1700V Silicon Carbide Schottky Diode

DESCRIPTION：

·Zero reverse recovery current

·Zero forward recovery voltage

·Temperature independent switching behavior

·High temperature operation

·High frequency operation

·Unipolar rectifier

·Substantially reduced switching losses

·No thermal run-away with parallel devices

·Reduced heat sink requirements

V_{RRM}	1700V
I_F	5A (Tc=168℃)
Q_C	63nC

TO-252

TYPICAL APPLICATIONS：

·SMPS, PFC

·Solar application, UPS, EV/HEV

·Motor drives, Wind turbine, Rail traction

MAXIMUM RATINGS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	1700	V
Surge Peak Reverse Voltage		V_{RSM}	1700	V
Continuous Forward Current	Tc=25℃ Tc=135℃ Tc=168℃	I_F	28.1 13.8 5	A
Repetitive Peak Forward Surge Current	Tc=25℃, t_P=10ms, Half sine pulse	I_{FRM}	60	A
Non-Repetitive Forward Surge Current	Tc=25℃, t_P=10ms, Half sine pulse	I_{FSM}	120	A
i^2t value	Tc=25℃, t_P=10ms, Half sine pulse	$\int i^2dt$	72	A^2S
Power dissipation	Tc=25℃ Tc=110℃	P_{tot}	208 90	W
Operation Junction Range		Tj	-55~+175	℃
Storage temperature Range		T_{STG}	-55~+175	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction to case		$R_{th(j-C)}$	0.72	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	1700			V
Forward Voltage IF = 5A, T_J =25℃ IF = 5A, T_J =175℃	V_F		1.32 1.95	1.7 2.5	V
Reverse Current VR = 1700V, T_J =25℃ VR = 1700V, T_J =175℃	I_R		0.3 2.43	50 100	uA
Total capacitance VR = 0V, f =1MHz VR = 400V, f =1MHz VR = 800V, f =1MHz	C		641 48 34		pF
Total Capacitive Charge VR = 1200V	Q_C		63		nC
Capacitance Stored Energy VR = 1200 V	Ec		48		uJ

Typical Performance

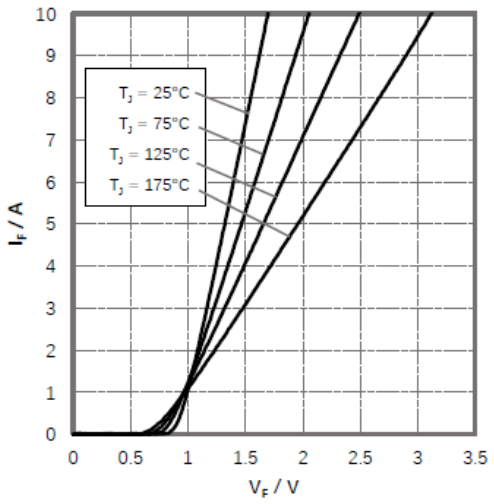


Figure 1. Forward characteristics

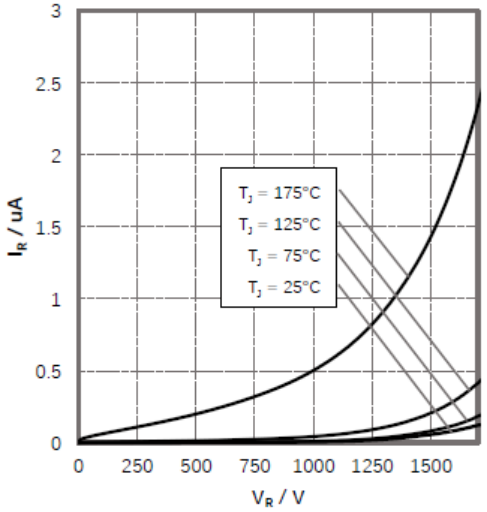


Figure 2. Reverse characteristics

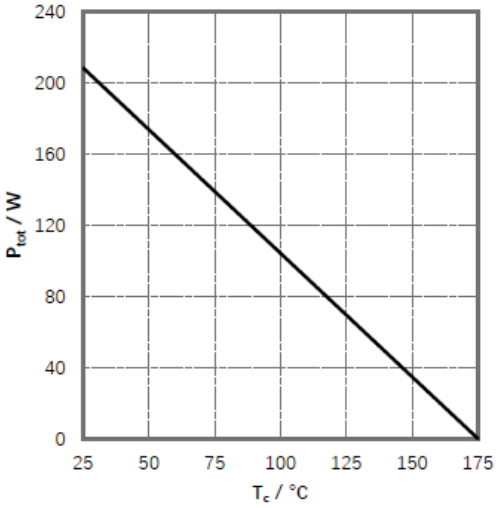


Figure 3. Power Derating

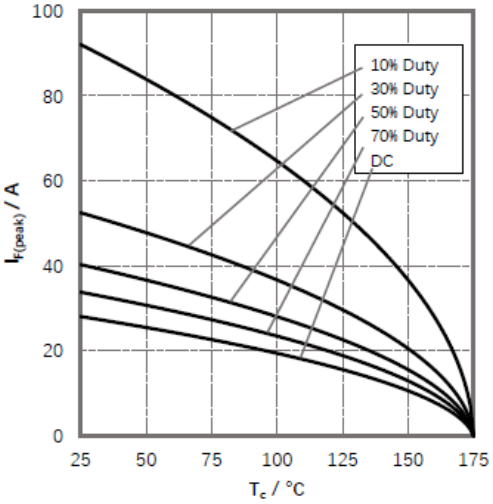


Figure 4. Current Derating

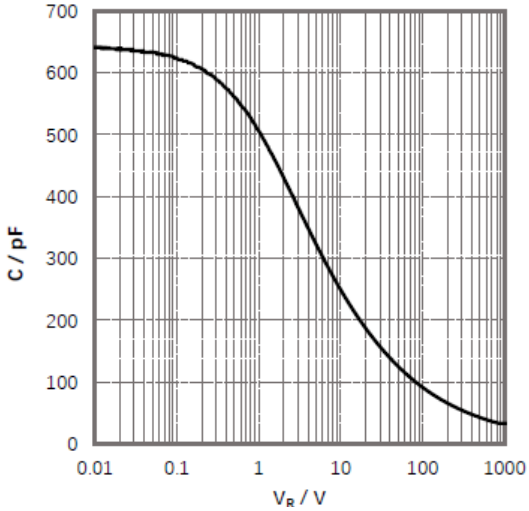


Figure 5. Capacitance vs. Reverse Voltage

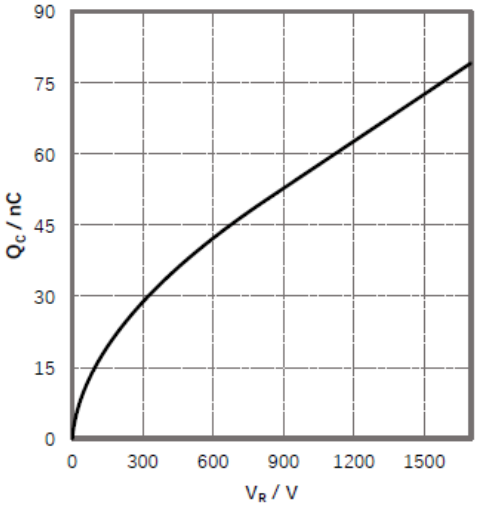


Figure 6. Reverse Charge vs. Reverse Voltage

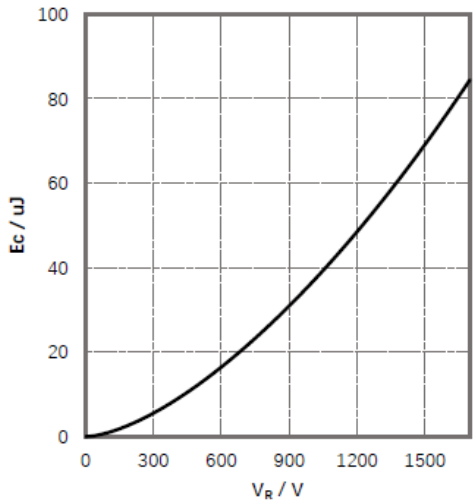


Figure 7. Capacitance Stored Energy

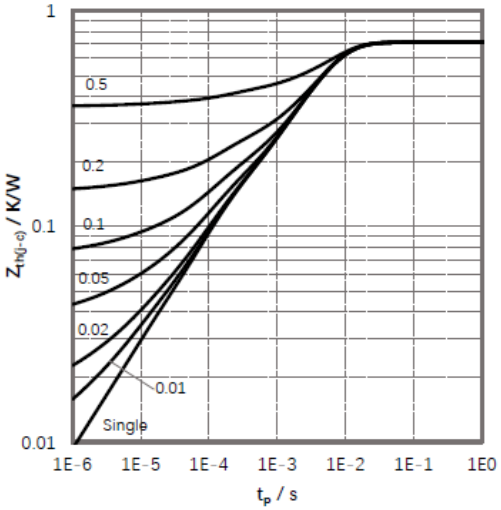
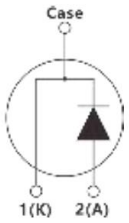
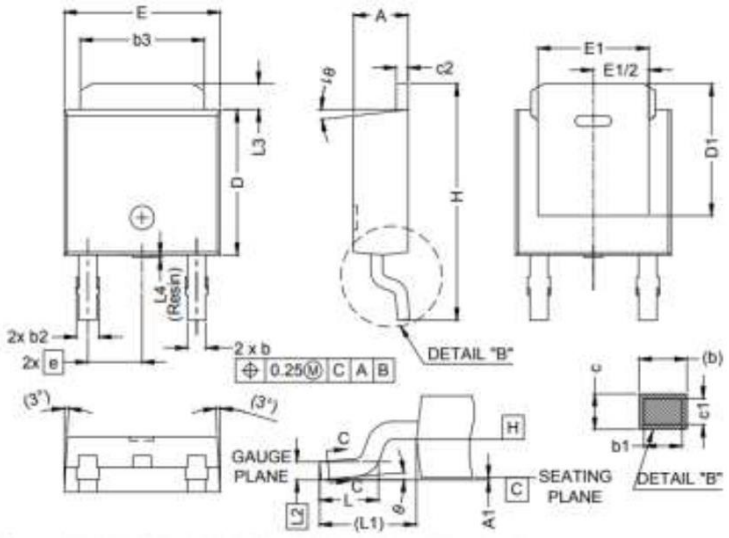


Figure 8. Transient Thermal Impedance

·Circuit diagram



·TO-252 Package outlines : Dimensions in (mm)



SYMBOL	MIN.	MAX.	SYMBOL	MIN.	MAX.
A	2.18	2.39	E	6.35	6.73
A1	0.00	0.13	E1	4.32	4.80
b	0.65	0.89	e	2.29 BSC	
b1	0.64	0.84	H	9.94	10.34
b2	0.76	1.13	L	1.50	1.78
b3	4.95	5.46	L1	2.74 REF	
c	0.46	0.61	L2	0.51 BSC	
c1	0.41	0.56	L3	0.89	1.27
c2	0.46	0.60	L4	0.00	0.50
D	5.97	6.22	θ	0°	10°
D1	5.21	5.70	θ1	0°	15°

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