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NRTS6100PFST3G

Schottky Barrier Rectifier, Trench-based, High Performance

This Trench Schottky rectifier is a high performance device in a TO−277 package. The lower forward voltage, less leakage current, and small junction capacitance are suitable to high switching frequency high density DC to DC conversion applications. It offers higher avalanche energy capability for Oring or reverse protection applications. The TO−277 package provides excellent thermal performance, less land area of board space, and a low profile.

Features

- Lower Forward Voltage Drop
- Less Leakage Current in High Temperature
- Small Junction Capacitance for High Switching Frequency
- Higher Avalanche Energy Capability
- 175°C Operating Junction Temperature
- Package Provided Capability of Inspection and Probe After Board Mounting
- Good Alternative Solution of SMC and DPAK Package

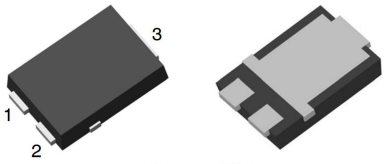
Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94−0 @ 0.125 in.
- Lead Finish: 100% Matte Sn (Tin)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL 1 Requirements
- ESD Ratings:
  - Human Body Model: ≥ 8000 V (Class 3B)
  - Charged Device Model: > 1000 V (Class C5)

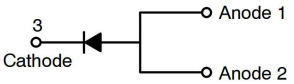
Applications

- High Switching Frequency DC/DC Converters
- 2nd Rectifier
- Oring / Reverse Protection
- Freewheeling Diode for Inductive Loads

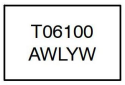
SCHOTTKY BARRIER RECTIFIER, 6 AMPERES 100 VOLTS



TO−277−3LD
CASE 340CZ



MARKING DIAGRAM



T06100	= Specific Device Code
A	= Assembly Location
Y	= Year
W	= Work Week
WL	= Wafer Lot

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	100	V
Continuous Forward Current (T_C = 168°C, DC)	$I_{F(DC)}$	6	A
Peak Repetitive Forward Current, (T_C = 166°C, Square Wave, Duty = 0.5)	I_{FRM}	12	A
Non−Repetitive Avalanche Energy (T_J = 25°C)	E_{AS}	145	mJ
Storage Temperature Range	T_{stg}	−65 to +175	°C
Operating Junction Temperature (Note 1)	T_J	−55 to +175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient $dP_D/dT_J < 1/R_{\theta JA}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	70	°C/W
Thermal Resistance, Junction−to−Case Bottom	$R_{\theta JCB}$	2.2	°C/W
Thermal Characterization, Junction−to−Case Top	Ψ_{JCT}	1.1	°C/W
Thermal Characterization, Junction−to−Lead of Cathode	Ψ_{JLC}	0.7	°C/W

NOTE: (Assumes 600 mm^2, 1 oz. copper bond pad on a FR4 board)

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Instantaneous Forward Voltage (Note 2) (I_F = 3 A, T_J = 25°C) (I_F = 3 A, T_J = 125°C) (I_F = 6 A, T_J = 25°C) (I_F = 6 A, T_J = 125°C)	V_F	 0.52 0.47 0.62 0.56	 − − 0.68 0.62	V
Instantaneous Reverse Current (Note 2) (V_R = Rated DC Voltage, T_J = 25°C) (V_R = Rated DC Voltage, T_J = 125°C)	I_R	 6.2 3.3	 50 15	 μA mA
Junction Capacitance (V_R = 1 V, T_J = 25°C, 1 MHz)	C_J	 827	 −	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

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TYPICAL CHARACTERISTICS

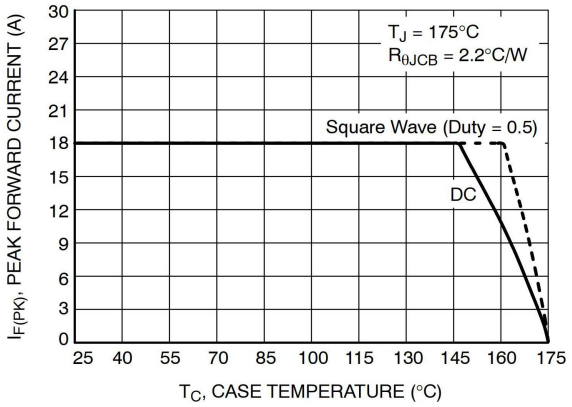


Figure 1. Forward Current Derating of Case Temperature

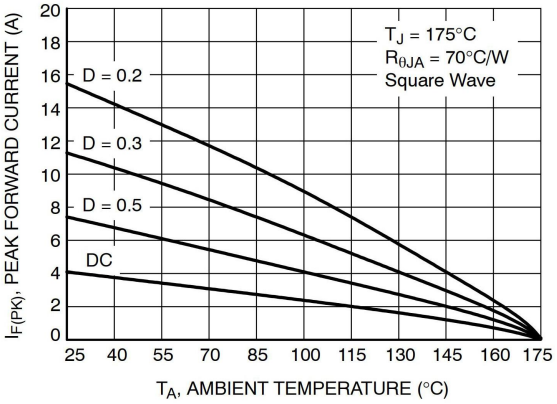


Figure 2. Forward Current Derating of Ambient Temperature

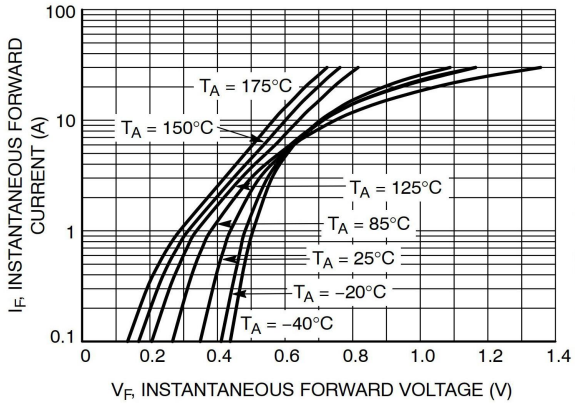


Figure 3. Typical Forward Characteristics

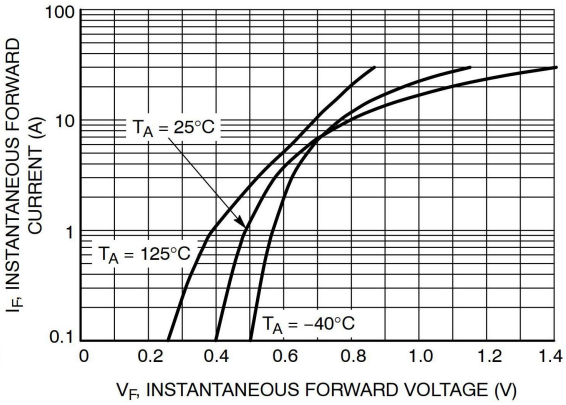


Figure 4. Maximum Forward Characteristics

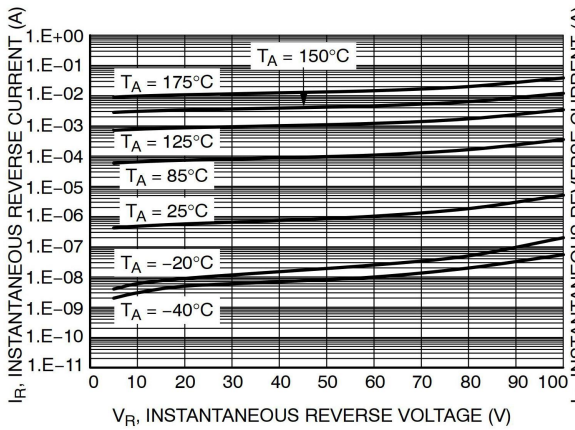


Figure 5. Typical Reverse Characteristics

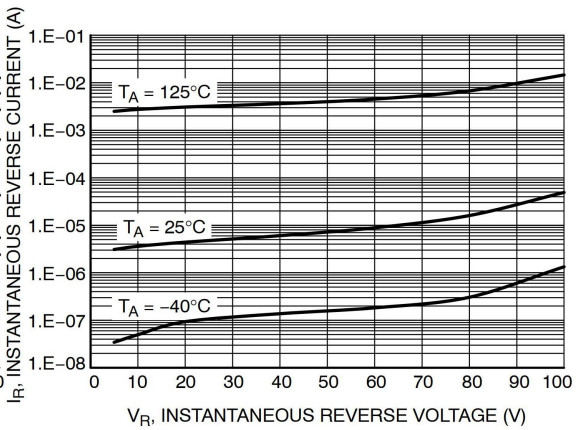


Figure 6. Maximum Reverse Characteristics

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TYPICAL CHARACTERISTICS

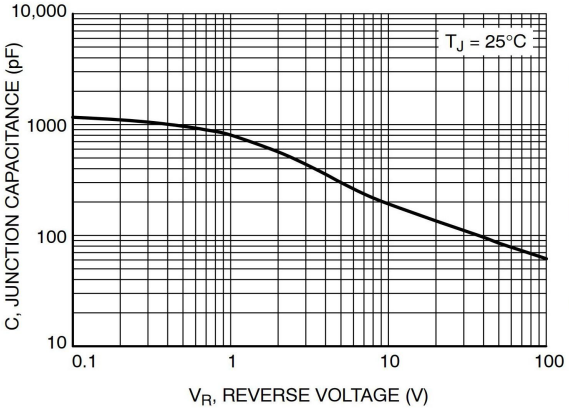


Figure 7. Typical Junction Capacitance

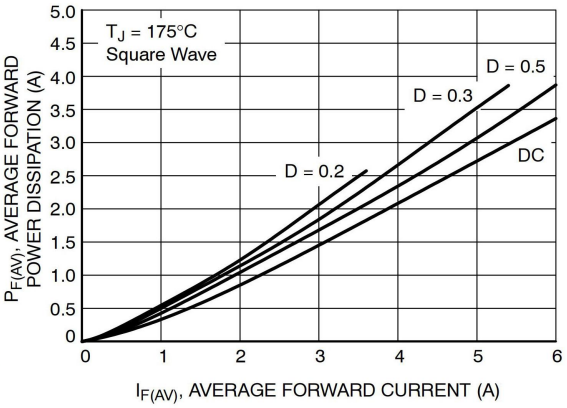


Figure 8. Average Forward Power Dissipation

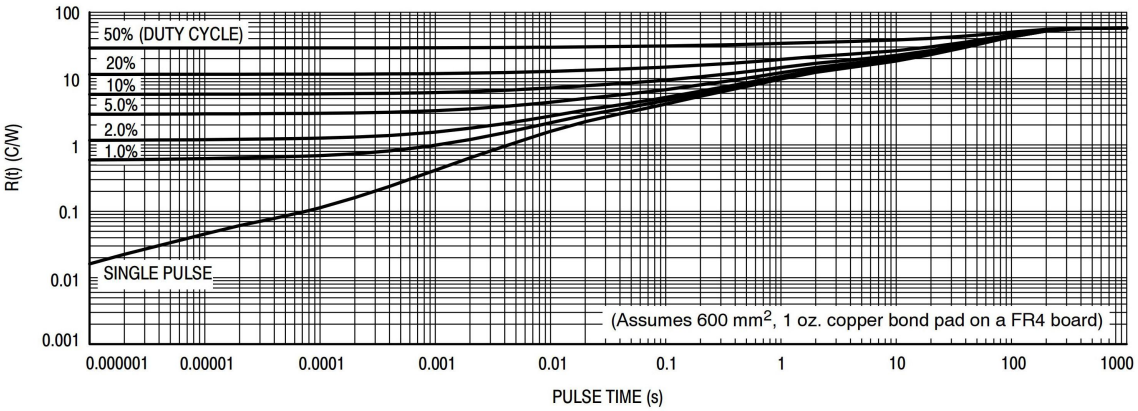


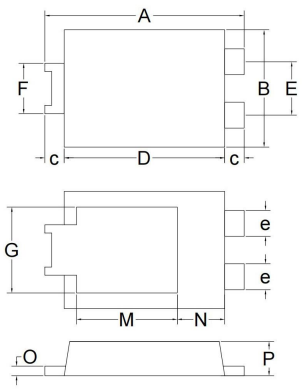
Figure 9. Typical Thermal Characteristics, Junction−to−Ambient

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Ordering Information

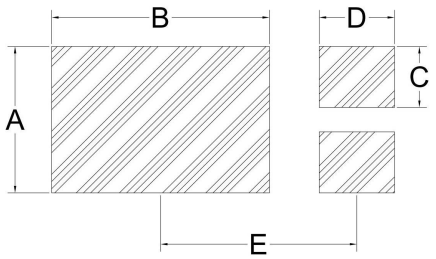
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
TO-277	R3	0.090	5000	10000	100000	13''

Package Outline Dimensions (TO-277)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.300	6.700	0.248	0.264
B	3.950	4.300	0.156	0.169
c	0.410	0.710	0.016	0.028
D	5.280	5.880	0.208	0.231
E	1.760	1.960	0.069	0.077
e	0.850	0.960	0.033	0.038
F	1.750	1.850	0.069	0.073
G	2.850	3.150	0.112	0.124
M	3.390	3.690	0.133	0.145
N	1.440	1.740	0.057	0.069
O	0.250	0.350	0.010	0.014
P	0.950	1.250	0.037	0.049

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.400	3.800	0.134	0.150
B	4.500	4.900	0.177	0.193
C	1.200	1.600	0.047	0.063
D	0.600	1.00	0.024	0.039
E	3.670	4.070	0.144	0.160