Surface Mount Ultrafast Power Rectifiers

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

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, $T_J = 150^{\circ}$ C)
- AEC-Q101 Qualified and PPAP Capable
- SURS8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These are Pb-Free Packages

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

1

- Polarity: Polarity Band Indicates Cathode Lead
- ESD Rating:
 - Human Body Model = 3B (> 8 kV)
 - Machine Model = C (> 400 V)



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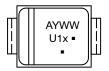
http://onsemi.com

ULTRAFAST RECTIFIERS 1.0 AMPERE, 50-600 VOLTS



SMB CASE 403A

MARKING DIAGRAM



A = Assembly Location*

′ = 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

		MURS/SURS8						
Rating	Symbol	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 2.0 @ T _L		Α	
Non-Repetitive Peak Surge Current, (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I _{FSM}	40 35		5	Α			
Operating Junction Temperature	TJ	- 65 to +175			°C			

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL CHARACTERISTICS

		MURS/SURS8						
Rating	Symbol	105T3	110T3	115T3	120T3	140T3	160T3	Unit
Thermal Resistance Junction-to-Lead (T _L = 25°C)	$R_{ heta JL}$	13		°C/W				

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) ($i_F = 1.0 \text{ A}, T_J = 25^{\circ}\text{C}$) ($i_F = 1.0 \text{ A}, T_J = 150^{\circ}\text{C}$)	VF	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	μА
Maximum Reverse Recovery Time ($i_F = 1.0$ A, di/dt = 50 A/ μ s) ($i_F = 0.5$ 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	Α

^{1.} Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Package	Shipping [†]
MURS105T3G, SURS8105T3G	U1A	SMB (Pb-Free)	2,500 Units / Tape & Reel
MURS110T3G, SURS8110T3G	U1B	SMB (Pb-Free)	2,500 Units / Tape & Reel
MURS115T3G, SURS8115T3G	U1C	SMB (Pb-Free)	2,500 Units / Tape & Reel
MURS120T3G, SURS8120T3G	U1D	SMB (Pb-Free)	2,500 Units / Tape & Reel
MURS140T3G, SURS8140T3G	U1G	SMB (Pb-Free)	2,500 Units / Tape & Reel
MURS160T3G, 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.

MURS105T3G, MURS110T3G, MURS115T3G, MURS120T3G, SURS8105T3G, SURS8110T3G, SURS8115T3G, SURS8120T3G

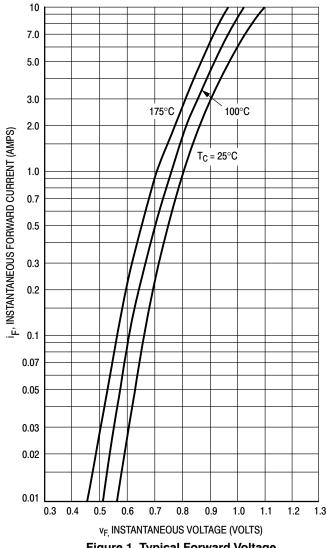


Figure 1. Typical Forward Voltage

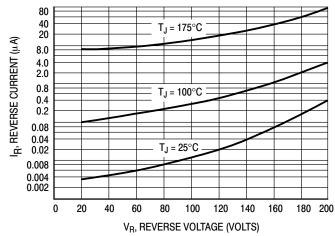


Figure 2. Typical Reverse Current*

*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.

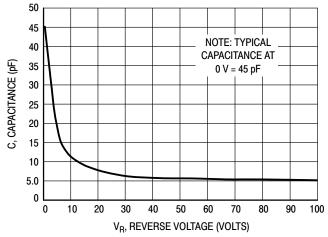


Figure 3. Typical Capacitance

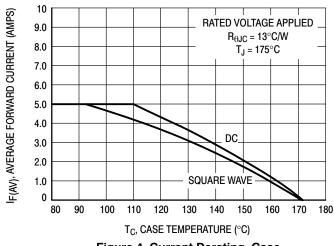


Figure 4. Current Derating, Case

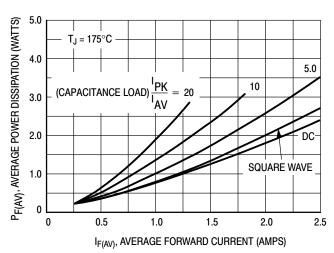
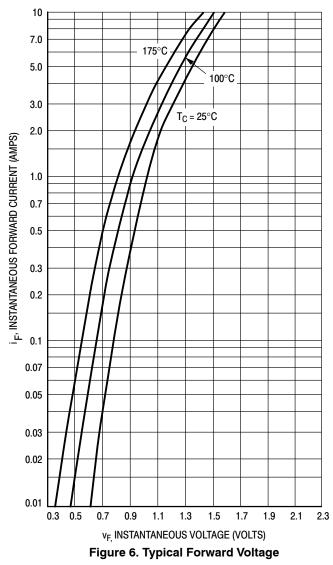


Figure 5. Power Dissipation

MURS140T3G, MURS160T3G, SURS8140T3G, SURS8160T3G



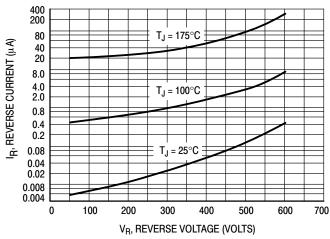


Figure 7. Typical Reverse Current*

*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 .

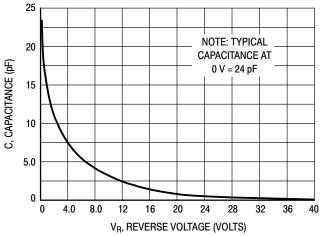


Figure 8. Typical Capacitance

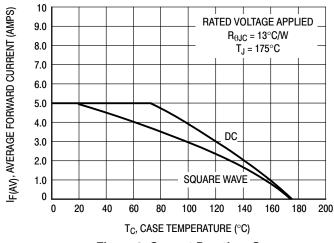


Figure 9. Current Derating, Case

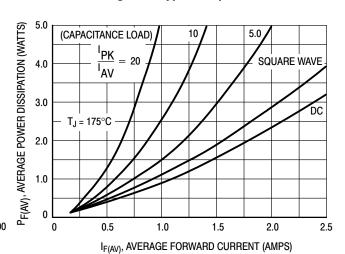
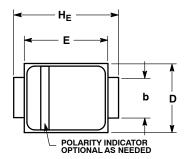


Figure 10. Power Dissipation

PACKAGE DIMENSIONS

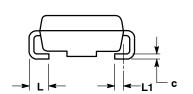
SMB CASE 403A-03 **ISSUE J**

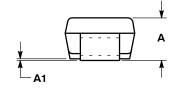




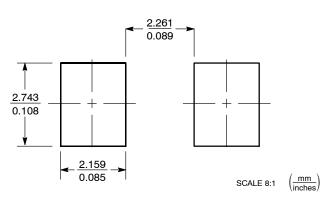
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- 2 CONTROLLING DIMENSION: INCH.
- DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L1.

	MILLIMETERS			INCHES			
DIM	MIN	NOM	MAX	MIN	NOM	MAX	
Α	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	
С	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	
HE	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*



*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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