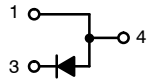
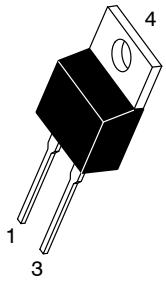
Switch-mode Ultrafast Power Rectifier

MUR2020R

ULTRAFAST RECTIFIER
20 AMPERES, 200 VOLTS
t_{rr} = 95 ns





TO−220AC
CASE 221B
STYLE 2

Features and Benefits

- Reverse Polarity Rectifier
- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- These are Pb−Free Devices*

Applications

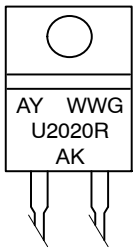
- Power Supply – Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94, V−0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperatures for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B
  Machine Model C

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

MARKING DIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
G	= Pb−Free Package
AK	= Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping
MUR2020RG	TO−220AC (Pb−Free)	50 Units / Rail

†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	200	V
Average Rectified Forward Voltage, (Rated V_R), T_C = 125°C	$I_{F(AV)}$	20	A
Peak Repetitive Forward Current (Rated V_R), T_C = 125°C	I_{FRM}	40	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	250	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	Conditions	Symbol	Max	Unit
Maximum Thermal Resistance, Junction−to−Case	Min. Pad	$R_{\theta JC}$	2.0	°C/W
Maximum Thermal Resistance, Junction−to−Ambient	Min. Pad	$R_{\theta JA}$	70	

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typical	Max	Unit
Instantaneous Forward Voltage (Note 1) (i_F = 20 Amps, T_j = 25°C) (i_F = 20 Amps, T_j = 150°C)	v_F	 − −	 0.97 0.79	 1.1 1.0	V
Instantaneous Reverse Current (Note 1) (Rated dc Voltage, Tj = 25°C) (Rated dc Voltage, Tj = 150°C)	i_R	 − −	 0.1 0.225	 50 1.0	 μA mA
Maximum Reverse Recovery Time (I_F = 1.0 Amps, di/dt = 50 A/μs) (I_F = 1.0 Amps, di/dt = 100 A/μs)	t_{rr}	 − −	 − −	 95 75	ns

1. Pulse Test: Pulse Width = 5.0 ms, Duty Cycle ≤10%.

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TYPICAL CHARACTERISTICS

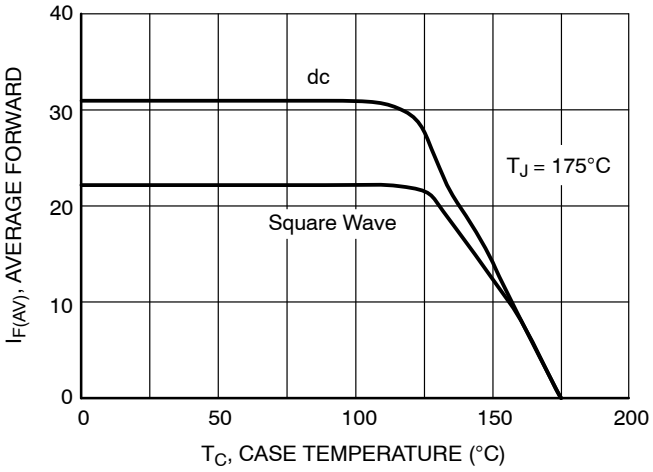

Figure 1. Current Derating

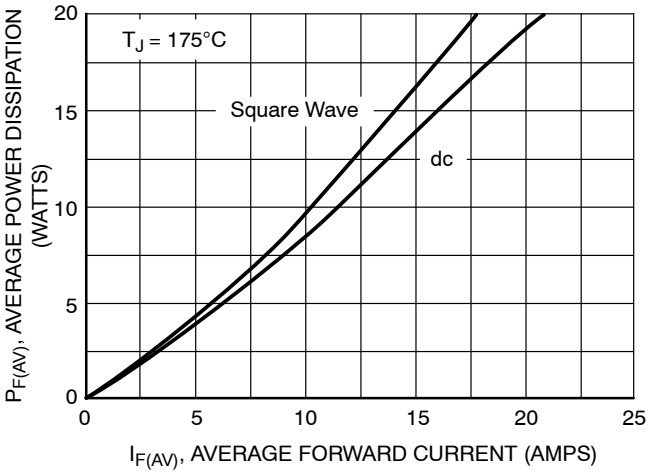

Figure 2. Power Dissipation

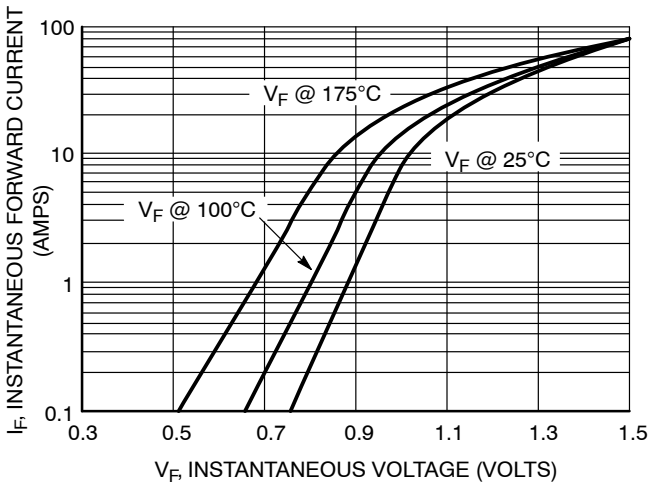

Figure 3. Maximum Forward Voltage

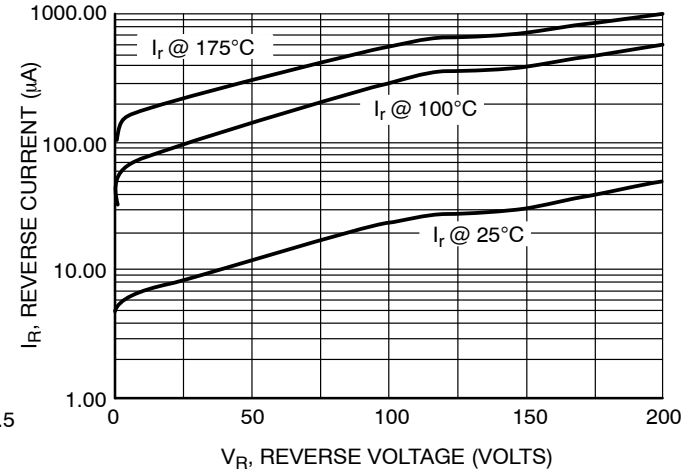

Figure 4. Maximum Reverse Current

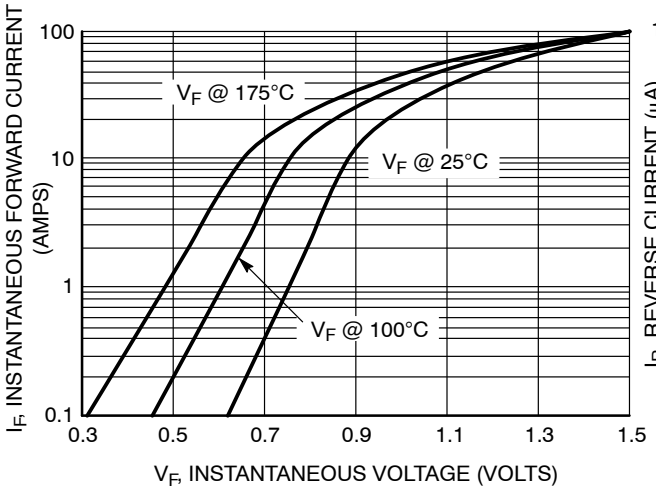

Figure 5. Typical Forward Voltage

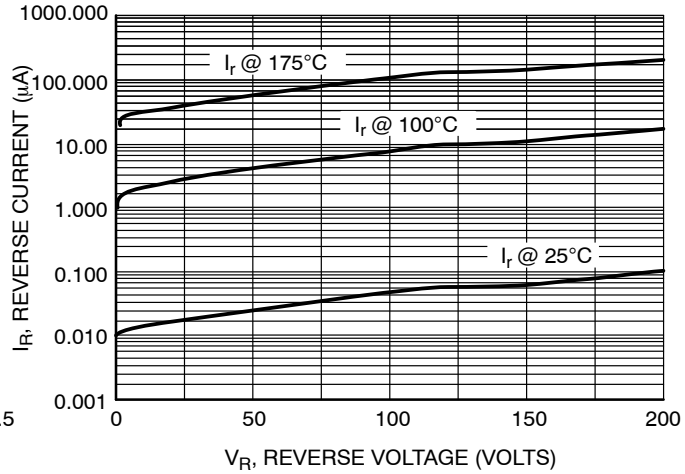

Figure 6. Typical Reverse Current

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TYPICAL CHARACTERISTICS

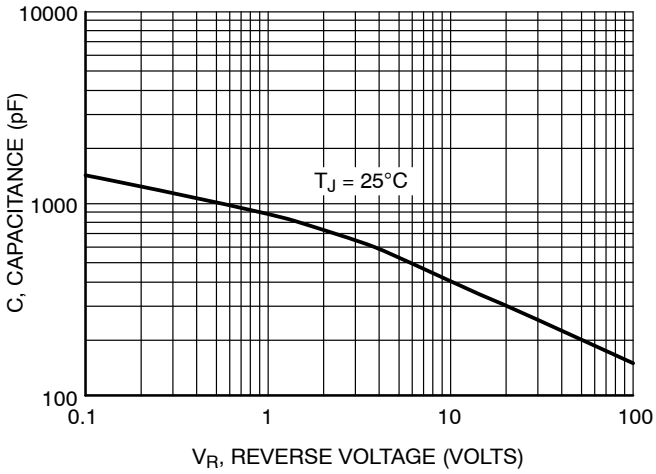

Figure 7. Maximum Capacitance

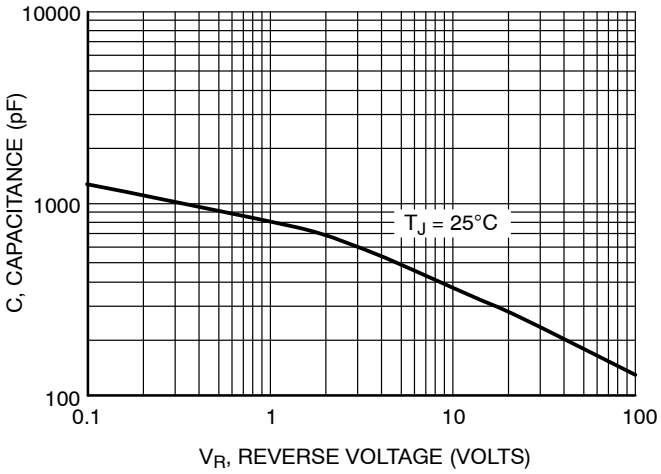

Figure 8. Typical Capacitance

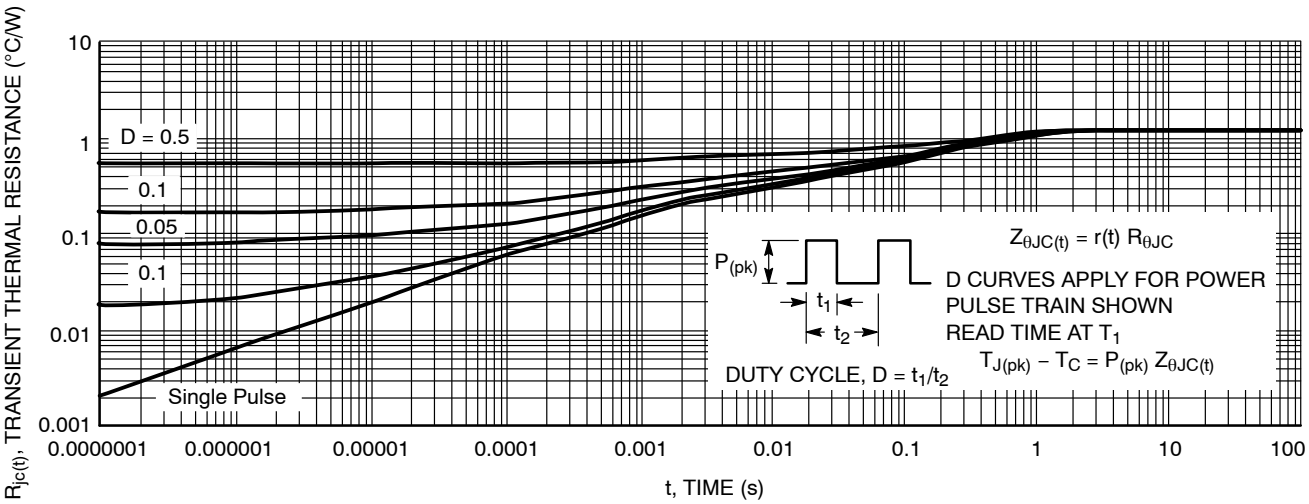

Figure 9. Thermal Response

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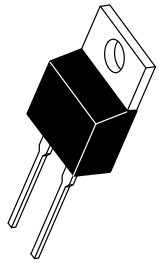
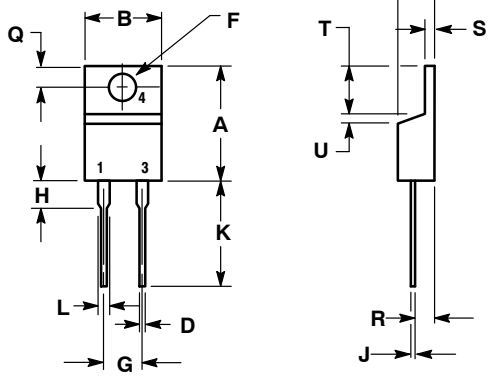
TO−220, 2−LEAD
CASE 221B−04
ISSUE F

DATE 12 APR 2013



SCALE 1:1



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	0.039	0.64	1.00
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

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

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

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