Schottky Barrier Rectifier, Trench-based

NRTS1260PFS, NRVTS1260PFS

This TO−277 trench Schottky rectifier provides fast switching performance in a compact thermally efficient package. The TO−277 package provides an excellent alternative to the DPAK, offering thermal performance nearly as good in a package occupying less than half the board space. Its low profile makes it a good option for flat panel display and other applications with limited vertical clearance. The device offers low leakage over temperature making it a good match for applications requiring low quiescent current.

Features

- Package Provides Capability of Inspection and Probe After Board Mounting
- Low Forward Voltage Drop
- 175°C Operating Junction Temperature
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

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

Applications

- Excellent Alternative to DPAK in Space−Constrained Automotive Applications
- Low Leakage for Higher Temperature Operation
- Output Rectification in Compact Portable Consumer Applications
- Freewheeling Diode used with Inductive Loads

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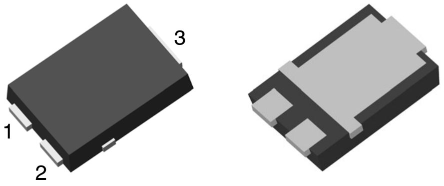
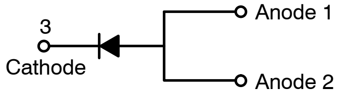
SCHOTTKY BARRIER RECTIFIER, 12 AMPERES 60 VOLTS



TO−277−3LD
CASE 340CZ



MARKING DIAGRAM

TS1260
AWLYW

TS1260 = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
WL = Wafer Lot

ORDERING INFORMATION

Device	Package	Shipping†
NRTS1260PFST3G	TO−277 (Pb−Free)	1500 / Tape & Reel
NRVTS1260PFST3G	TO−277 (Pb−Free)	1500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	60	V
Average Rectified Forward Current (T_C = 161°C)	$I_{F(AV)}$	12	A
Peak Repetitive Forward Current, (T_C = 157°C, Square Wave, Duty = 0.5)	I_{FRM}	24	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	150	A
Storage Temperature Range	T_{stg}	−65 to +175	°C
Operating Junction Temperature	T_J	−55 to +175	°C
ESD Rating (Human Body Model)		3B	
ESD Rating (Machine Model)		M4	

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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient (Assumes 600 mm^2, 1 oz. copper bond pad on a FR4 board)	$R_{\theta JA}$	69	°C/W
Thermal Resistance, Junction−to−Case, Top (Assumes 600 mm^2, 1 oz. copper bond pad on a FR4 board)	$R_{\theta JCT}$	60	°C/W
Thermal Resistance, Junction−to−Case, Bottom (Assumes 600 mm^2, 1 oz. copper bond pad on a FR4 board)	$R_{\theta JCB}$	1.92	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Instantaneous Forward Voltage (Note 1)	v_F			V
(I_F = 6 A, T_J = 25°C)		0.50	−	
(I_F = 6 A, T_J = 125°C)		0.43	−	
(I_F = 12 A, T_J = 25°C)		0.58	0.66	
(I_F = 12 A, T_J = 125°C)		0.55	0.64	
Instantaneous Reverse Current (Note 1)	i_R			
(Rated dc Voltage, T_J = 25°C)		7.5	350	μA
(Rated dc Voltage, T_J = 125°C)		5.1	60	mA
Junction Capacitance	C_J			pF
(V_R = 1 V, T_J = 25°C, 1 MHz)		1180	−	

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.

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

TYPICAL CHARACTERISTICS

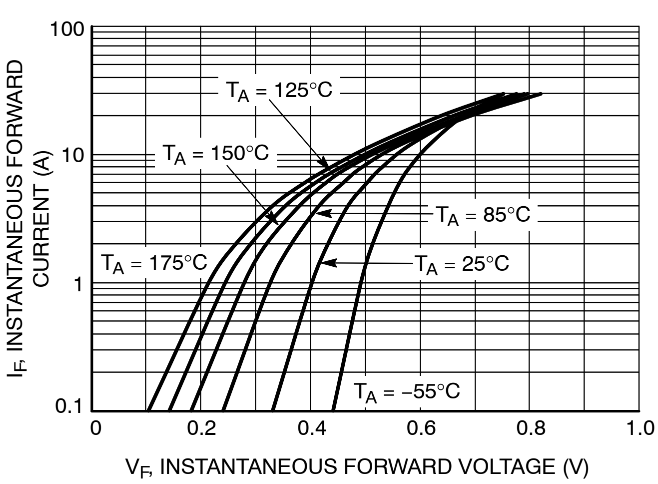


Figure 1. Typical Instantaneous Forward Characteristics

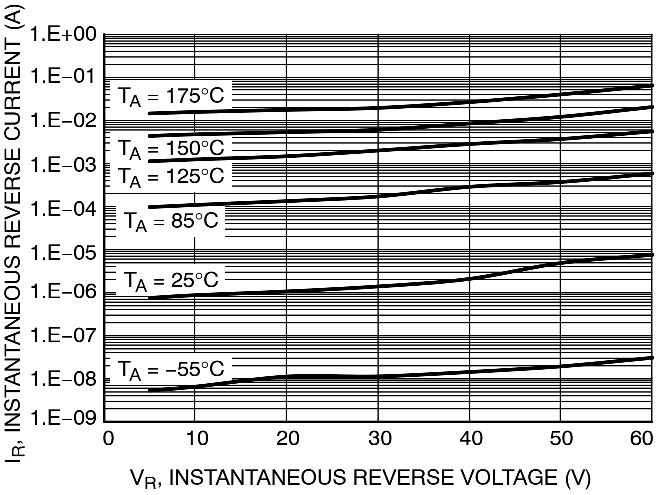


Figure 2. Typical Reverse Characteristics

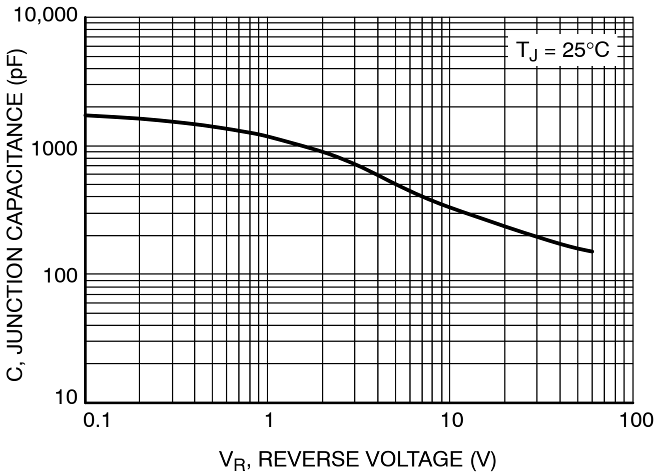


Figure 3. Typical Junction Capacitance

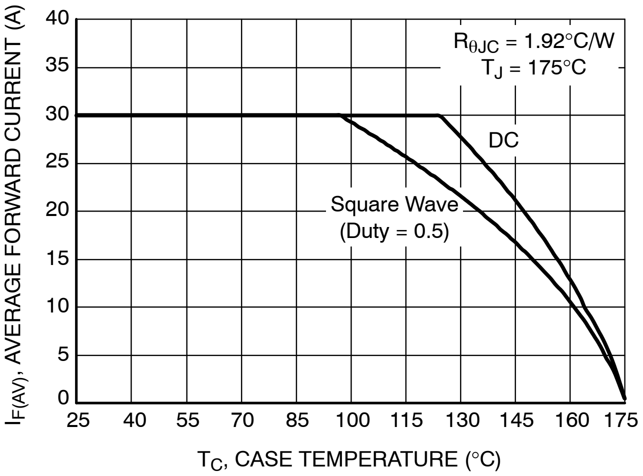


Figure 4. Current Derating

TYPICAL CHARACTERISTICS

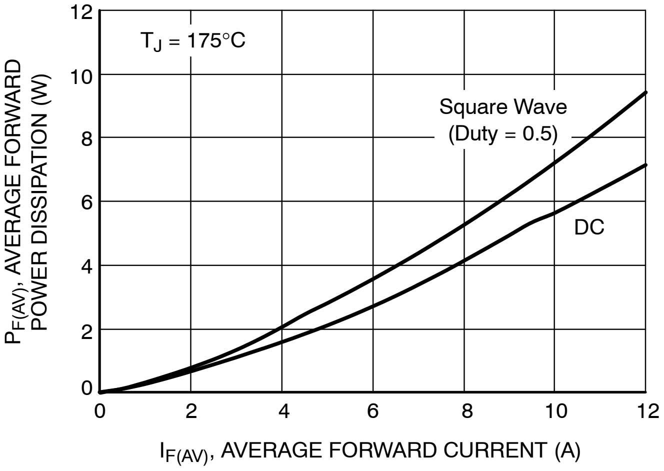


Figure 5. Forward Power Dissipation

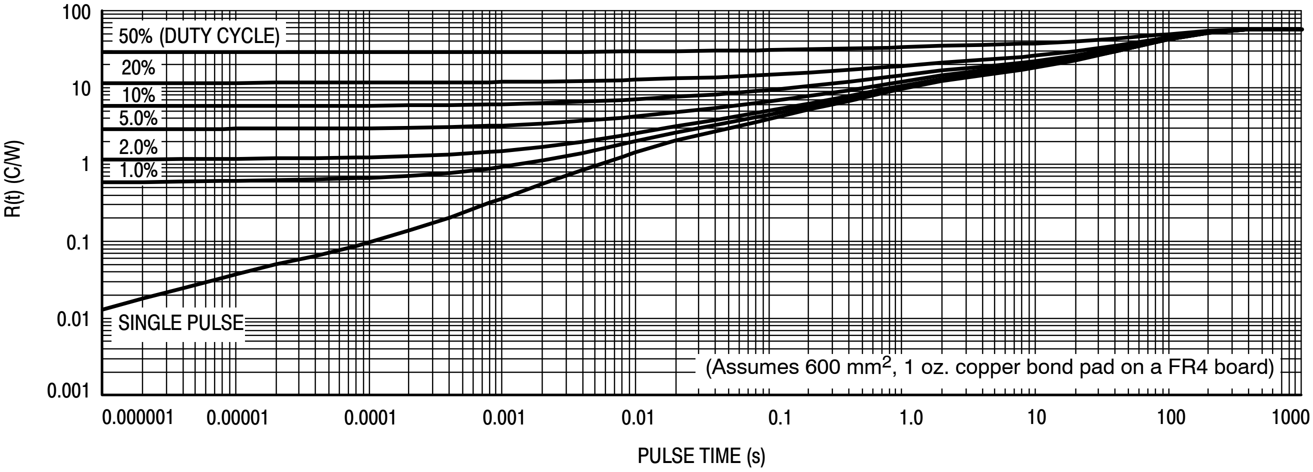
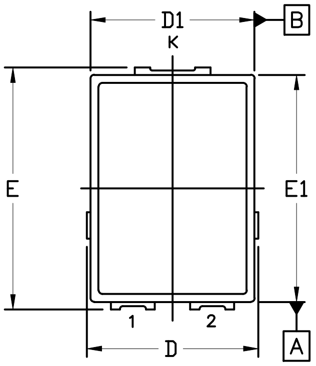


Figure 6. Typical Thermal Characteristics, Junction−to−Ambient

PACKAGE DIMENSIONS

TO−277−3LD
CASE 340CZ
ISSUE O

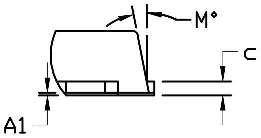


TOP VIEW

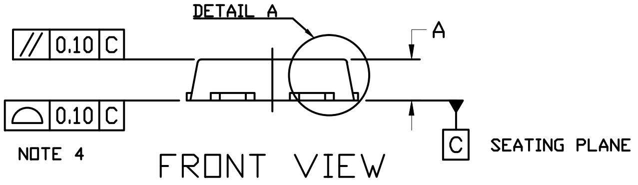
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS b, b1,b2,b3,b6 AND c TO BE MEASURED ON FLAT SECTION OF THE LEAD, BETWEEN 0.13 AND 0.25mm FROM LEAD TIP.
4. COPLANARITY APPLES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.
5. POSITIONAL TOLERANCE APPLIES TO THE TERMINALS AND EXPOSED PAD.
6. A1 IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.
7. DIMENSIONS D AND E TO BE DETERMINED AT DATUM PLANE C.

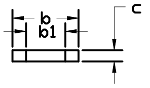
DIM	MILLIMETERS MIN.	MILLIMETERS NOM.	MILLIMETERS MAX.
A	1.00	1.10	1.20
A1	---	0.01	0.05
b	1.13	1.18	1.28
b1		0.07 REF	
b2	1.08	2.03	2.13
b3		1.20 REF	
b4		0.71 REF	
c		0.20 REF	
D	4.45	4.60	4.75
D1	4.35	4.40	4.45
D2	3.50	3.60	3.70
E	6.35	6.50	6.65
E1	6.05	6.10	6.15
E2	4.50	4.60	4.70
E3	3.84	3.94	4.04
E4		0.98 REF	
e		2.13 BSC	
K		0.85 REF	
K1		0.40 REF	
L	0.90	1.05	1.20
L1	0.02	---	---
M	---	---	12°



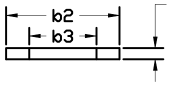
DETAIL A



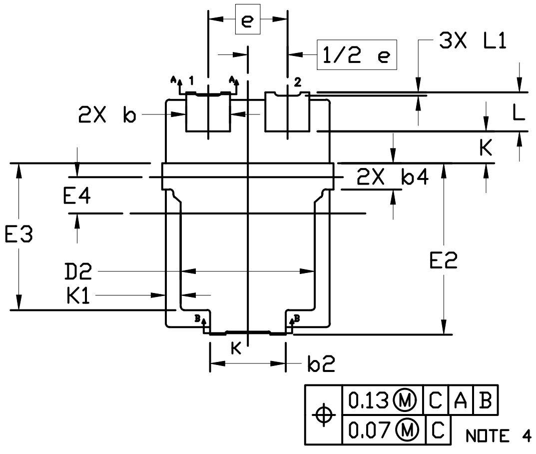
FRONT VIEW



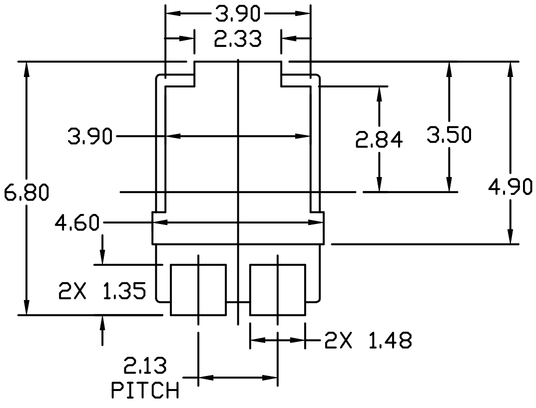
SECTION A−A



SECTION B−B



BOTTOM VIEW



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