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MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G, SUR8820G, SUR8840G

SWITCHMODE Power Rectifiers

This series is designed for use in switching power supplies, inverters and as free wheeling diodes.

Features

- Ultrafast 25 and 50 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Low Forward Voltage
- Low Leakage Current
- Reverse Voltage to 600 V
- ESD Ratings:
  - Machine Model = C (> 400 V)
  - Human Body Model = 3B (> 16,000 V)
- SUR8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant*

Mechanical Characteristics:

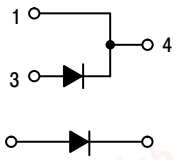
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max for 10 Seconds

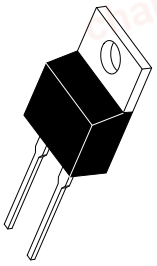
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

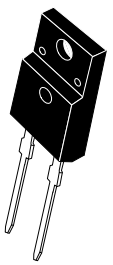
http://onsemi.com

ULTRAFAST RECTIFIERS
8.0 AMPERES, 50−600 VOLTS



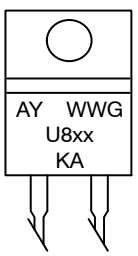


TO−220AC
CASE 221B
PLASTIC



TO−220 FULLPAK
CASE 221E
STYLE 1

MARKING DIAGRAMS





A = Assembly Location
Y = Year
WW = Work Week
U8XX = Device Code
xx = 05, 10, 15, 20, 40, or 60
G = Pb−Free Package
KA = Diode Polarity

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

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MAXIMUM RATINGS

Rating	Symbol	MUR/SUR8						Unit
		805	810	815	820	840	860	
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 Total Device, (Rated V_R), T_C = 150°C	$I_{F(AV)}$	8.0						A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz), T_C = 150°C	I_{FM}	16						A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	100						A
Operating Junction Temperature and Storage Temperature Range	T_J, T_{stg}	−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

Characteristic	Symbol	MUR/SUR8						Unit
		805	810	815	820	840	860	
Maximum Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	3.0				2.0		°C/W
Thermal Resistance, Junction−to−Case MURF860	$R_{\theta JC}$	4.75						°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	73						°C/W
Thermal Resistance, Junction−to−Ambiente MURF860	$R_{\theta JA}$	75						°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	MUR/SUR8						Unit
		805	810	815	820	840	860	
Maximum Instantaneous Forward Voltage (Note 1) (i_F = 8.0 A, T_C = 150°C) (i_F = 8.0 A, T_C = 25°C)	v_F	0.895 0.975				1.00 1.30	1.20 1.50	V
Maximum Instantaneous Reverse Current (Note 1) (Rated DC Voltage, T_J = 150°C) (Rated DC Voltage, T_J = 25°C)	i_R	250 5.0				500 10		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_{REC} = 0.25 A)	t_{rr}	35 25				60 50		ns

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

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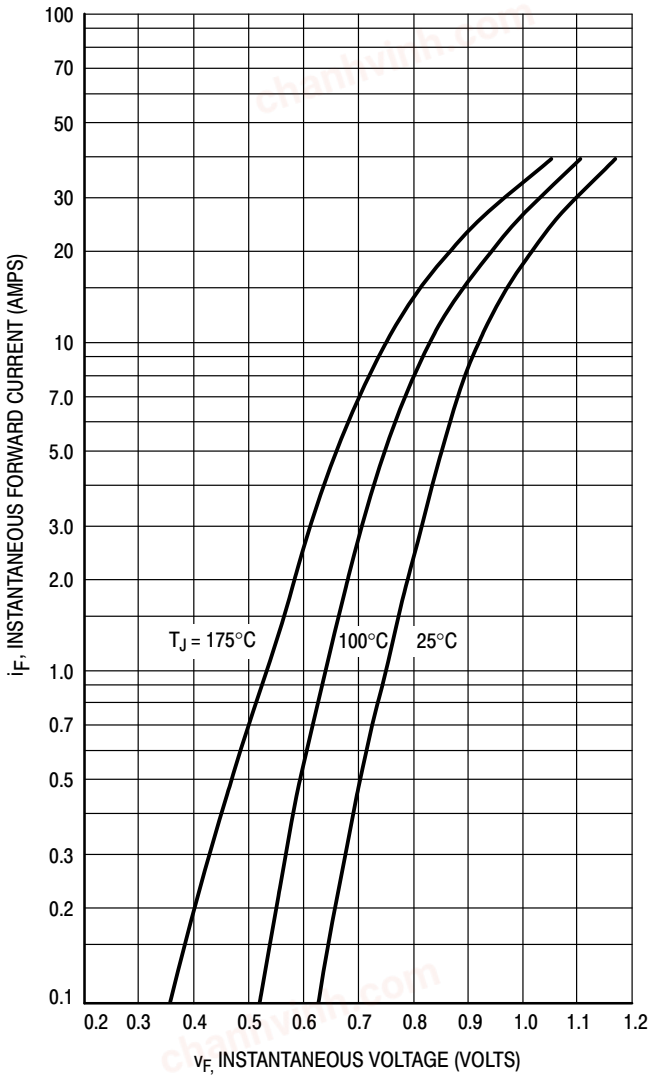


Figure 1. Typical Forward Voltage

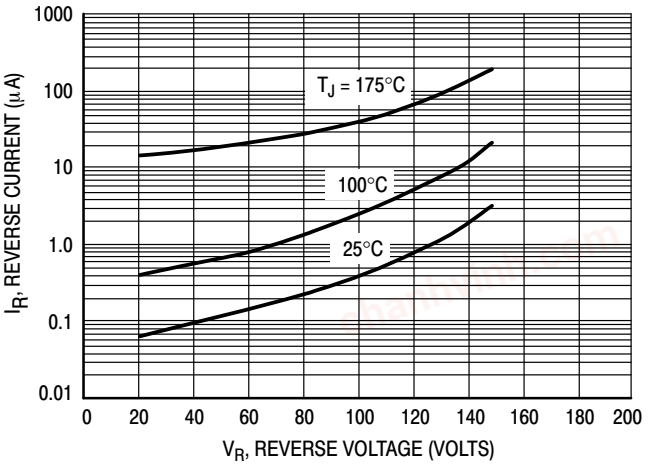


Figure 2. Typical Reverse Current*

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

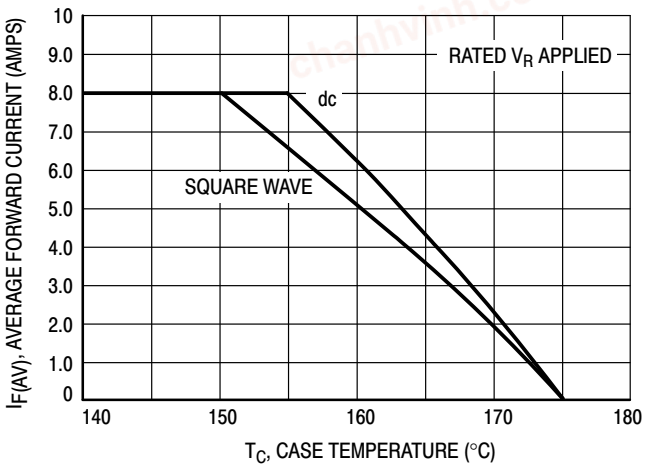


Figure 3. Current Derating, Case

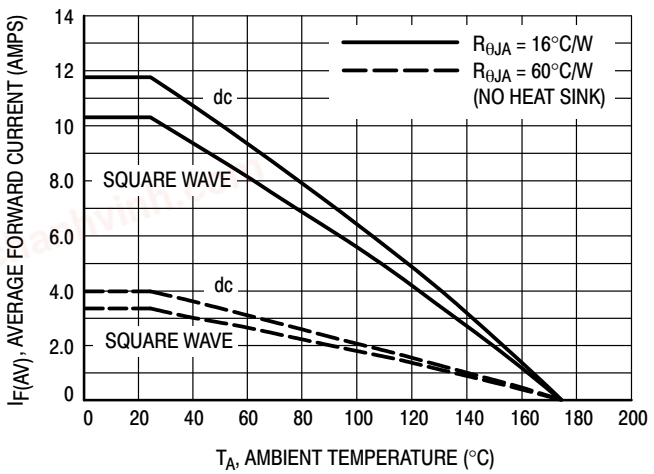


Figure 4. Current Derating, Ambient

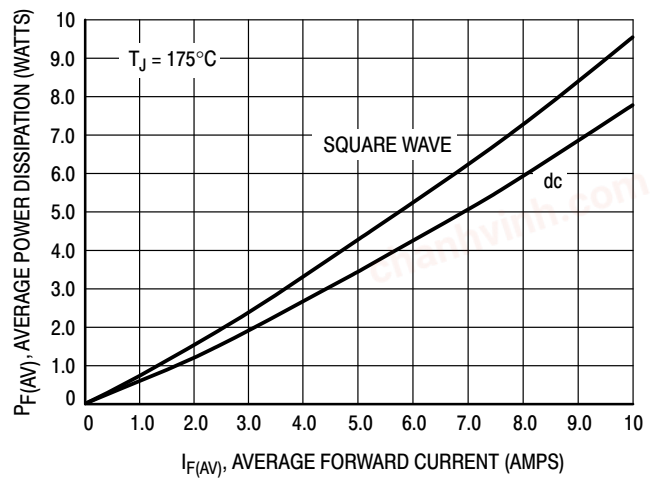


Figure 5. Power Dissipation

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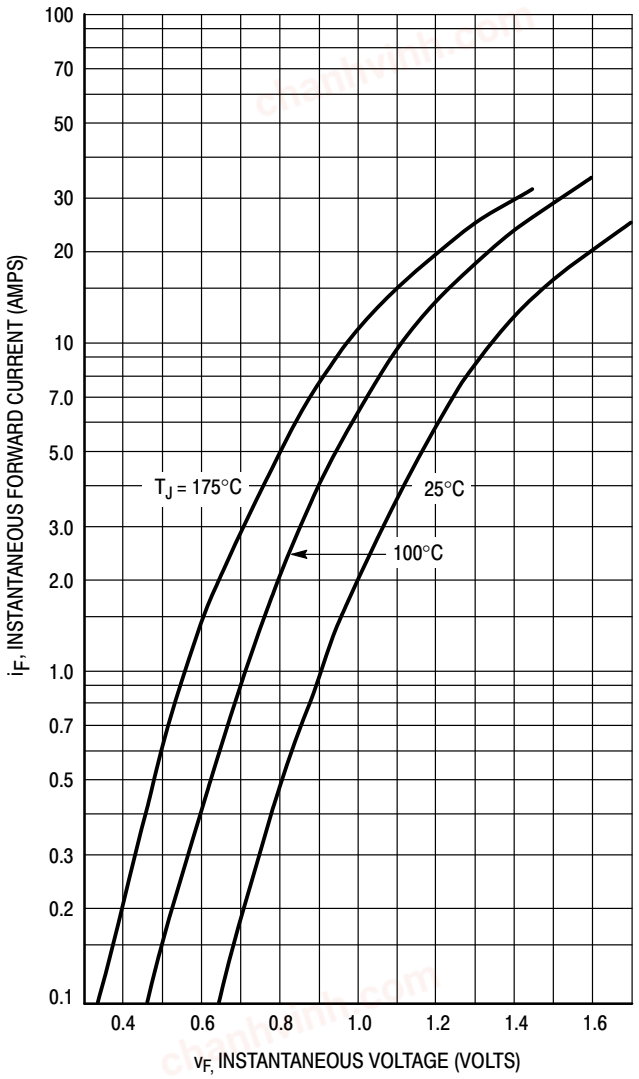


Figure 6. Typical Forward Voltage

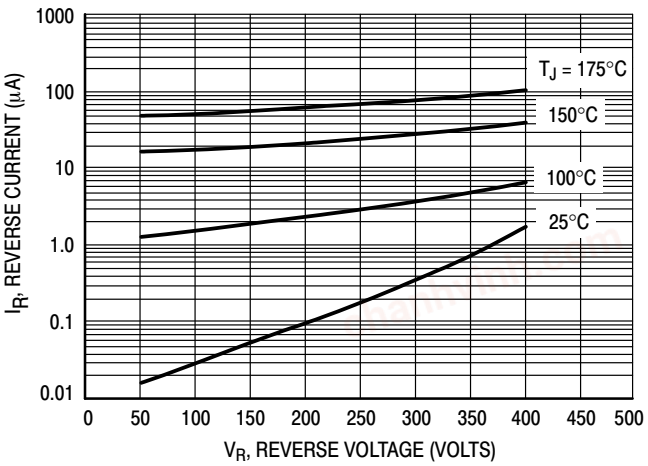


Figure 7. Typical Reverse Current*

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

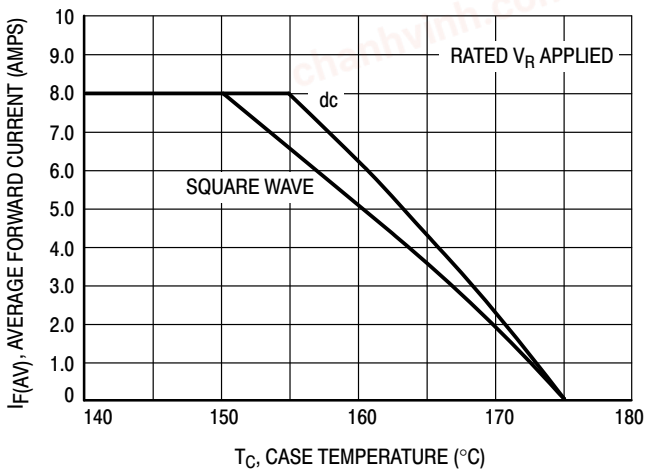


Figure 8. Current Derating, Case

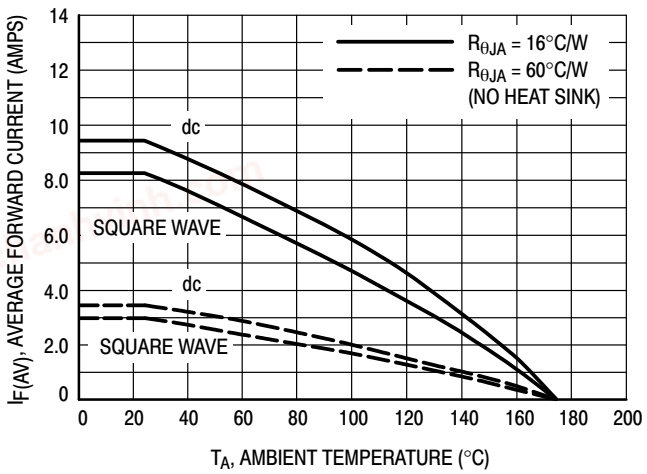


Figure 9. Current Derating, Ambient

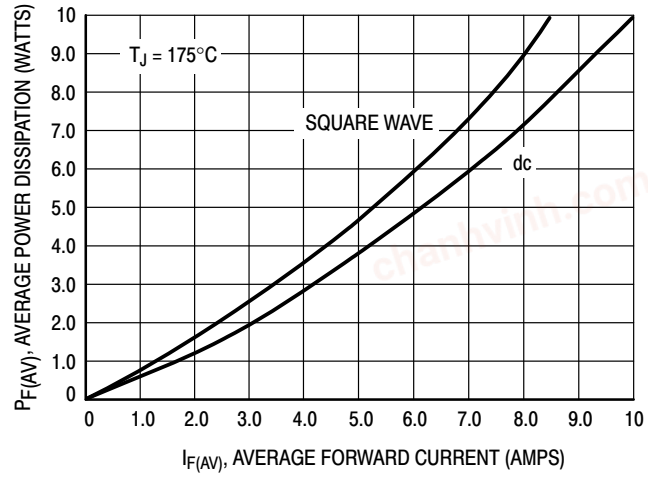


Figure 10. Power Dissipation

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MUR860G, MURF860G

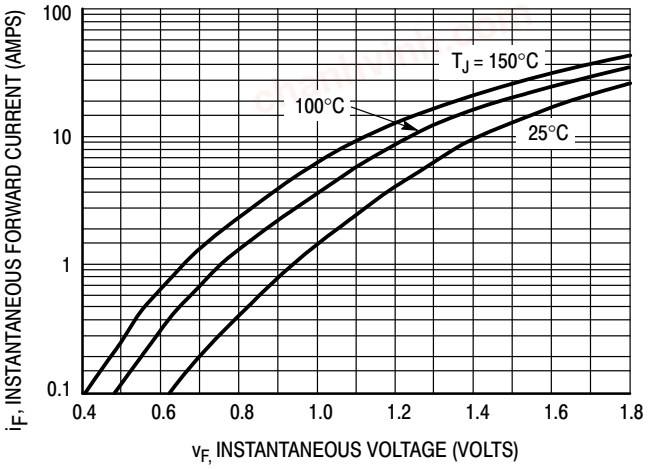


Figure 11. Typical Forward Voltage

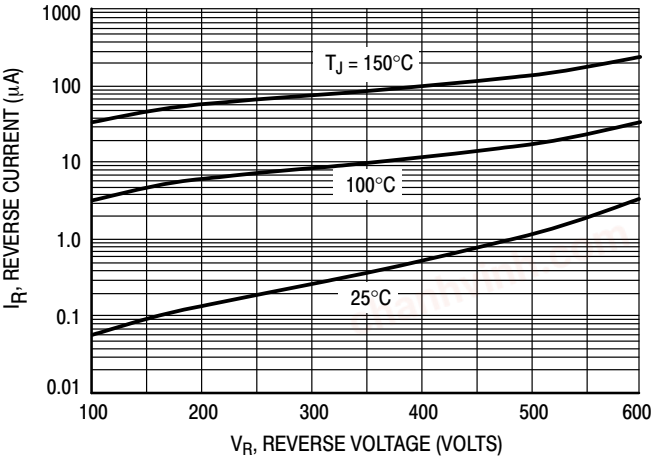


Figure 12. Typical Reverse Current*

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

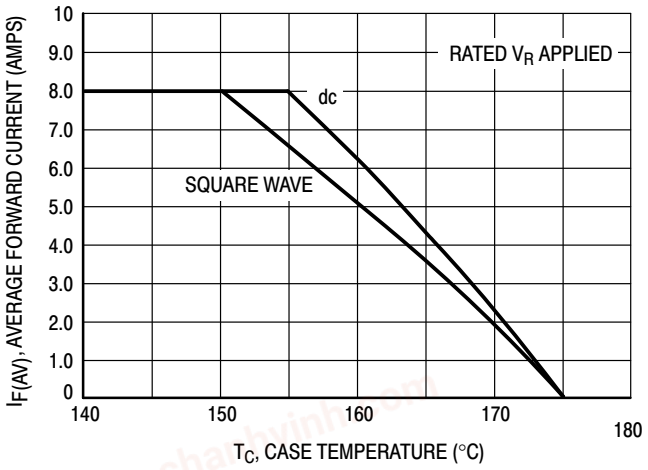


Figure 13. Current Derating, Case

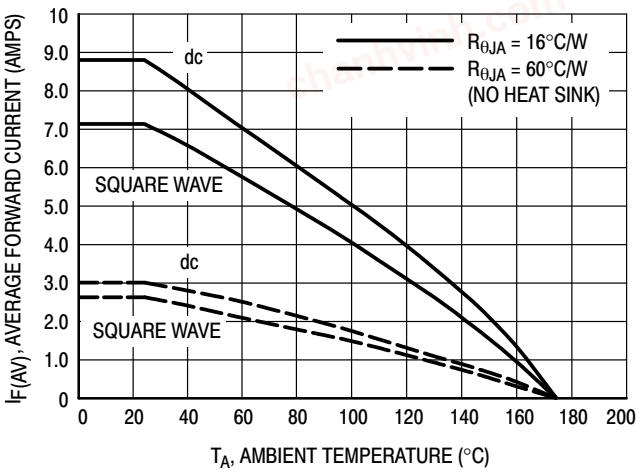


Figure 14. Current Derating, Ambient

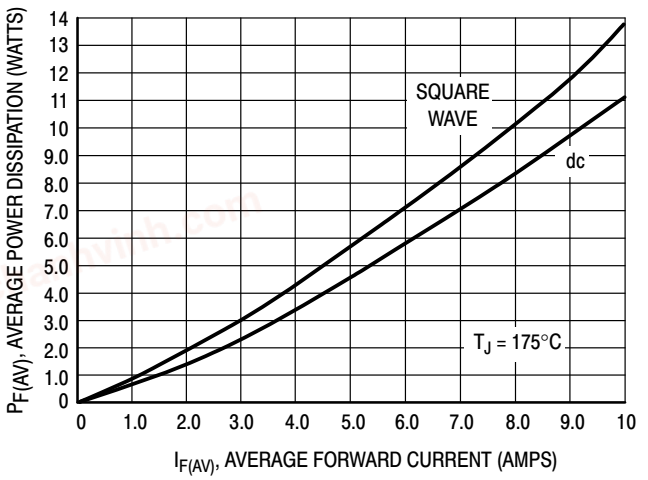


Figure 15. Power Dissipation

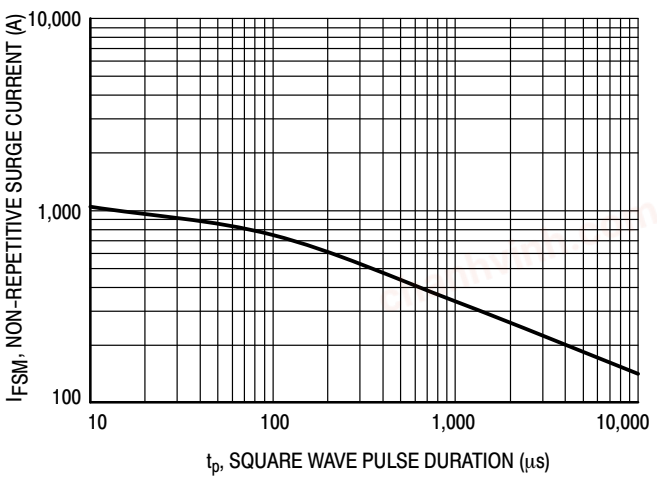


Figure 16. Typical Non−Repetitive Surge Current

* Typical performance based on a limited sample size. ON Semiconductor does not guarantee ratings not listed in the Maximum Ratings table.

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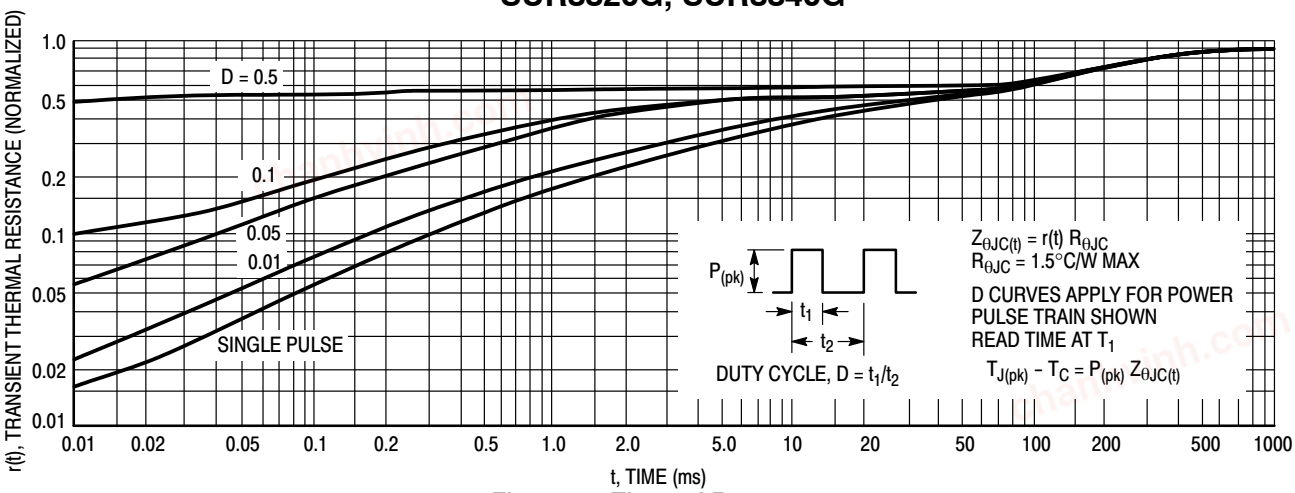


Figure 17. Thermal Response

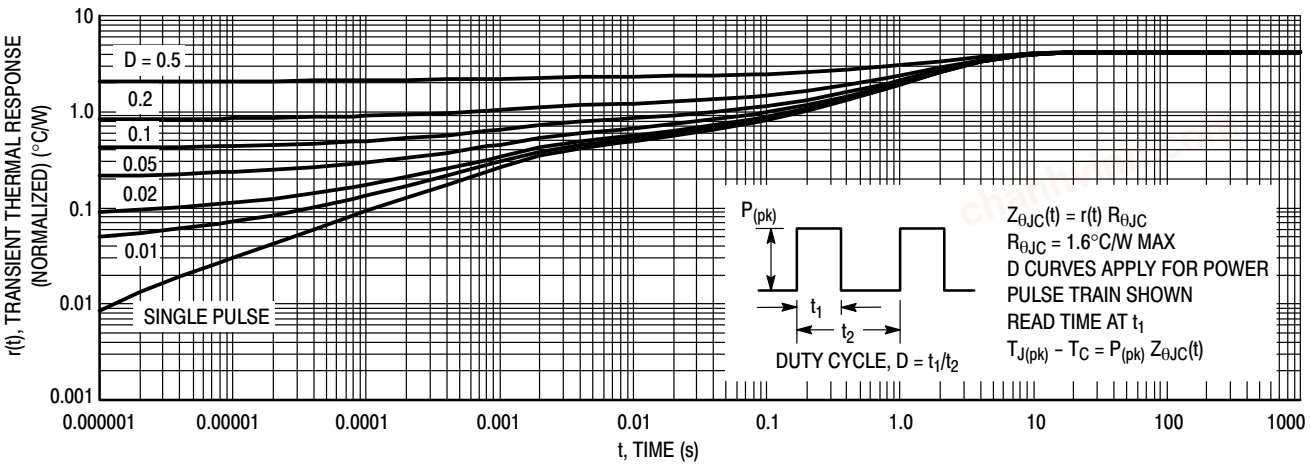


Figure 18. Thermal Response, (MURF860G) Junction−to−Case ($R_{\theta JC}$)

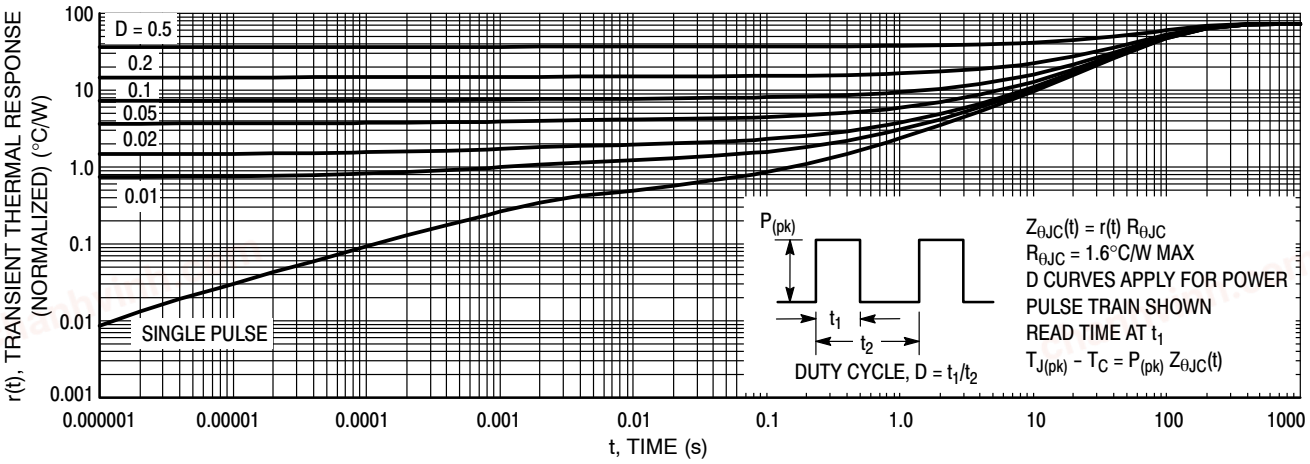


Figure 19. Thermal Response, (MURF860G) Junction−to−Ambient ($R_{\theta JA}$)

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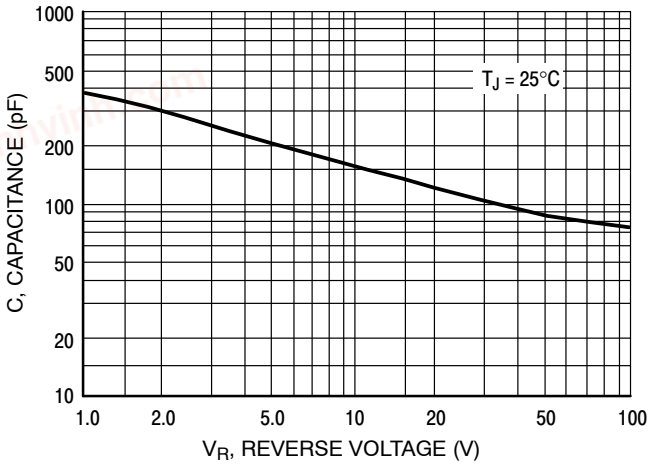


Figure 20. Typical Capacitance

ORDERING INFORMATION

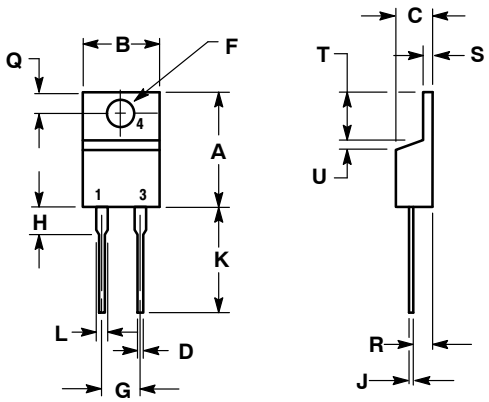
Device	Package	Shipping
MUR805G	TO−220AC (Pb−Free)	50 Units / Rail
MUR810G	TO−220AC (Pb−Free)	50 Units / Rail
MUR815G	TO−220AC (Pb−Free)	50 Units / Rail
MUR820G	TO−220AC (Pb−Free)	50 Units / Rail
SUR8820G	TO−220AC (Pb−Free)	50 Units / Rail
MUR840G	TO−220AC (Pb−Free)	50 Units / Rail
SUR8840G	TO−220AC (Pb−Free)	50 Units / Rail
MUR860G	TO−220AC (Pb−Free)	50 Units / Rail
MURF860G	TO−220FP (Pb−Free)	50 Units / Rail

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MUR805G, MUR810G, MUR815G, MUR820G, MUR840G, MUR860G, MURF860G, SUR8820G, SUR8840G

PACKAGE DIMENSIONS

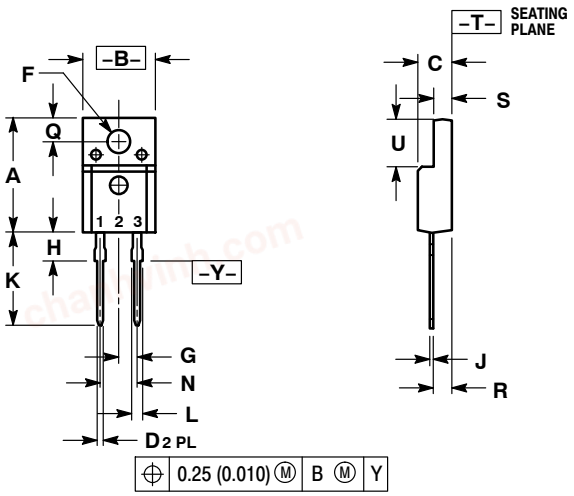
TO−220AC TWO−LEAD
CASE 221B−04
ISSUE E



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.595	0.620	15.11	15.75
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.82
D	0.025	0.035	0.64	0.89
F	0.142	0.161	3.61	4.09
G	0.190	0.210	4.83	5.33
H	0.110	0.130	2.79	3.30
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.14	1.52
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.14	1.39
T	0.235	0.255	5.97	6.48
U	0.000	0.050	0.000	1.27

TO−220 FULLPAK, 2−LEAD
CASE 221E−01
ISSUE A



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.617	0.633	15.67	16.07
B	0.392	0.408	9.96	10.36
C	0.177	0.193	4.50	4.90
D	0.024	0.039	0.60	1.00
F	0.121	0.129	3.08	3.28
G	0.100 BSC		2.54 BSC	
H	0.117	0.133	2.98	3.38
J	0.018	0.025	0.45	0.64
K	0.499	0.562	12.68	14.27
L	0.045	0.060	1.14	1.52
N	0.200 BSC		5.08 BSC	
Q	0.122	0.138	3.10	3.50
R	0.101	0.117	2.56	2.96
S	0.092	0.108	2.34	2.74
U	0.255	0.271	6.48	6.88

STYLE 1:
PIN 1. CATHODE
2. N/A
3. ANODE

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