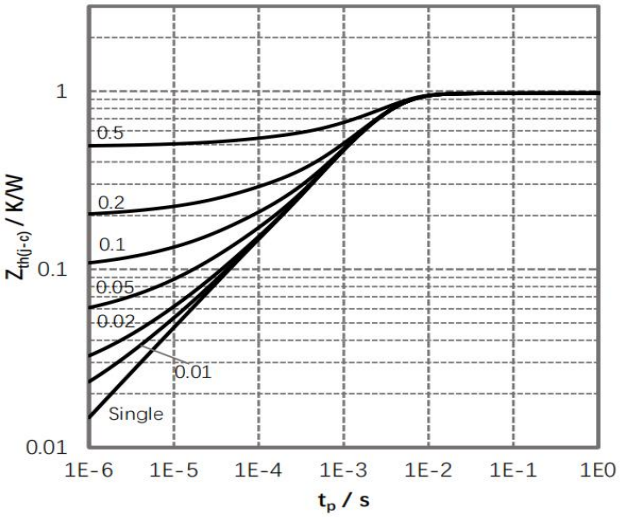
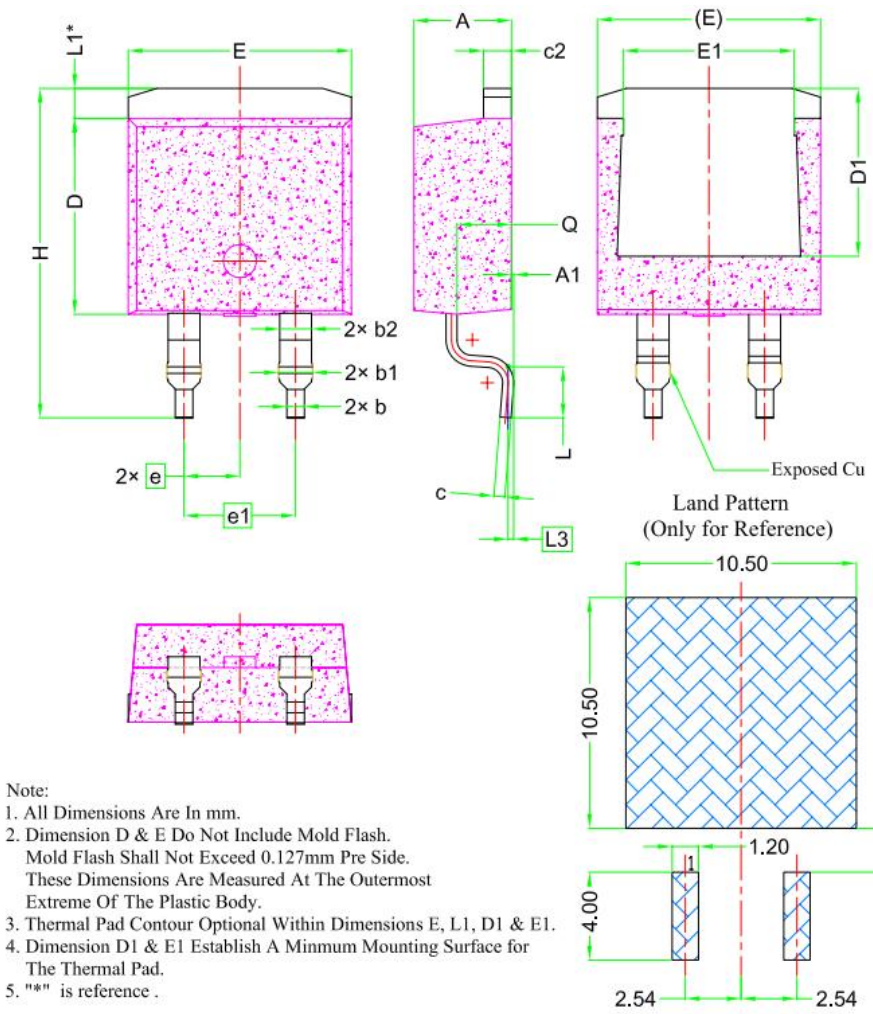


Figure 8. Transient Thermal Impedance

PACKAGE OUTLINES



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	—
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
e1	5.08 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70

Note:
1. All Dimensions Are In mm.
2. Dimension D & E Do Not Include Mold Flash.
   Mold Flash Shall Not Exceed 0.127mm Pre Side.
   These Dimensions Are Measured At The Outermost
   Extreme Of The Plastic Body.
3. Thermal Pad Contour Optional Within Dimensions E, L1, D1 & E1.
4. Dimension D1 & E1 Establish A Minmum Mounting Surface for
   The Thermal Pad.
5. "*" is reference .

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