NTS245ESF, NRVTS245ESF, NTSM245ESF, NRVTSM245ESF

Product Preview

Very Low Forward Voltage Trench-based Schottky Rectifier

Features

- Fine Lithography Trench−based Schottky Technology for Very Low Forward Voltage and Low Leakage
- Fast Switching with Exceptional Temperature Stability
- Low Power Loss and Lower Operating Temperature
- Higher Efficiency for Achieving Regulatory Compliance
- Low Thermal Resistance
- High Surge Capability
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These are Pb−Free and Halide−Free Devices

Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight: 11.7 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds
- MSL 1

Typical Applications

- Switching Power Supplies including Compact Adapters and Flat Panel Display
- High Frequency and DC−DC Converters
- Freewheeling and OR−ing diodes
- Reverse Battery Protection
- Instrumentation
- Automotive LED Lighting

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

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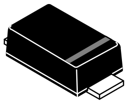
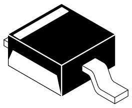
TRENCH SCHOTTKY RECTIFIER
2.0 AMPERES
45 VOLTS

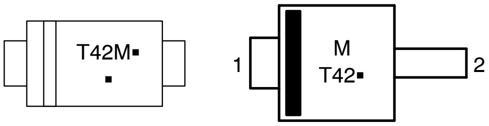


SOD−123FL
CASE 498
PLASTIC



POWERMITE
CASE 457
PLASTIC

MARKING DIAGRAMS



T42 = Specific Device Code
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
NTS245ESFT3G	SOD−123 (Pb−Free)	10,000/ Tape & Reel
NRVTS245ESFT3G	SOD−123 (Pb−Free)	10,000/ Tape & Reel
NTSM245ESFT3G	POWERMITE (Pb−Free)	12,000/ Tape & Reel
NRVTSM245ESFT3G	POWERMITE (Pb−Free)	12,000/ 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.

July, 2014 − Rev. P0

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	45	V
Average Rectified Forward Current (T_L = TBD°C)	I_O	2.0	A
Peak Repetitive Forward Current (Square Wave, 20 kHz, T_L = TBD°C)	I_{FRM}	4.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	50	A
Storage and Operating Junction Temperature Range (Note 1)	T_{stg}, T_J	−65 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	Value	Unit
Thermal Resistance, Junction−to−Lead (Note 2)	Ψ_{JCL}	23	°C/W
Thermal Resistance, Junction−to−Ambient (Note 2)	$R_{\theta JA}$	85	°C/W
Thermal Resistance, Junction−to−Ambient (Note 3)	$R_{\theta JA}$	330	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 4)	V_F		V
(I_F = 2.0 A, T_J = 25°C)		0.62	
(I_F = 2.0 A, T_J = 125°C)		0.55	
Maximum Instantaneous Reverse Current (Note 4)	I_R		
(Rated dc Voltage, T_J = 25°C)		50	μA
(Rated dc Voltage, T_J = 125°C)		6	mA

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. Mounted with 700 mm^2 copper pad size (Approximately 1 in^2) 1 oz FR4 Board.
3. Mounted with pad size approximately 20 mm^2 copper, 1 oz FR4 Board.
4. Pulse Test: Pulse Width ≤ 380 μs, Duty Cycle ≤ 2.0%.

TYPICAL CHARACTERISTICS

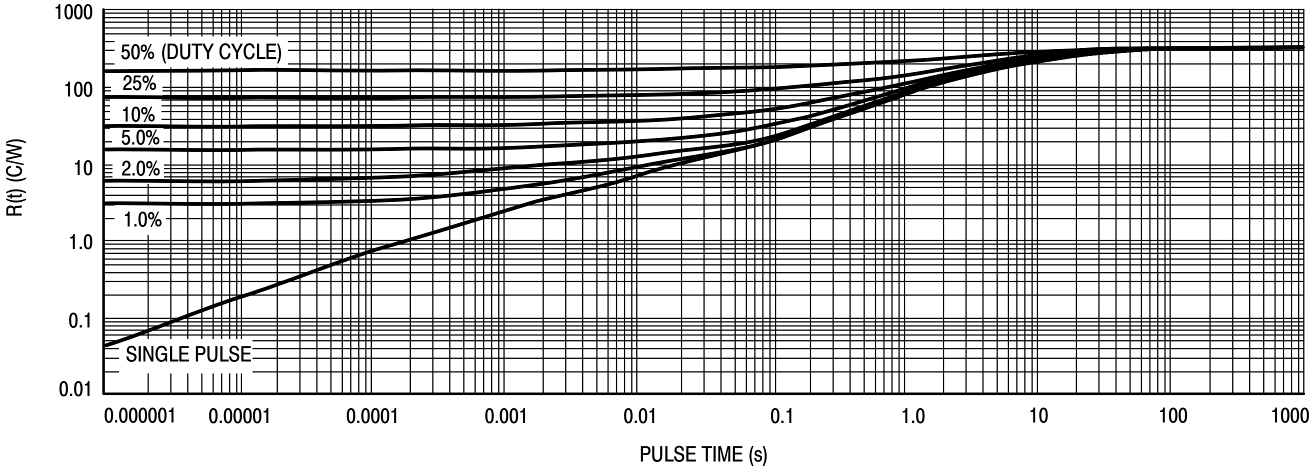


Figure 1. Thermal Response, Junction−to−Ambient (20 mm^2 pad)

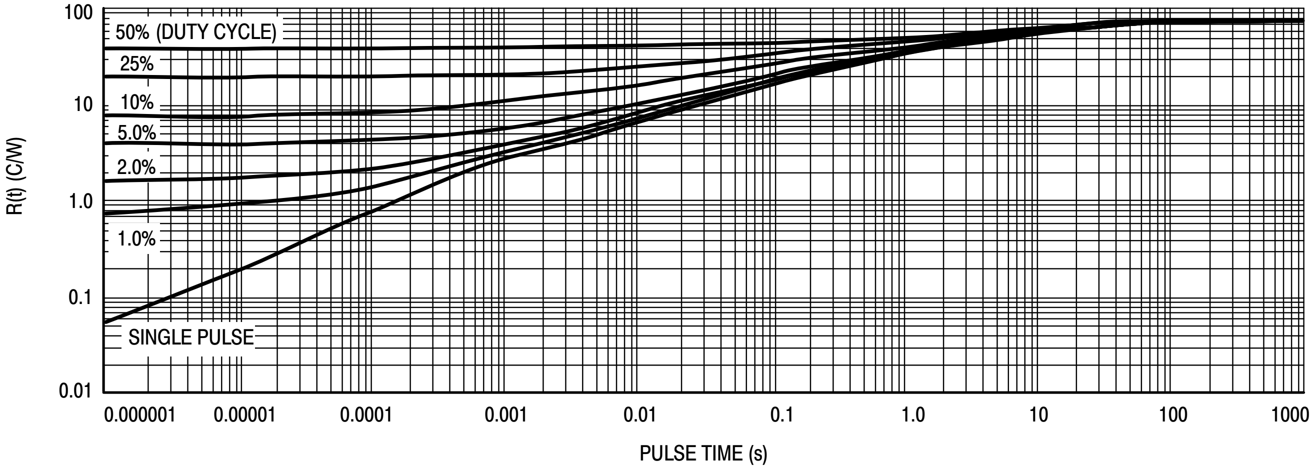
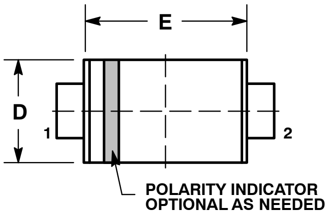


Figure 2. Thermal Response, Junction−to−Ambient (1 in^2 pad)

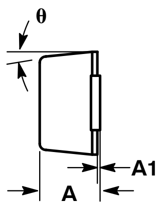
PACKAGE DIMENSIONS

SOD−123FL

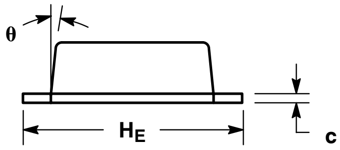
CASE 498
ISSUE D



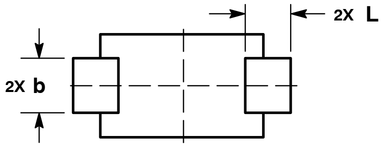
TOP VIEW



END VIEW



SIDE VIEW

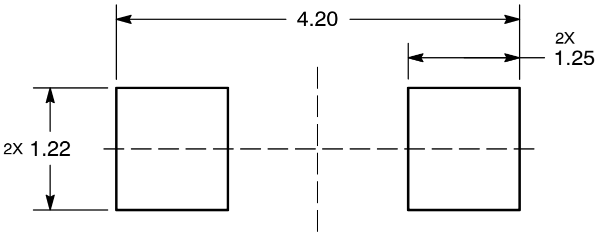


BOTTOM VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
4. DIMENSIONS D AND J ARE TO BE MEASURED ON FLAT SECTION OF THE LEAD: BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.

	MILLIMETERS			INCHES		
DIM	**MIN**	**NOM**	**MAX**	**MIN**	**NOM**	**MAX**
A	0.90	0.95	0.98	0.035	0.037	0.039
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.70	0.90	1.10	0.028	0.035	0.043
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.50	1.65	1.80	0.059	0.065	0.071
E	2.50	2.70	2.90	0.098	0.106	0.114
L	0.55	0.75	0.95	0.022	0.030	0.037
H_E	3.40	3.60	3.80	0.134	0.142	0.150
θ	0°	–	8°	0°	–	8°

RECOMMENDED SOLDERING FOOTPRINT*

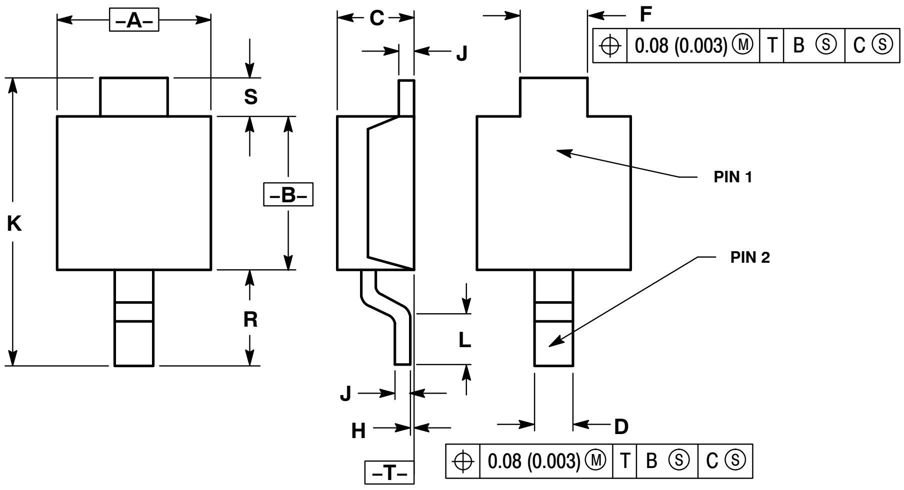


DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PACKAGE DIMENSIONS

POWERMITE
CASE 457−04
ISSUE F



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.

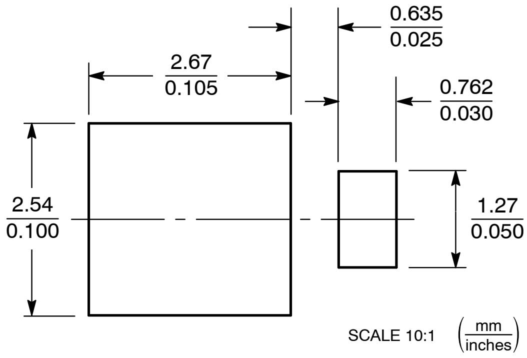
	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	1.75	2.05	0.069	0.081
B	1.75	2.18	0.069	0.086
C	0.85	1.15	0.033	0.045
D	0.40	0.69	0.016	0.027
F	0.70	1.00	0.028	0.039
H	−0.05	+0.10	−0.002	+0.004
J	0.10	0.25	0.004	0.010
K	3.60	3.90	0.142	0.154
L	0.50	0.80	0.020	0.031
R	1.20	1.50	0.047	0.059
S	0.50 REF		0.019 REF	

STYLE 1:
PIN 1. CATHODE
2. ANODE

STYLE 2:
PIN 1. ANODE OR CATHODE
2. CATHODE OR ANODE (BI−DIRECTIONAL)

STYLE 3:
PIN 1. ANODE
2. CATHODE

SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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