NHPM260T3G, NRVHPM260T3G

Surface Mount Ultra Fast Power Rectifier

POWERMITE®
Power Surface Mount Package

The ultrafast Powermite® provides soft recovery fast switching performance in a compact thermally efficient package. The advanced packaging techniques provide for a very efficient micro−miniature space−saving surface mount rectifier. With its unique heatsink design, the Powermite® offers thermal performance similar to the SMA while being 50% smaller in footprint area.

Features

- Fast Soft Switching for Reduced EMI and Higher Efficiency
- Low Profile − Maximum Height of 1.1 mm
- Small Footprint − Footprint Area of 8.45 mm^2
- Supplied in 12 mm Tape and Reel
- Low Thermal Resistance with Direct Thermal Path of Die on Exposed Cathode Heat Sink
- These Devices are Pb−Free, Halogen Free and are RoHS Compliant

Mechanical Characteristics:

- Powermite® is JEDEC Registered as D0−216AA
- Case: Molded Epoxy
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight: 16.3 mg (Approximately)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds
- MSL 1

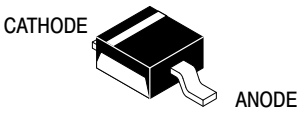
Applications

- Automotive HID Lighting
- Diesel Piezo Injection
- Power Factor Correction in Mini Adapters
- Freewheeling Diode Where Space is at a Premium

ON Semiconductor®

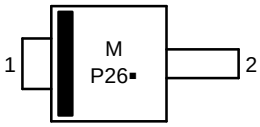
www.onsemi.com

ULTRA FAST RECTIFIER 2.0 AMPERES, 600 VOLTS



POWERMITE CASE 457

MARKING DIAGRAM



M = Date Code
P26 = Device Code
▪ = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
NHPM260T3G	Powermite (Pb−Free)	12000/Tape & Reel
NRVHPM260T3G	Powermite (Pb−Free)	12000/Tape & Reel

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

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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	600	V
Average Rectified Forward Current (T_L = 145°C)	I_O	2.0	A
Peak Repetitive Forward Current (Square Wave, 20 kHz, T_L = 125°C)	I_{FRM}	4.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	15	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}	8.5	°C/W
Thermal Resistance, Junction−to−Ambient (Note 2)	$R_{\theta JA}$	82.9	°C/W
Thermal Resistance, Junction−to−Ambient (Note 3)	$R_{\theta JA}$	260	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Typ	Max	Unit
Instantaneous Forward Voltage (Note 4)	(I_F = 2 A, T_C = 125°C) (I_F = 2 A, T_C = 25°C)	V_F	2.1 3.0	2.6 3.8	V
Instantaneous Reverse Current (Note 4)	(Rated DC Voltage, T_C = 125°C) (Rated DC Voltage, T_C = 25°C)	I_R	5.0 0.002	50 0.5	μA
Reverse Recovery Time Peak Reverse Recovery Current Total Reverse Recovery Charge Softness Factor	(I_F = 2 A, d_{IF}/d_t = −200 A/μs, T_C = 25°C)	t_{rr} I_{RM} Q_{rr} S	15 0.5 2.1 0.8	30 3.0 10 3.0	ns A nC −
Reverse Recovery Time Peak Reverse Recovery Current Total Reverse Recovery Charge Softness Factor	(I_F = 2 A, d_{IF}/d_t = −200 A/μs, T_C = 125°C)	t_{rr} I_{RM} Q_{rr} S	30 0.7 12 2.4	− − − −	ns A nC −

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

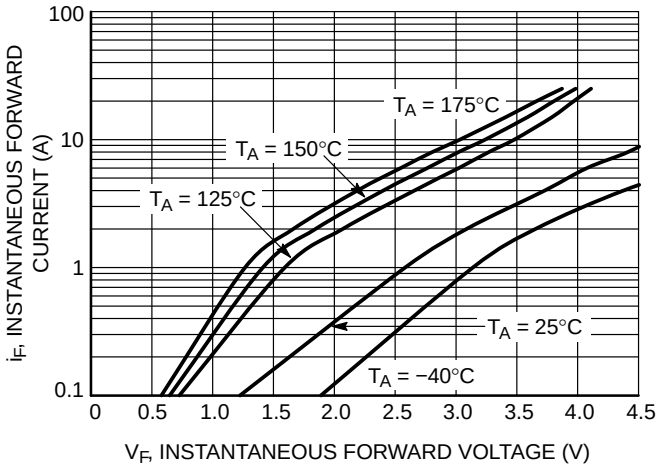


Figure 1. Typical Instantaneous Forward Characteristics

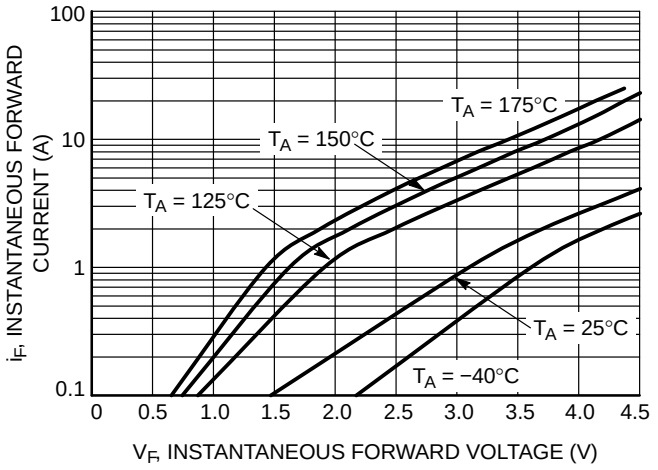


Figure 2. Maximum Instantaneous Forward Characteristics

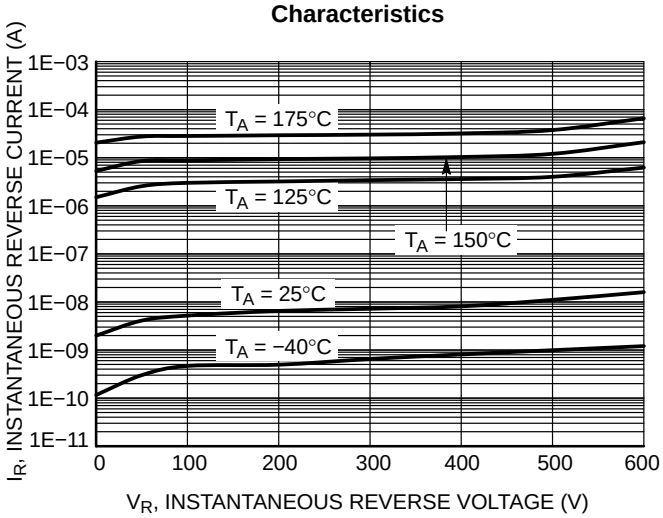


Figure 3. Typical Reverse Characteristics

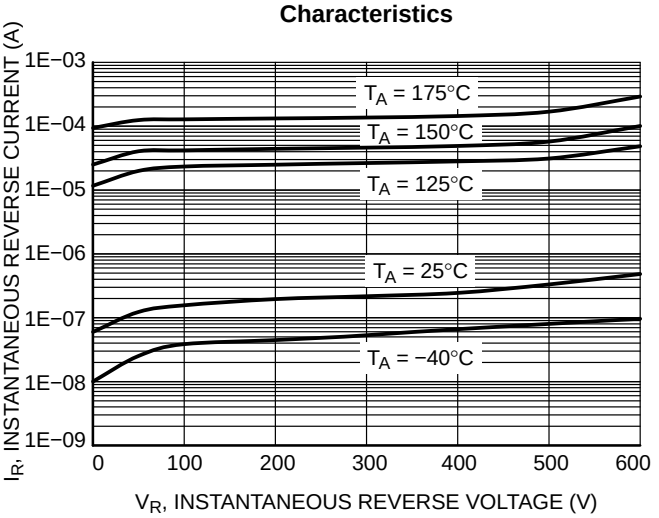


Figure 4. Maximum Reverse Characteristics

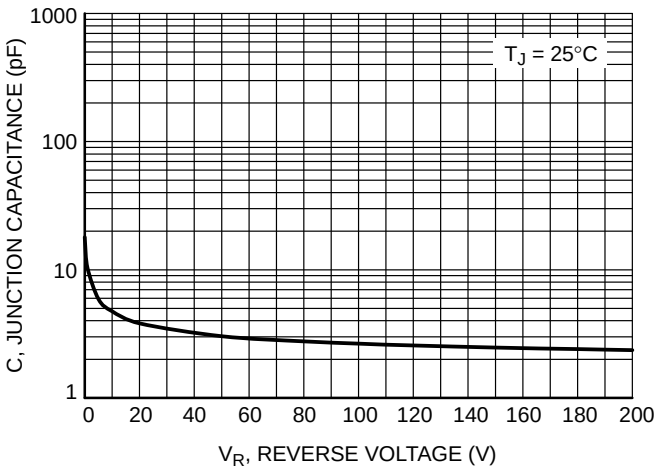


Figure 5. Typical Junction Capacitance

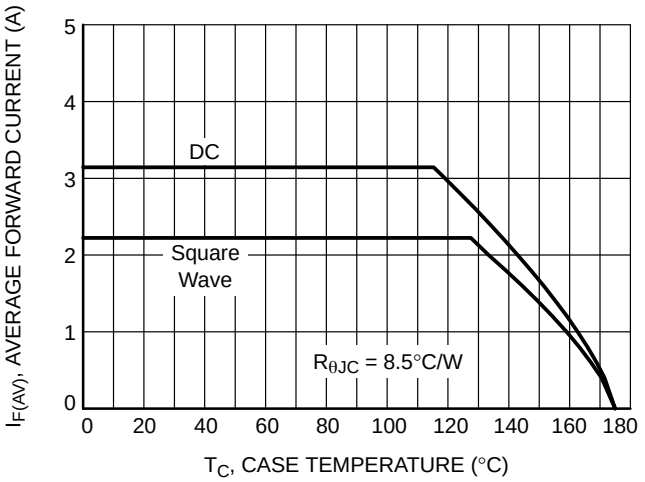


Figure 6. Current Derating

TYPICAL CHARACTERISTICS

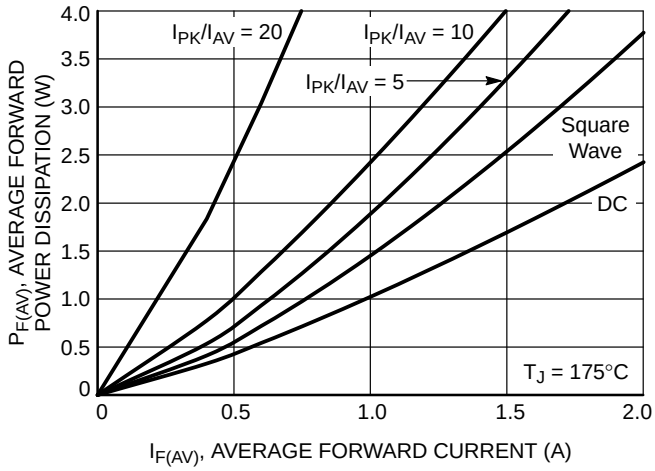


Figure 7. Forward Power Dissipation

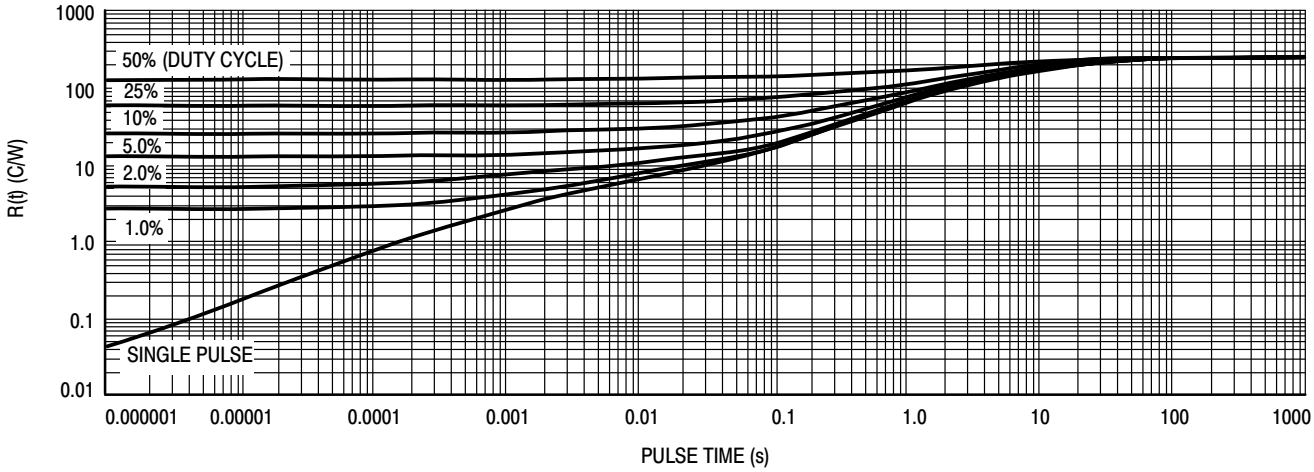


Figure 8. Thermal Response, Junction−to−Ambient (20 mm^2 pad)

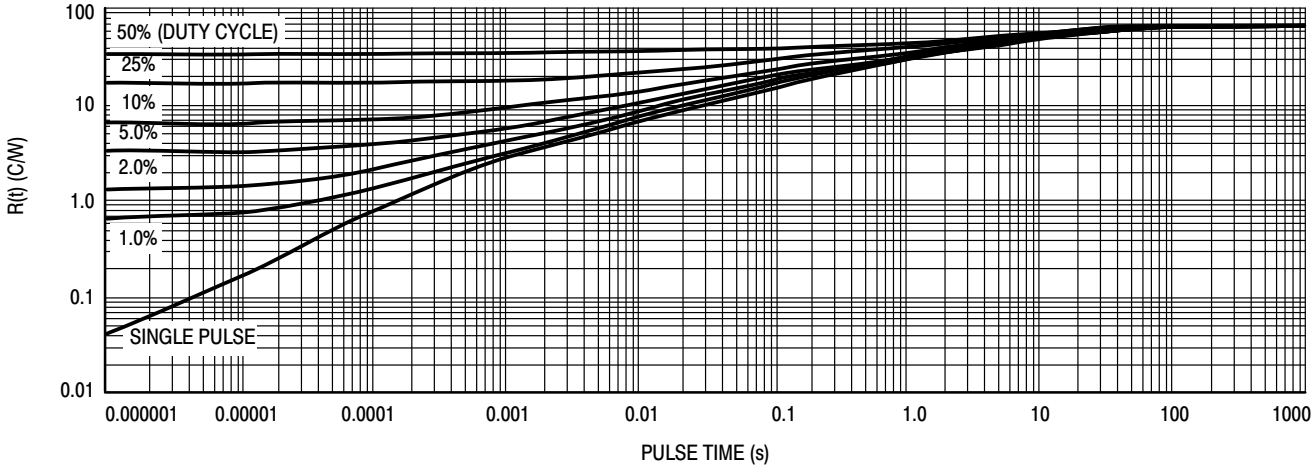


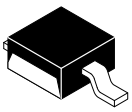
Figure 9. Thermal Response, Junction−to−Ambient (1 in^2 pad)

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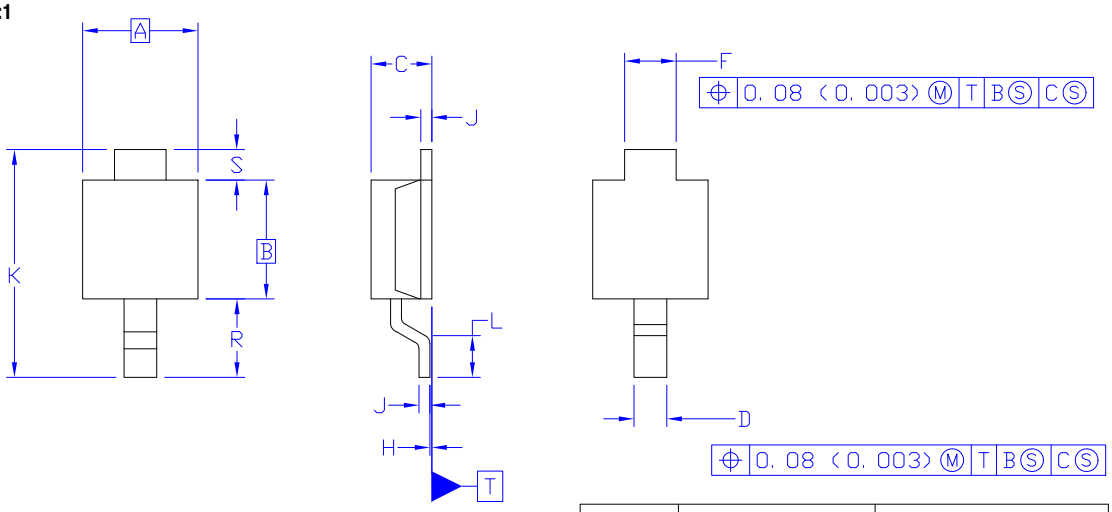
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

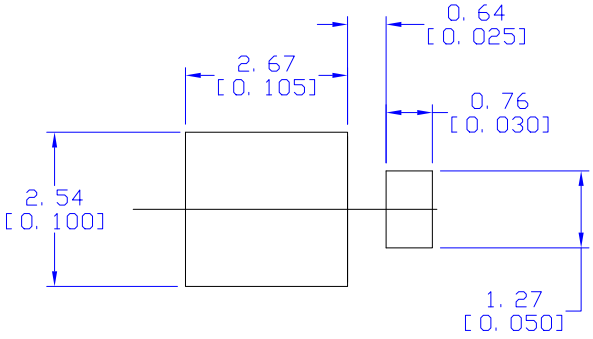
POWERMITE
CASE 457
ISSUE G

DATE 12 JAN 2022



SCALE 4:1





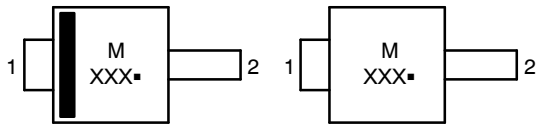
RECOMMENDED
MOUNTING FOOTPRINT

DIM	MILLIMETERS		INCHES	
	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	

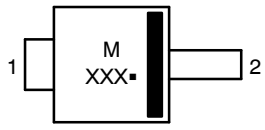
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM THE TERMINAL TIP.

GENERIC MARKING DIAGRAMS*



STYLE 1 **STYLE 2**



STYLE 3

XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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

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