MURS120T3G Series, SURS8120T3G Series, NRVUS120VT3G Series

Surface Mount Ultrafast Power Rectifiers

MURS105T3G, MURS110T3G, MURS115T3G, MURS120T3G, MURS140T3G, MURS160T3G, SURS8105T3G, SURS8110T3G, SURS8115T3G, SURS8120T3G, SURS8140T3G, SURS8160T3G, NRVUS110VT3G, NRVUS120VT3G, NRVUS160VT3G

Ideally suited for high voltage, high frequency rectification, or as free wheeling and protection diodes in surface mount applications where compact size and weight are critical to the system.

Features

- Small Compact Surface Mountable Package with J−Bend Leads
- Rectangular Package for Automated Handling
- High Temperature Glass Passivated Junction
- Low Forward Voltage Drop (0.71 to 1.05 V Max @ 1.0 A, T_J = 150°C)
- NRVUS and SURS8 Prefixes 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
- Weight: 95 mg (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Polarity Band Indicates Cathode Lead
- ESD Rating:
  - Human Body Model = 3B (> 8 kV)
  - Machine Model = C (> 400 V)

ON Semiconductor®

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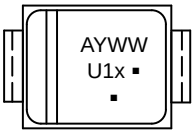
ULTRAFAST RECTIFIERS
1.0 AMPERE, 50−600 VOLTS

SMB
CASE 403A

MARKING DIAGRAM



A = Assembly Location*
Y = Year
WW = Work Week
U1 = Device Code
x = A, B, C, D, G, or J
▪ = Pb−Free Package
(Note: Microdot may be in either location)

* The Assembly Location code (A) is front side optional. In cases where the Assembly Location is stamped in the package bottom (molding ejecter pin), the front side assembly code may be blank.

ORDERING INFORMATION

See detailed ordering and shipping information in the table on page 2 of this data sheet.

DEVICE MARKING INFORMATION

See general marking information in the device marking table on page 2 of this data sheet.

MAXIMUM RATINGS

Rating	Symbol	MURS/SURS8/NRVUS 105T3	110T3	115T3	120T3	140T3	160T3	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	50	100	150	200	400	600	V
Average Rectified Forward Current	$I_{F(AV)}$	1.0 @ T_L = 155°C 2.0 @ T_L = 145°C				1.0 @ T_L = 150°C 2.0 @ T_L = 125°C		A
Non−Repetitive Peak Surge Current, (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	40				35		A
Operating Junction Temperature	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.

THERMAL CHARACTERISTICS

Rating	Symbol	MURS/SURS8/NRVUS 105T3	110T3	115T3	120T3	140T3	160T3	Unit
Thermal Resistance Junction−to−Lead (T_L = 25°C)	$R_{\theta JL}$	13						°C/W

ELECTRICAL CHARACTERISTICS

				Unit
Maximum Instantaneous Forward Voltage (Note 1) (i_F = 1.0 A, T_J = 25°C) (i_F = 1.0 A, T_J = 150°C)	v_F	0.875 0.71	1.25 1.05	V
Maximum Instantaneous Reverse Current (Note 1) (Rated DC Voltage, T_J = 25°C) (Rated DC Voltage, T_J = 150°C)	i_R	2.0 50	5.0 150	μA
Maximum Reverse Recovery Time (i_F = 1.0 A, di/dt = 50 A/μs) (i_F = 0.5 A, i_R = 1.0 A, I_R to 0.25 A)	t_{rr}	35 25	75 50	ns
Maximum Forward Recovery Time (i_F = 1.0 A, di/dt = 100 A/μs, Rec. to 1.0 V)	t_{fr}	25	50	ns
Typical Peak Reverse Recovery Current (I_F = 1.0 A, di/dt = 50 A/μs)	I_{RM}	0.75	1.60	A

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%.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Package	Shipping†
MURS105T3G, SURS8105T3G*	U1A	SMB (Pb−Free)	2,500 Units / Tape & Reel
MURS110T3G, NRVUS110VT3G* SURS8110T3G*	U1B	SMB (Pb−Free)	2,500 Units / Tape & Reel
MURS115T3G, SURS8115T3G*	U1C	SMB (Pb−Free)	2,500 Units / Tape & Reel
MURS120T3G, NRVUS120VT3G* SURS8120T3G*	U1D	SMB (Pb−Free)	2,500 Units / Tape & Reel
MURS140T3G, SURS8140T3G*,	U1G	SMB (Pb−Free)	2,500 Units / Tape & Reel
MURS160T3G, NRVUS160VT3G* SURS8160T3G*	U1J	SMB (Pb−Free)	2,500 Units / 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.

*NRVUS and SURS8 Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable.

**MURS105T3G, MURS110T3G, MURS115T3G, MURS120T3G,
SURS8105T3G, SURS8110T3G, SURS8115T3G, SURS8120T3G, NRVUS110VT3G, NRVUS120VT3G**

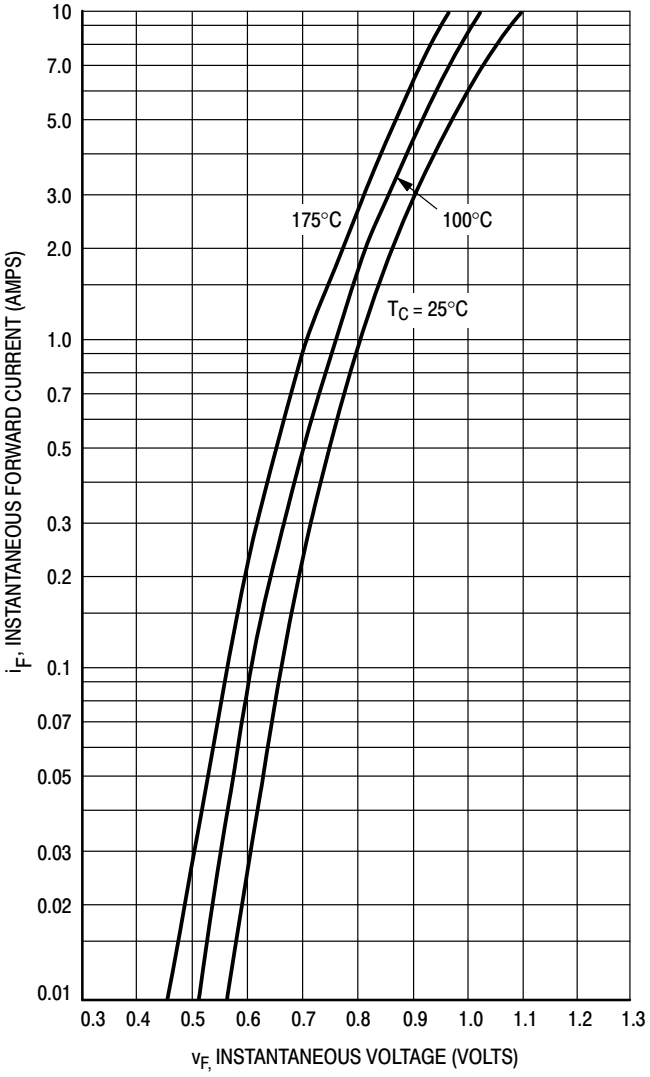


Figure 1. Typical Forward Voltage

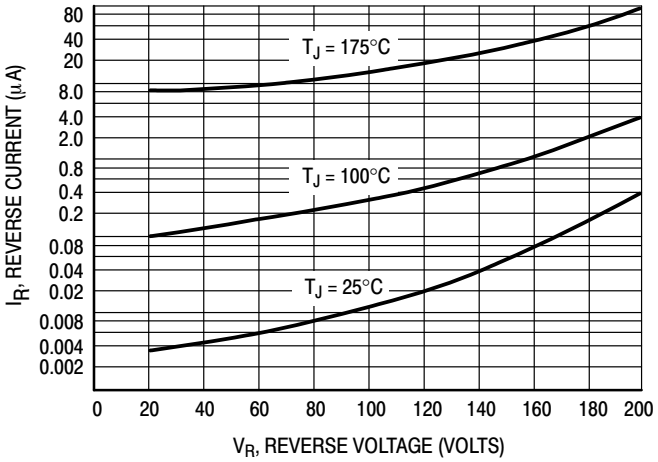


Figure 2. Typical Reverse Current*

*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if applied V_R is sufficiently below rated V_R.

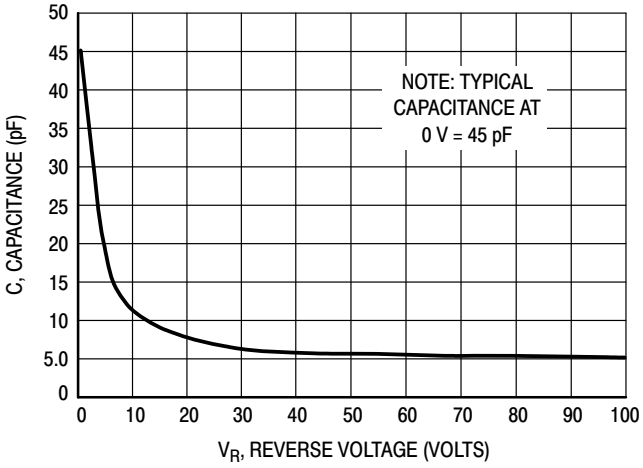


Figure 3. Typical Capacitance

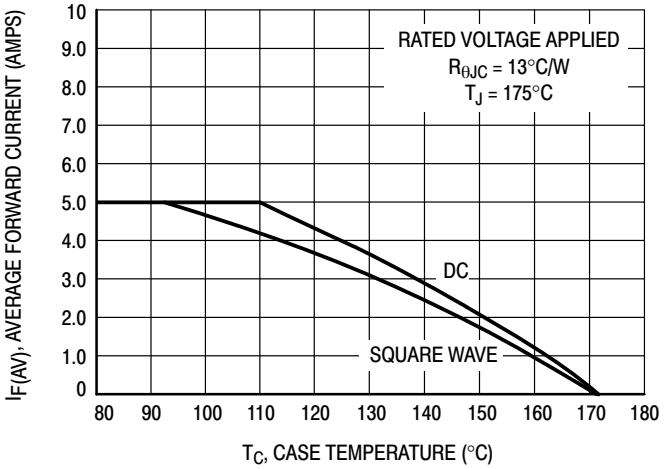


Figure 4. Current Derating, Case

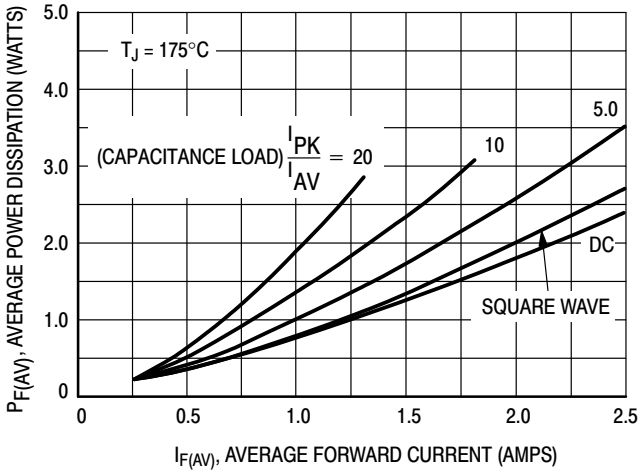


Figure 5. Power Dissipation

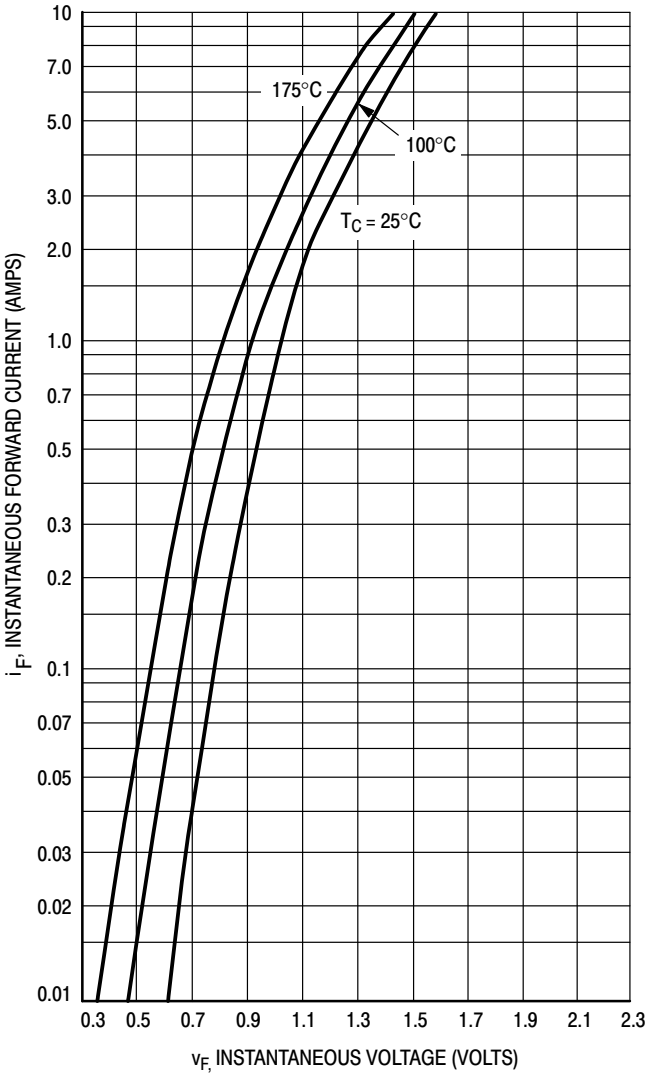


Figure 6. Typical Forward Voltage

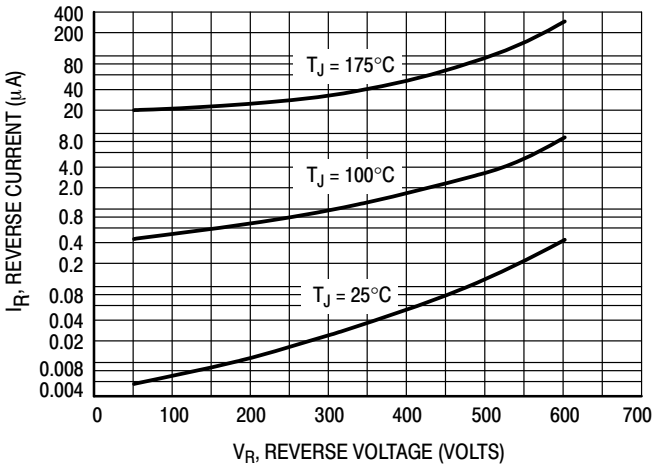


Figure 7. Typical Reverse Current*

*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if applied V_R is sufficiently below rated V_R.

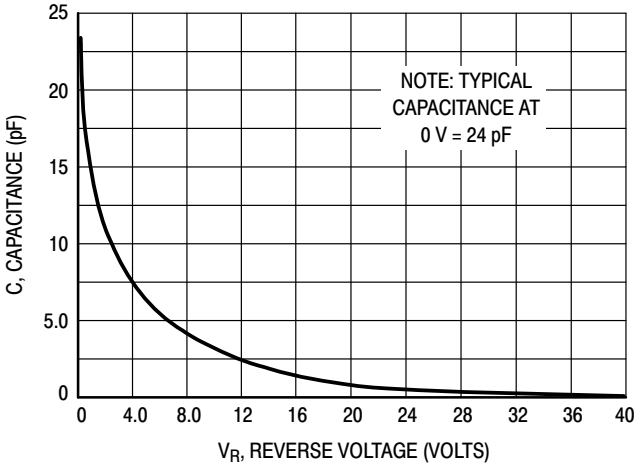


Figure 8. Typical Capacitance

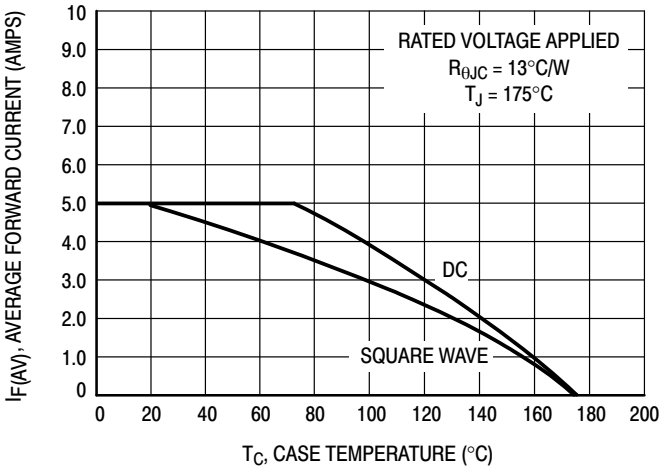


Figure 9. Current Derating, Case

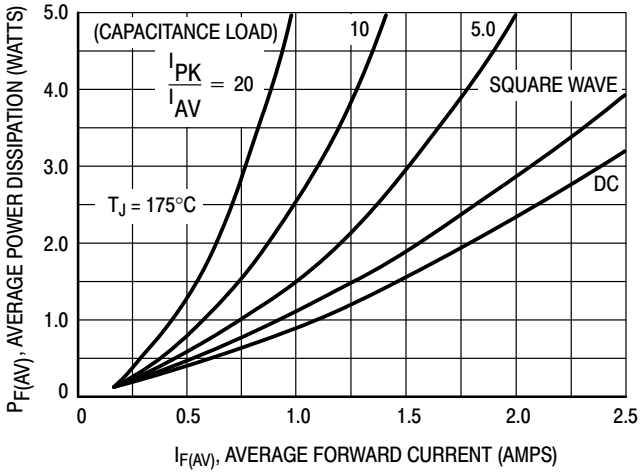
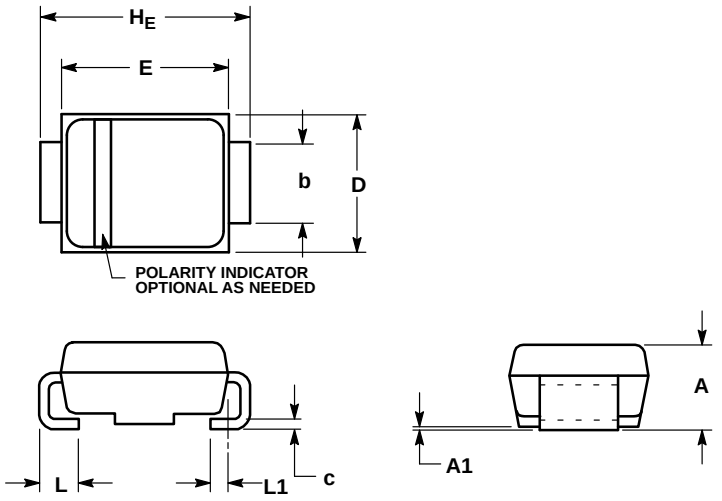


Figure 10. Power Dissipation

PACKAGE DIMENSIONS

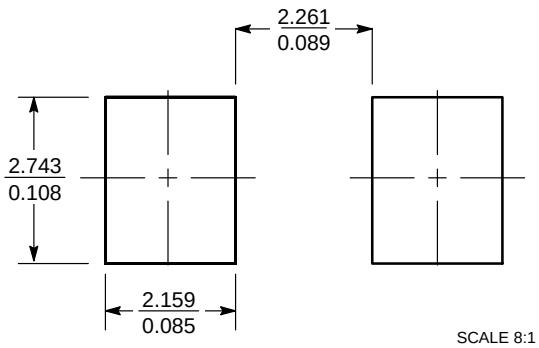
SMB
CASE 403A−03
ISSUE J



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L1.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	1.95	2.30	2.47	0.077	0.091	0.097
A1	0.05	0.10	0.20	0.002	0.004	0.008
b	1.96	2.03	2.20	0.077	0.080	0.087
c	0.15	0.23	0.31	0.006	0.009	0.012
D	3.30	3.56	3.95	0.130	0.140	0.156
E	4.06	4.32	4.60	0.160	0.170	0.181
H_E	5.21	5.44	5.60	0.205	0.214	0.220
L	0.76	1.02	1.60	0.030	0.040	0.063
L1	0.51 REF			0.020 REF		

SOLDERING FOOTPRINT*



SCALE 8:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
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