

# MUR1620CTR, MURB1620CTR

Preferred Device

## SWITCHMODE™ Power Rectifier

These state-of-the-art devices are designed for use in negative switching power supplies, inverters and as free wheeling diodes. Also, used in conjunction with common cathode dual Ultrafast Rectifiers, makes a single phase full-wave bridge.

### Features

- Common Anode Dual Rectifier (8.0 A per Leg or 16 A per Package)
- Ultrafast 35 Nanosecond Reverse Recovery Times
- Exhibits Soft Recovery Characteristics
- High Temperature Glass Passivated Junction
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating @ Both Case and Ambient Temperatures
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Complement to MUR1620CT and MURB1620CT Common Cathode Device
- Pb-Free Packages are Available

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: MUR1620CTR: 1.9 Grams (Approximately)  
MURB1620CTR: 1.7 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

### MAXIMUM RATINGS (Per Leg)

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 $V_R$ , $T_C = 160^\circ\text{C}$ ) Per Leg Per Total Device	$I_{F(AV)}$	8.0 16	A
Peak Repetitive Surge Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 140^\circ\text{C}$ ) Per Diode	$I_{FM}$	16	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	100	A
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-65 to +175	°C

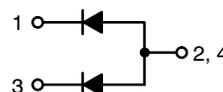
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



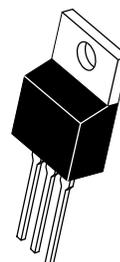
ON Semiconductor®

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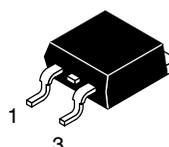
## ULTRAFAST RECTIFIER 16 AMPERES, 200 VOLTS



### MARKING DIAGRAMS



TO-220AB  
CASE 221A  
STYLE 7



D²PAK  
CASE 418B  
STYLE 5



U1620R = Device Code  
KAK = Diode Polarity  
A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Package

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

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

# MUR1620CTR, MURB1620CTR

## THERMAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.0	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient (D <sup>2</sup> PAK)	$R_{\theta JA}$	45	$^{\circ}\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 1) ( $i_F = 8.0$ Amps, $T_C = 25^{\circ}\text{C}$ ) ( $i_F = 8.0$ Amps, $T_C = 150^{\circ}\text{C}$ )	$v_F$	1.2 1.1	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_C = 25^{\circ}\text{C}$ ) (Rated dc Voltage, $T_C = 150^{\circ}\text{C}$ )	$i_R$	5.0 500	$\mu\text{A}$
Maximum Reverse Recovery Time ( $I_F = 1.0$ Amp, $di/dt = 50$ Amps/ $\mu\text{s}$ ) ( $I_F = 0.5$ Amp, $di/dt = 100$ Amps/ $\mu\text{s}$ )	$t_{rr}$	85 35	ns

1. Pulse Test: Pulse Width = 5.0 ms, Duty Cycle  $\leq$  10%.

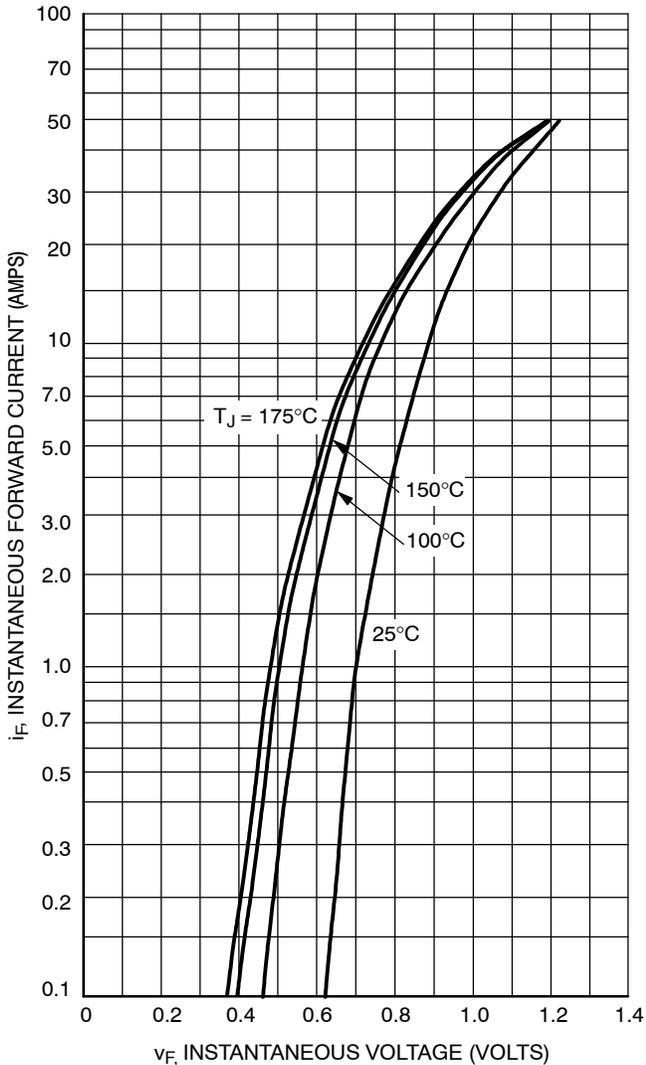


Figure 1. Typical Forward Voltage (Per Leg)

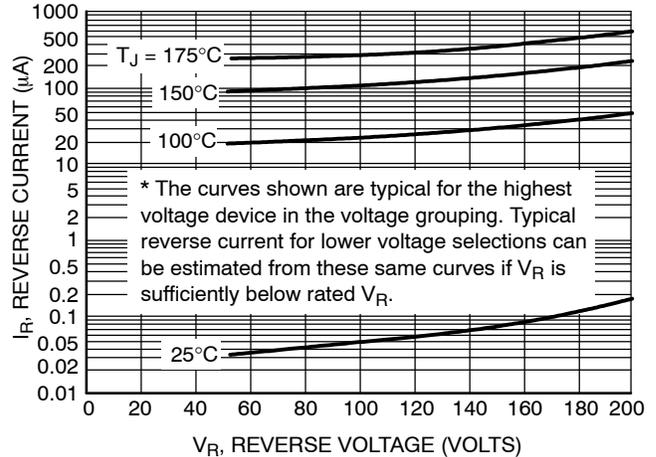


Figure 2. Typical Reverse Current\* (Per Leg)

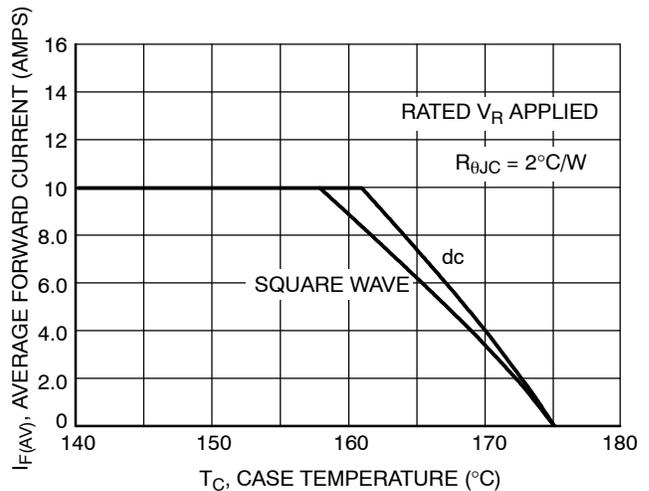


Figure 3. Current Derating, Case (Per Leg)

# MUR1620CTR, MURB1620CTR

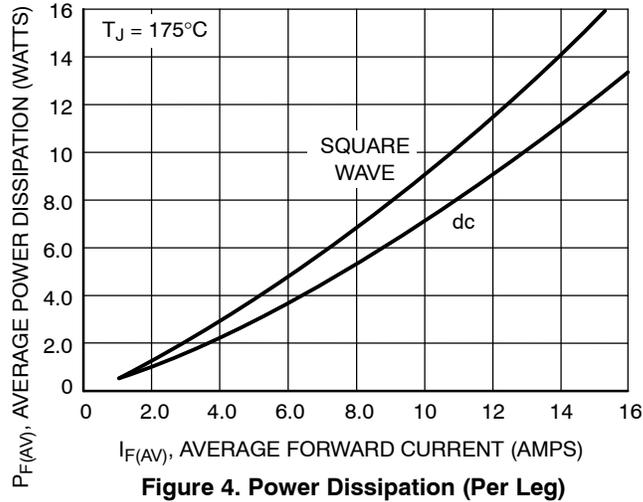


Figure 4. Power Dissipation (Per Leg)

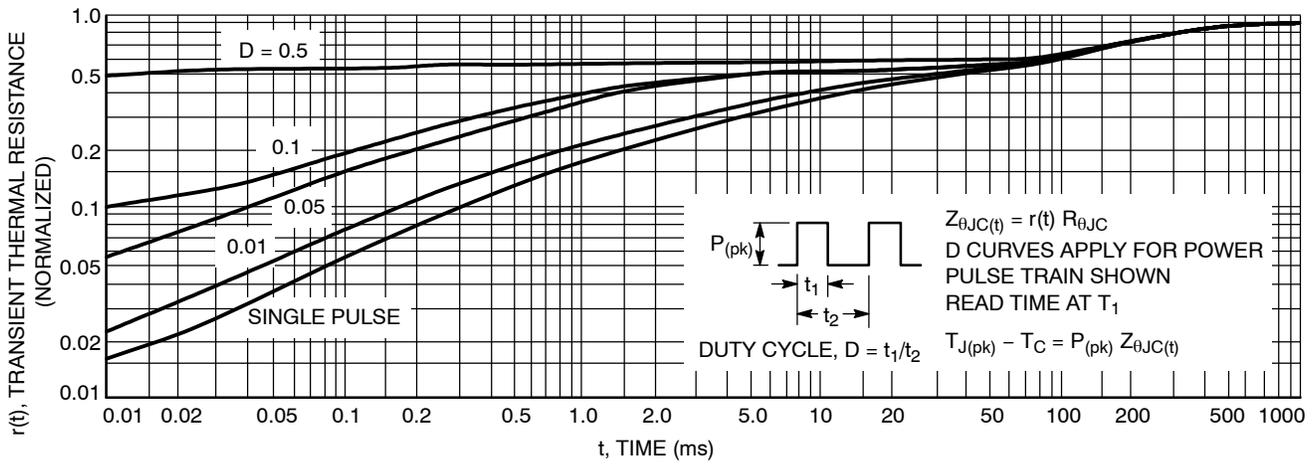


Figure 5. Thermal Response

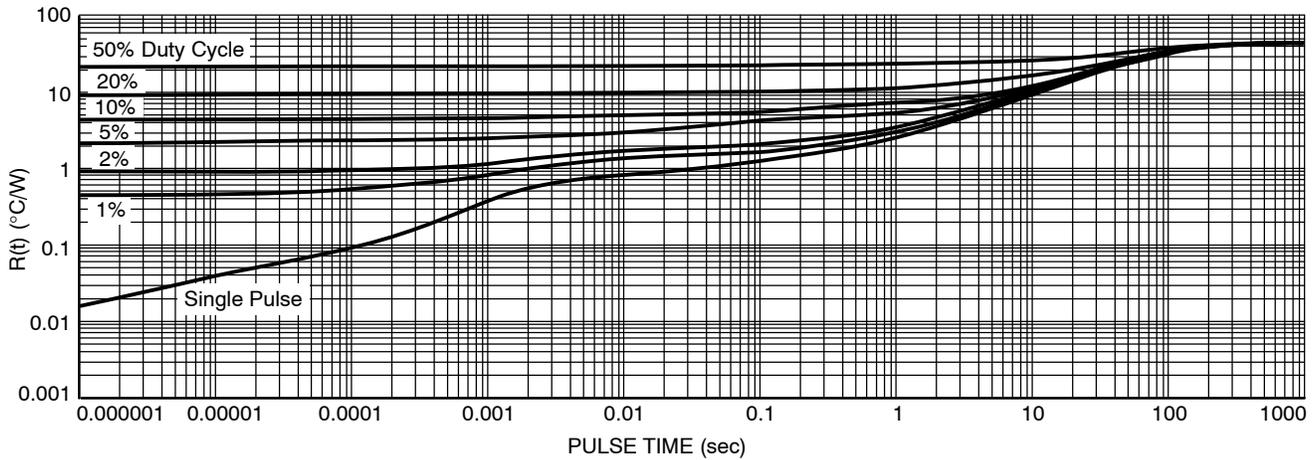
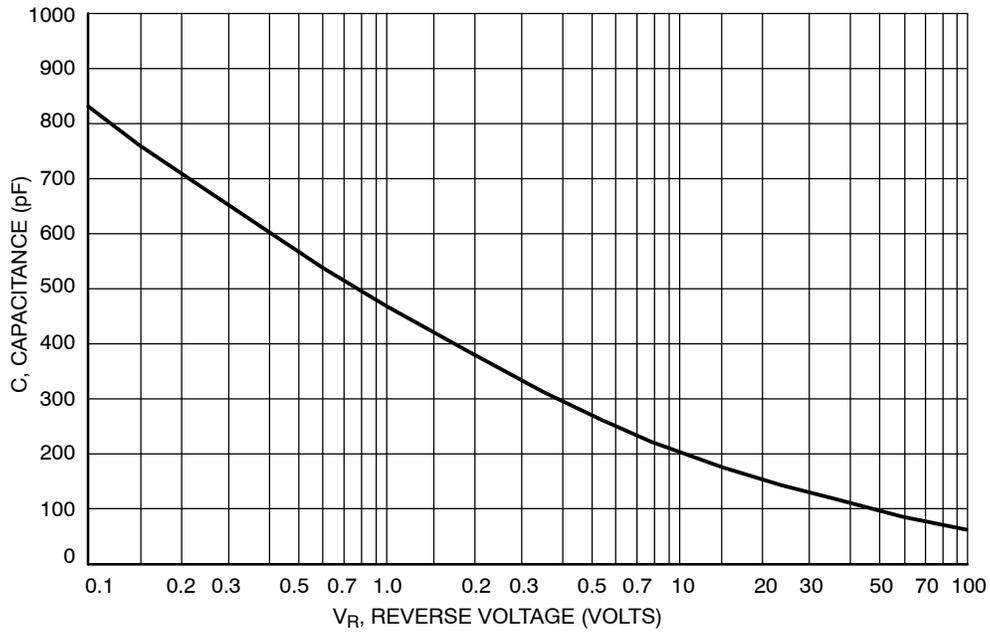


Figure 6. Thermal Response, Junction-to-Ambient

## MUR1620CTR, MURB1620CTR



**Figure 7. Typical Capacitance (Per Leg)**

### ORDERING INFORMATION

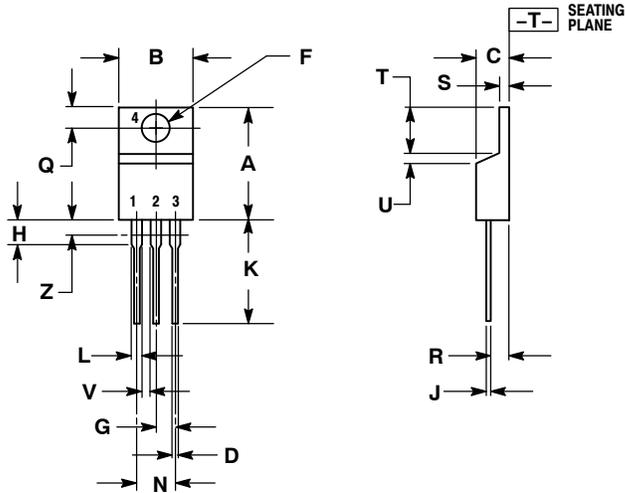
Device	Package	Shipping <sup>†</sup>
MUR1620CTR	TO-220	50 Units / Rail
MUR1620CTRG	TO-220 (Pb-Free)	50 Units / Rail
MURB1620CTR	D <sup>2</sup> PAK-3	50 Units / Rail
MURB1620CTRG	D <sup>2</sup> PAK-3 (Pb-Free)	50 Units / Rail
MURB1620CTR4	D <sup>2</sup> PAK-3	800 / Tape & Reel
MURB1620CTR4G	D <sup>2</sup> PAK-3 (Pb-Free)	800 / Tape & Reel

<sup>†</sup>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.

# MUR1620CTR, MURB1620CTR

## PACKAGE DIMENSIONS

TO-220  
CASE 221A-09  
ISSUE AF



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

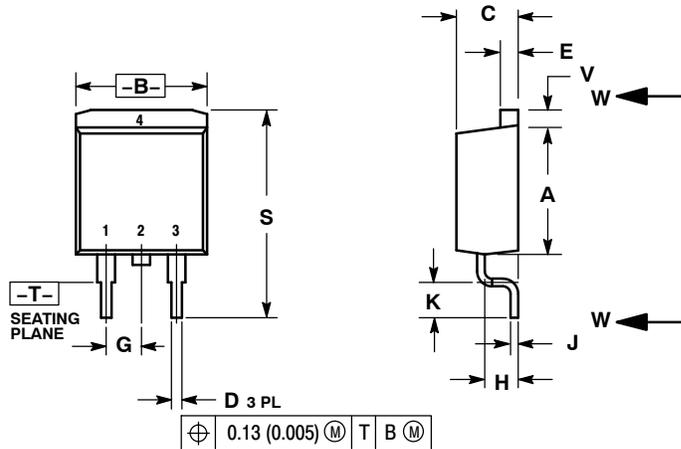
STYLE 7:

1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

# MUR1620CTR, MURB1620CTR

## PACKAGE DIMENSIONS

D<sup>2</sup>PAK-3  
CASE 418B-04  
ISSUE J



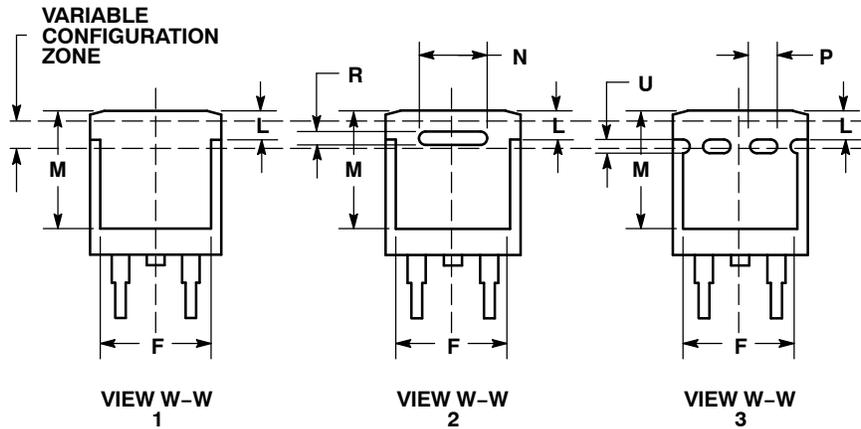
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
F	0.310	0.350	7.87	8.89
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.090	0.110	2.29	2.79
L	0.052	0.072	1.32	1.83
M	0.280	0.320	7.11	8.13
N	0.197 REF		5.00 REF	
P	0.079 REF		2.00 REF	
R	0.039 REF		0.99 REF	
S	0.575	0.625	14.60	15.88
V	0.045	0.055	1.14	1.40

STYLE 5:

- PIN 1. CATHODE
- ANODE
- CATHODE
- ANODE



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