MUR1510, MUR1515, MUR1520, MUR1540, MUR1560, MURF1560

Preferred Devices

SWITCHMODE™ Power Rectifiers

These state−of−the−art devices are a series designed for use in switching power supplies, inverters and as free wheeling diodes.

Features

- Ultrafast 35 and 60 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- High Voltage Capability to 600 V
- Low Forward Drop
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating Specified @ Both Case and Ambient Temperatures
- Pb−Free Packages are Available*

Mechanical Characteristics:

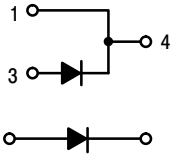
- Case: Epoxy, Molded
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

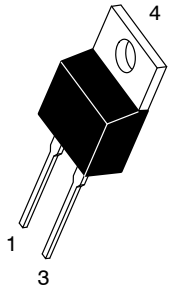
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

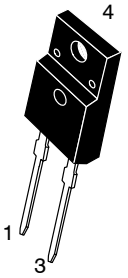
http://onsemi.com

ULTRAFAST RECTIFIERS 15 AMPERES, 100−600 VOLTS



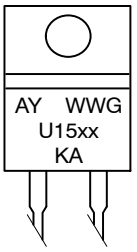


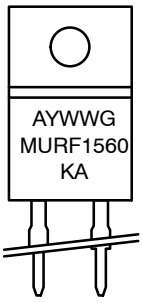
TO−220AC
CASE 221B
STYLE 1



TO−220 FULLPAK
CASE 221E
STYLE 1

MARKING DIAGRAMS





A	= Assembly Location
Y	= Year
WW	= Work Week
G	= Pb−Free Package
U15xx	= Device Code xx = 10, 15, 20, 40 or 60
KA	= Diode Polarity

ORDERING INFORMATION

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

Preferred devices are recommended choices for future use and best overall value.

MAXIMUM RATINGS

Rating	Symbol	MUR					Unit
		1510	1515	1520	1540	1560	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	100	150	200	400	600	V
Average Rectified Forward Current (Rated V_R)	$I_{F(AV)}$	15 @ T_C = 150°C				15 @ T_C = 145°C	A
Peak Rectified Forward Current (Rated V_R, Square Wave, 20 kHz)	I_{FRM}	30 @ T_C = 150°C				30 @ T_C = 145°C	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	200			150		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

Parameter	Symbol	Value	Unit
MUR1510 Series: Thermal Resistance Junction−to−Case Junction−to−Ambient	 $R_{\theta JC}$ $R_{\theta JA}$	 1.5 73	°C/W
MURF1560: Thermal Resistance Junction−to−Case Junction−to−Ambient	 $R_{\theta JC}$ $R_{\theta JA}$	 4.25 75	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	1510	1515	1520	1540	1560	Unit
Maximum Instantaneous Forward Voltage (Note 1) (i_F = 15 A, T_C = 150°C) (i_F = 15 A, T_C = 25°C)	v_F	0.85 1.05			1.12 1.25	1.20 1.50	V
Maximum Instantaneous Reverse Current (Note 1) (Rated DC Voltage, T_C = 150°C) (Rated DC Voltage, T_C = 25°C)	i_R	500 10			500 10	1000 10	μA
Maximum Reverse Recovery Time (I_F = 1.0 A, di/dt = 50 A/μs)	t_{rr}	35			60		ns

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

MUR1510, MUR1515, MUR1520

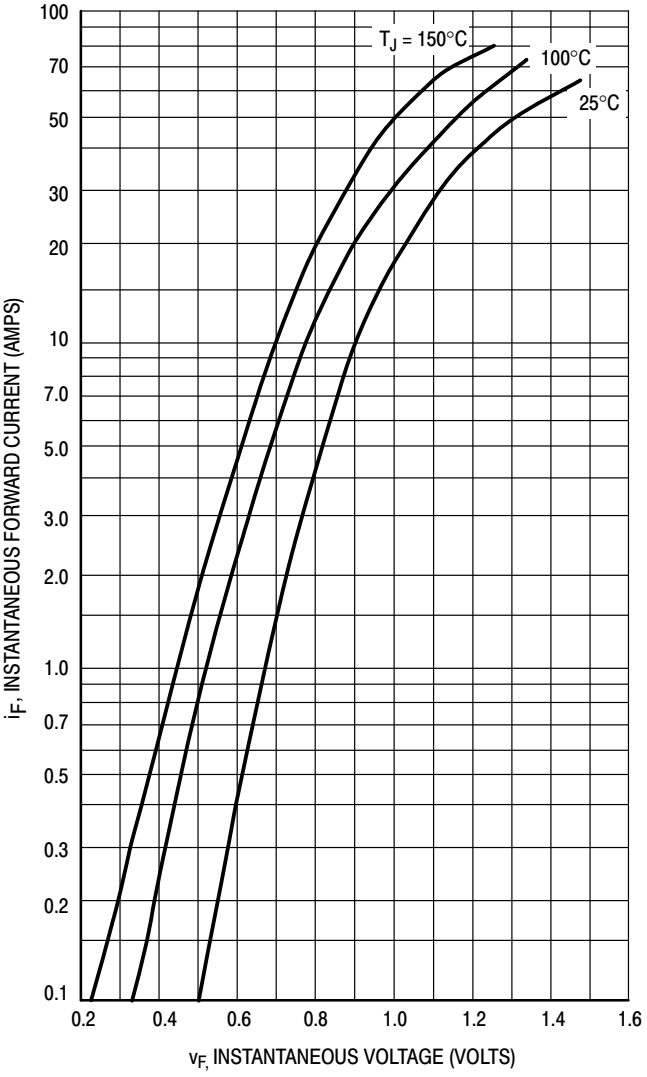


Figure 1. Typical Forward Voltage

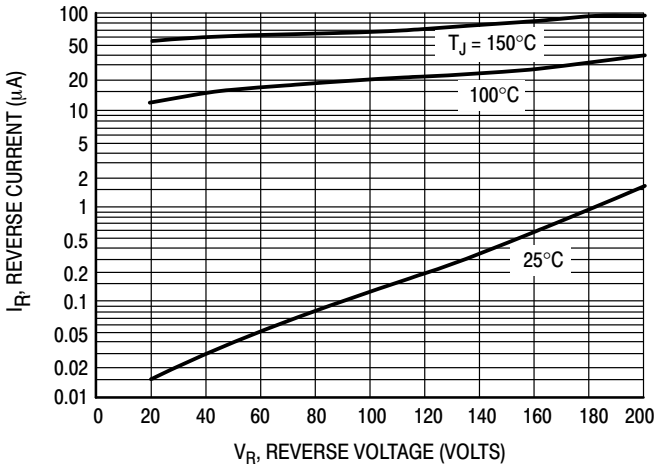


Figure 2. Typical Reverse Current

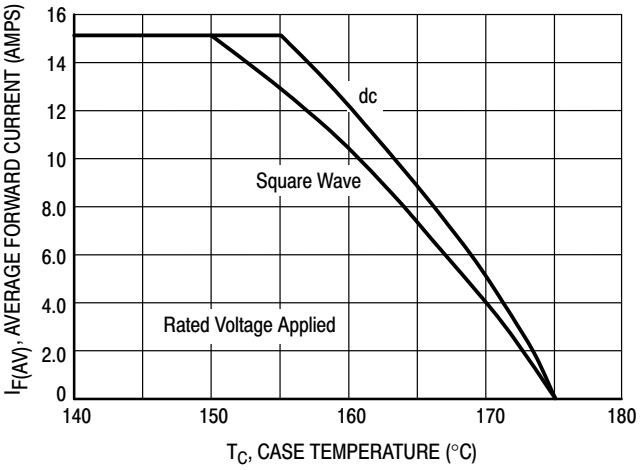


Figure 3. Current Derating, Case

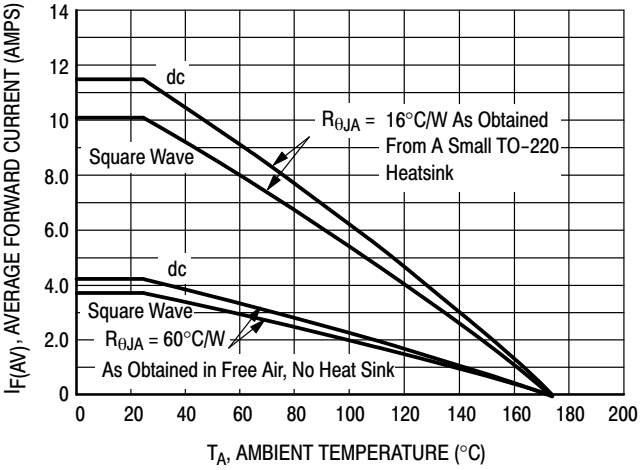


Figure 4. Current Derating, Ambient

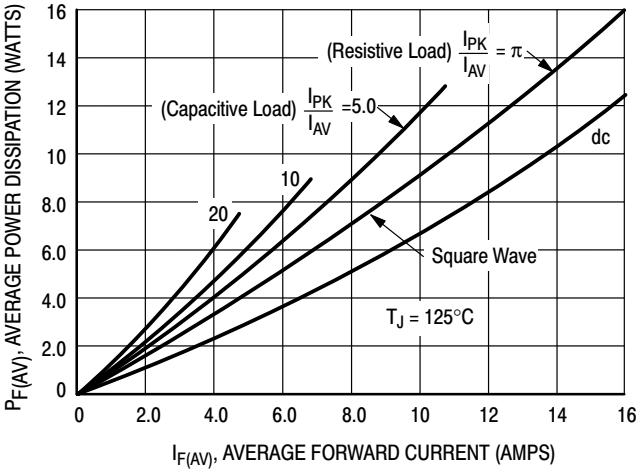


Figure 5. Power Dissipation

MUR1540

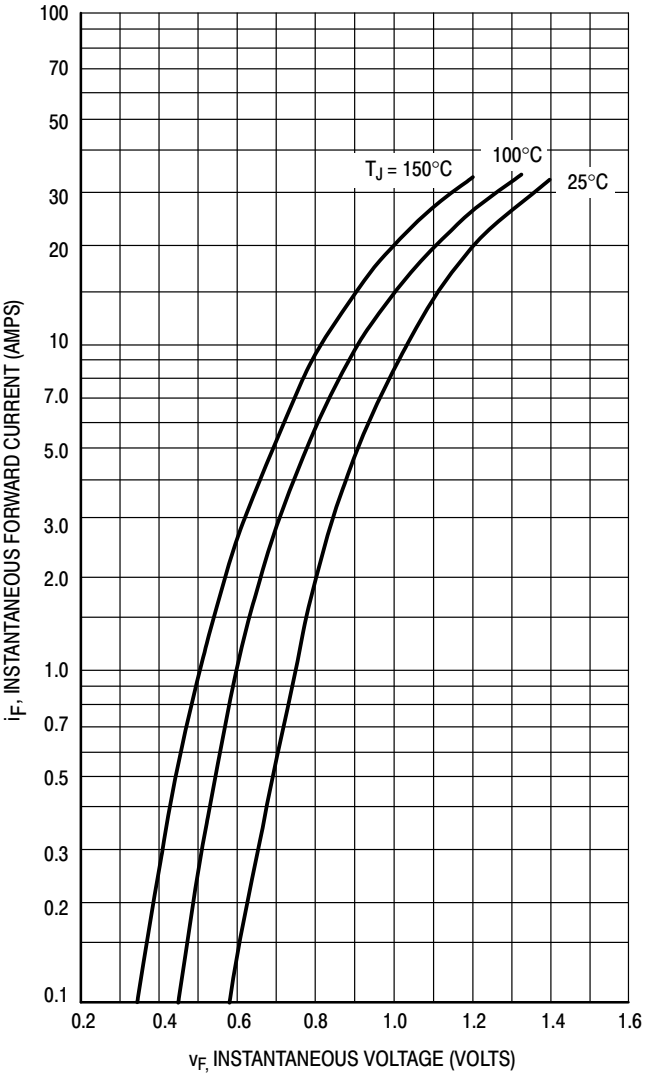


Figure 6. Typical Forward Voltage

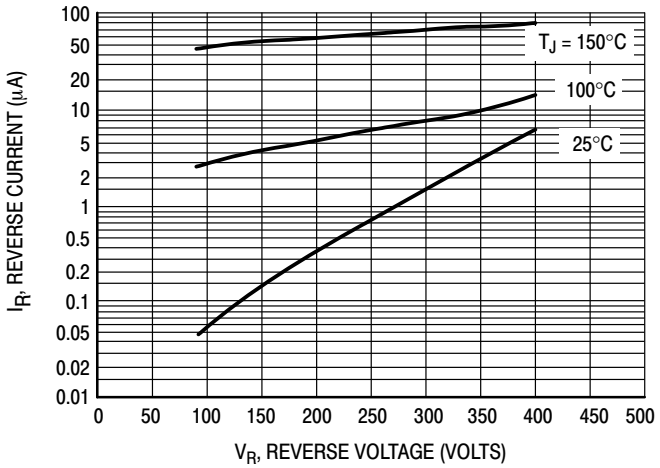


Figure 7. Typical Reverse Current

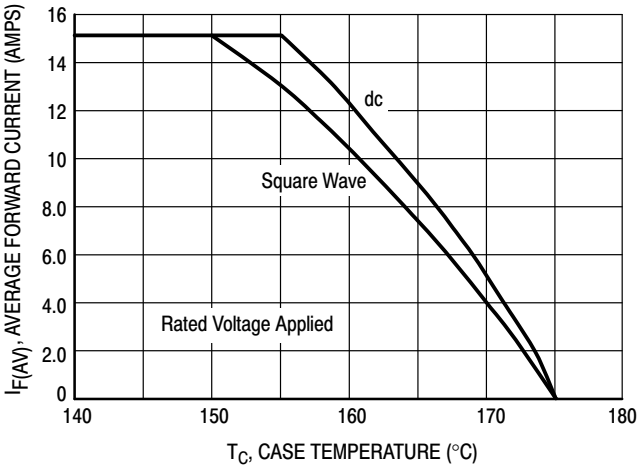


Figure 8. Current Derating, Case

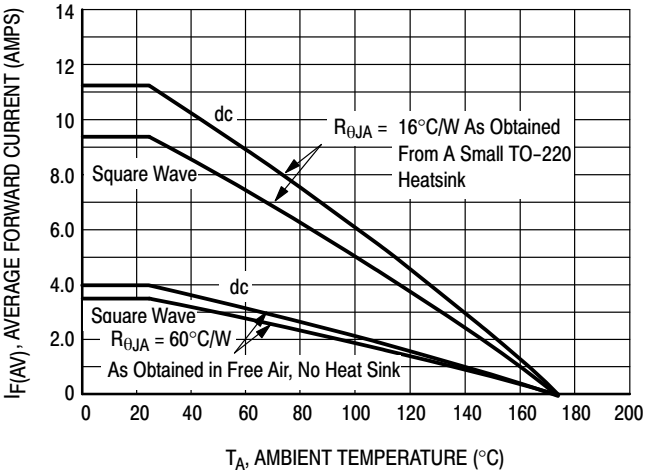


Figure 9. Current Derating, Ambient

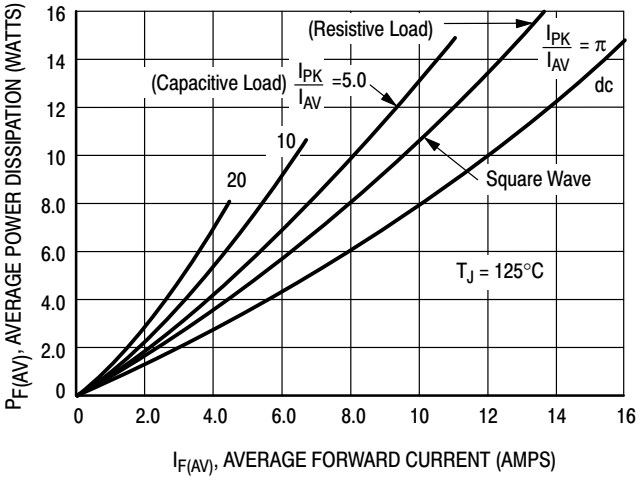


Figure 10. Power Dissipation

MUR1560, MURF1560

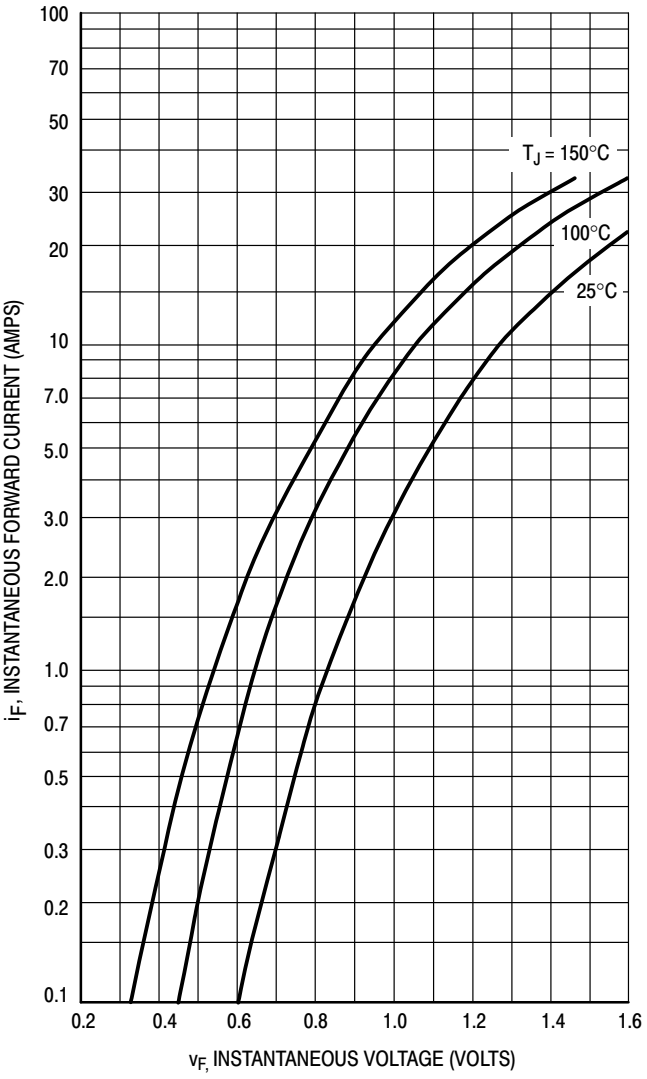


Figure 11. Typical Forward Voltage

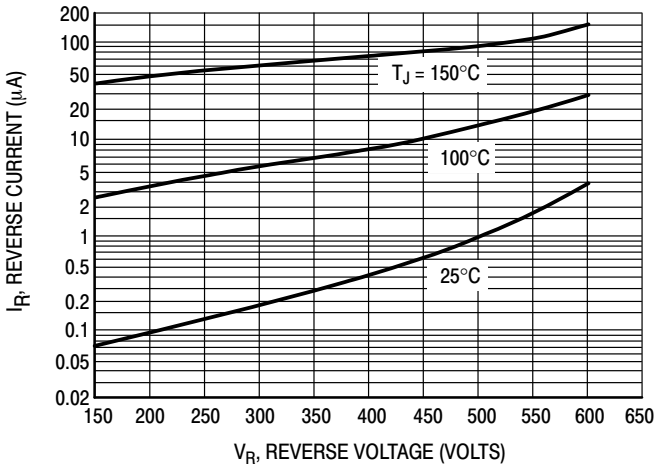


Figure 12. Typical Reverse Current

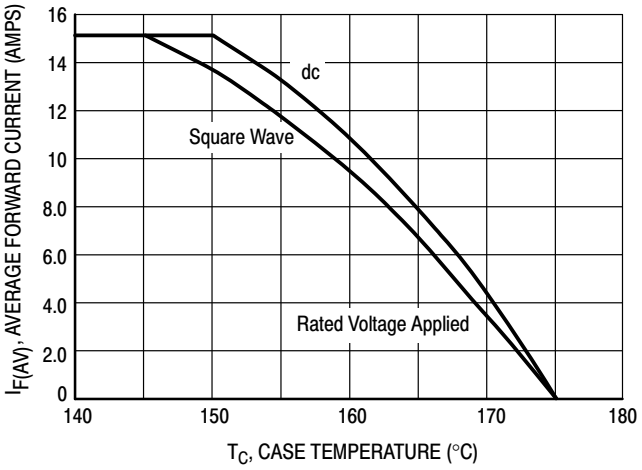


Figure 13. Current Derating, Case

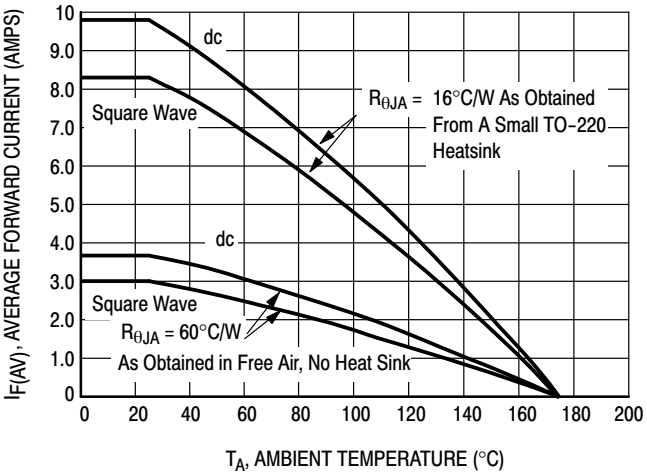


Figure 14. Current Derating, Ambient

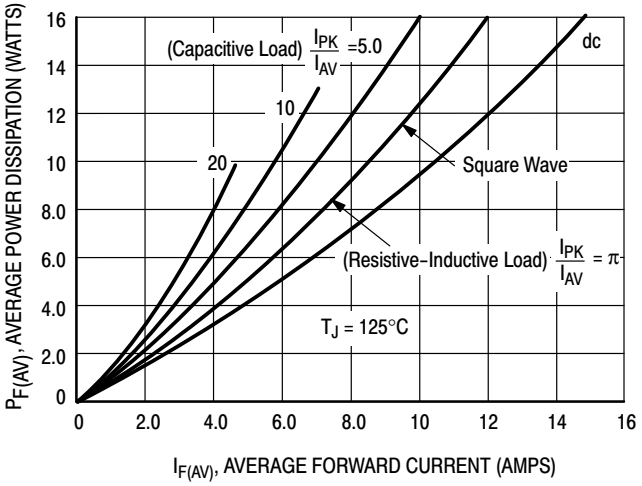


Figure 15. Power Dissipation

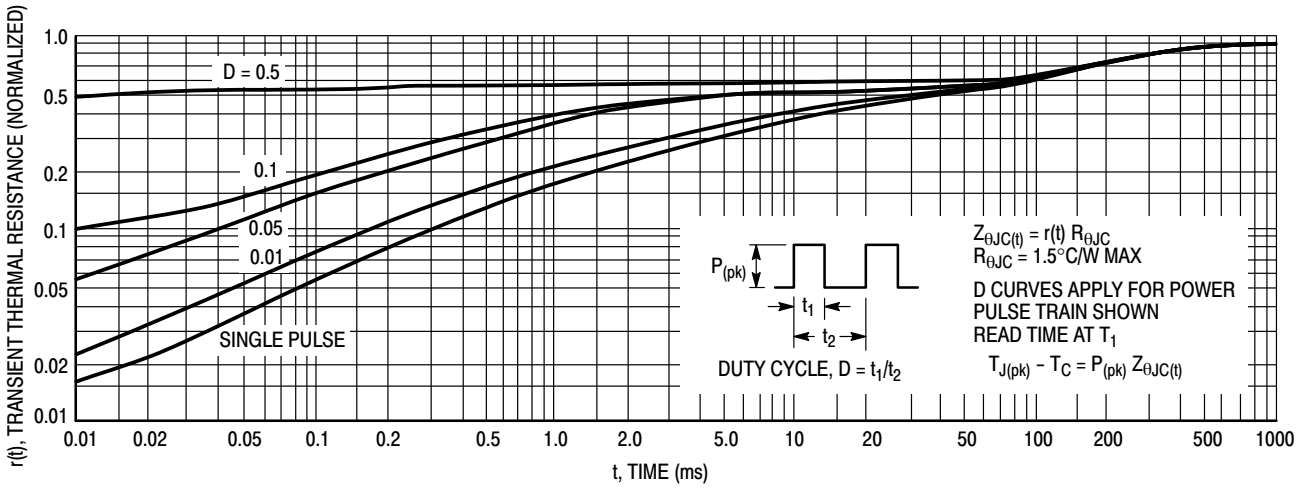


Figure 16. Thermal Response

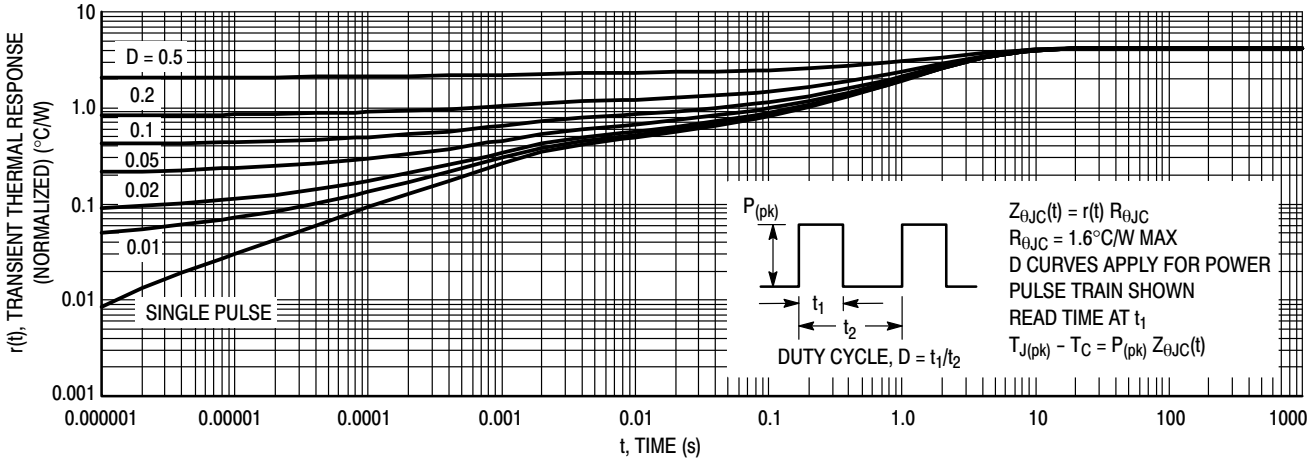


Figure 17. Thermal Response, (MURF1560) Junction−to−Case ($R_{\theta JC}$)

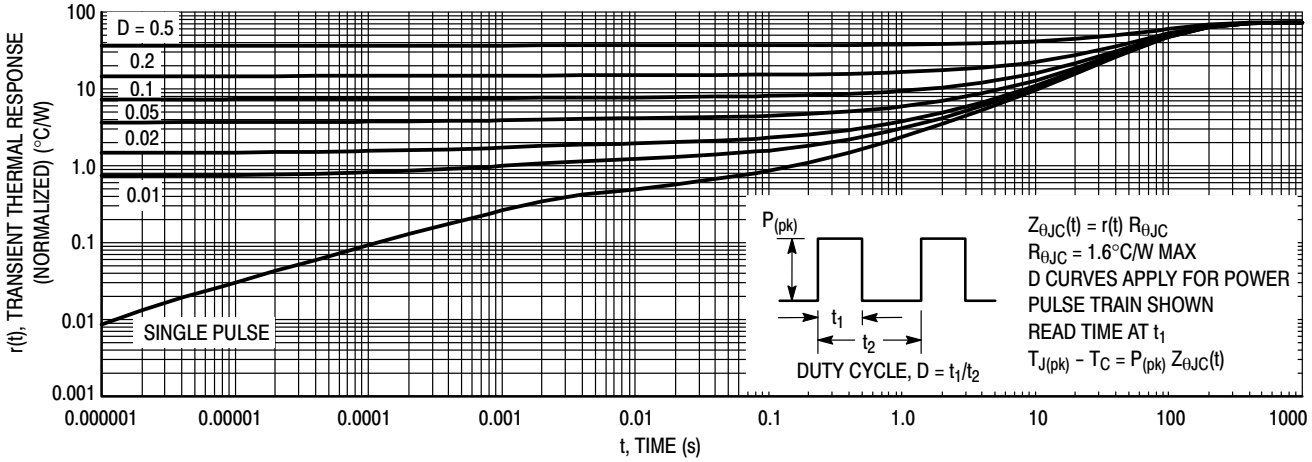


Figure 18. Thermal Response, (MURF1560) Junction−to−Ambient ($R_{\theta JA}$)

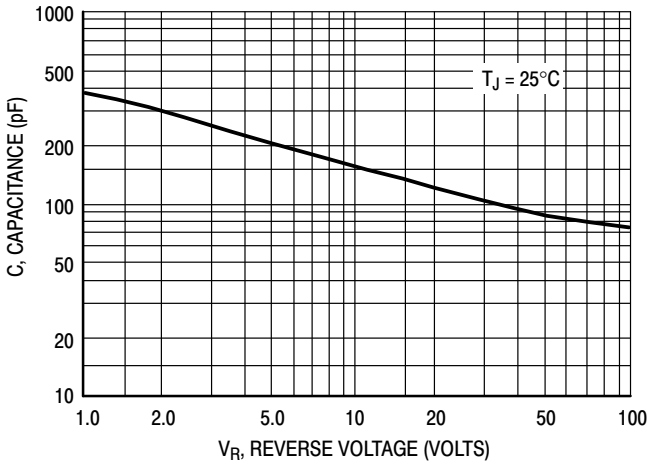


Figure 19. Typical Capacitance

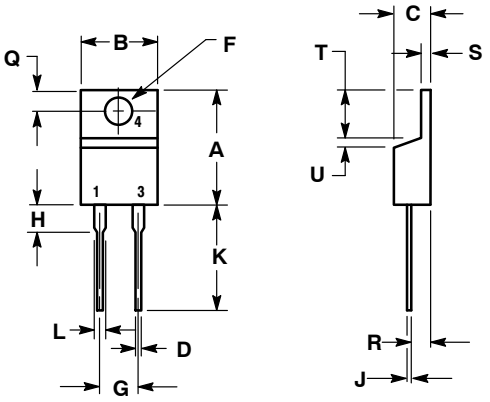
ORDERING INFORMATION

Device	Package	Shipping†
MUR1510	TO−220AC	50 Units / Rail
MUR1510G	TO−220AC (Pb−Free)	
MUR1515	TO−220AC	
MUR1515G	TO−220AC (Pb−Free)	
MUR1520	TO−220AC	
MUR1520G	TO−220AC (Pb−Free)	
MUR1540	TO−220AC	
MUR1540G	TO−220AC (Pb−Free)	
MUR1560	TO−220AC	
MUR1560G	TO−220AC (Pb−Free)	
MURF1560G	TO−220FP (Pb−Free)	

†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.

PACKAGE DIMENSIONS

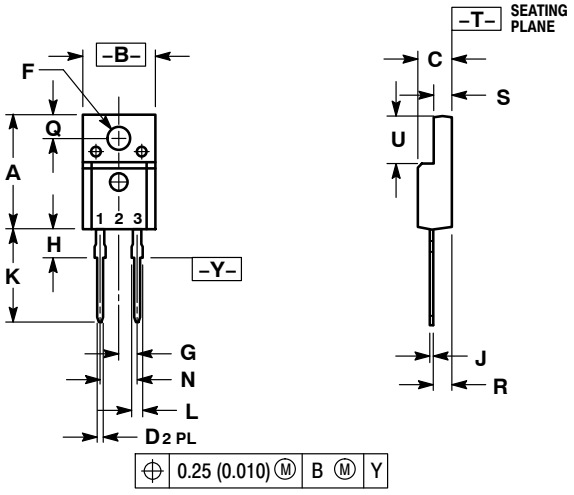
TO−220 TWO−LEAD
CASE 221B−04
ISSUE E



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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PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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