

# Switch-mode™ Power Rectifiers

**MUR105, MUR110, MUR115, MUR120,  
MUR130, MUR140, MUR160**

The MUR120 series of SWITCHMODE power rectifiers are designed for use in switching power supplies, inverters and as free wheeling diodes.

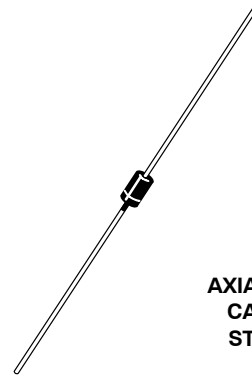
## Features

- Ultrafast 25, 50 and 75 Nanosecond Recovery Times
- 175 °C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 600 V
- Shipped in Plastic Bags; 1,000 per Bag
- Available Tape and Reel; 5,000 per Reel, by adding a “RL” Suffix to the Part Number
- These are Pb-Free Devices\*

## Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260 °C Max. for 10 Seconds
- Polarity: Cathode Indicated by Polarity Band

## ULTRAFast RECTIFIERS 1.0 AMPERE, 50 – 600 VOLTS



**AXIAL LEAD  
CASE 59  
STYLE 1**

## MARKING DIAGRAM



- A = Assembly Location
- MUR1xx = Specific Device Code
- Y = Year
- WW = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

## ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

\* For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, [SOLDERRM/D](#)

## MAXIMUM RATINGS

Rating	Symbol	MUR							Unit
		105	110	115	120	130	140	160	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	50	100	150	200	300	400	600	V
Average Rectified Forward Current (Square Wave Mounting Method #3 Per Note 2)	$I_{F(AV)}$	1.0 @ $T_A = 130\text{ }^\circ\text{C}$				1.0 @ $T_A = 120\text{ }^\circ\text{C}$			A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	$I_{FSM}$	35							A
Operating Junction Temperature and Storage Temperature	$T_J, T_{stg}$	- 65 to +175							$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Maximum Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	Note 2	$^\circ\text{C/W}$

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value		Unit
Maximum Instantaneous Forward Voltage (Note 1) ( $I_F = 1.0\text{ A}$ , $T_J = 150\text{ }^\circ\text{C}$ ) ( $I_F = 1.0\text{ A}$ , $T_J = 25\text{ }^\circ\text{C}$ )	$V_F$	0.710 0.875	1.05 1.25	V
Maximum Instantaneous Reverse Current (Note 1) (Rated DC Voltage, $T_J = 150\text{ }^\circ\text{C}$ ) (Rated DC Voltage, $T_J = 25\text{ }^\circ\text{C}$ )	$i_R$	50 2.0	150 5.0	$\mu\text{A}$
Maximum Reverse Recovery Time ( $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ ) ( $I_F = 0.5\text{ A}$ , $i_R = 1.0\text{ A}$ , $I_{REC} = 0.25\text{ A}$ )	$t_{rr}$	35 25	75 50	ns
Maximum Forward Recovery Time ( $I_F = 1.0\text{ A}$ , $di/dt = 100\text{ A}/\mu\text{s}$ , $I_{REC}$ to 1.0 V)	$t_{fr}$	25	50	ns
Typical Peak Reverse Recovery Current ( $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )	$I_{RM}$	0.85		A

1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

MUR105, MUR110, MUR115, MUR120

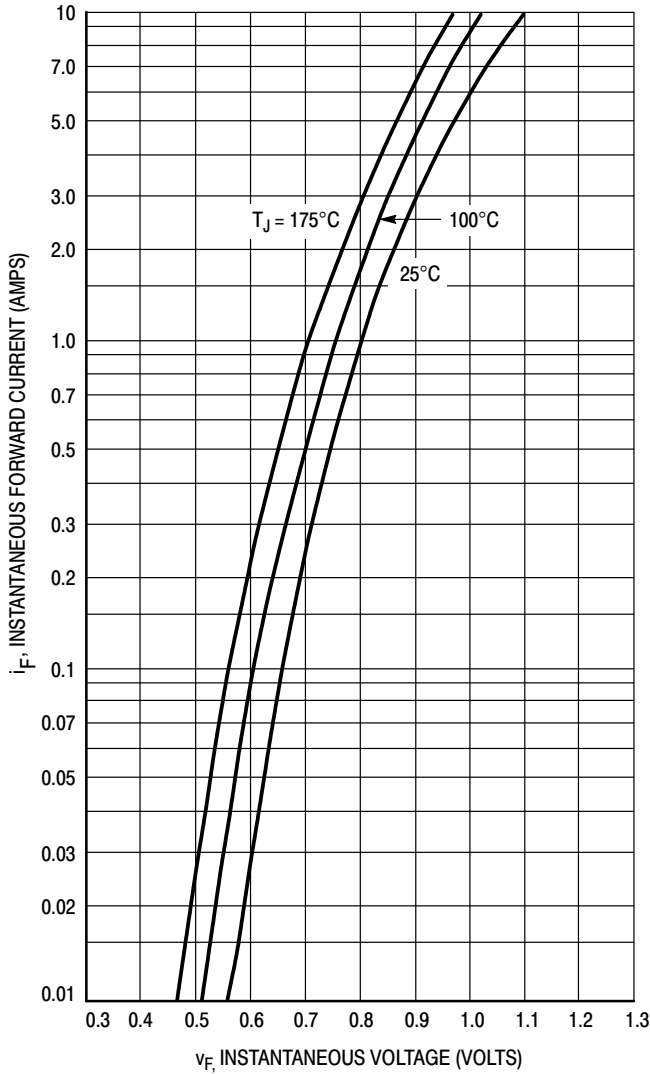


Figure 1. Typical Forward Voltage

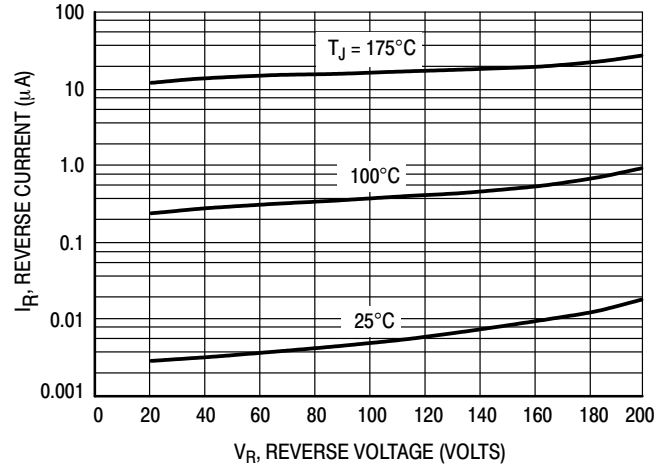


Figure 2. Typical Reverse Current\*

\* 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  $V_R$  is sufficiently below rated  $V_R$ .

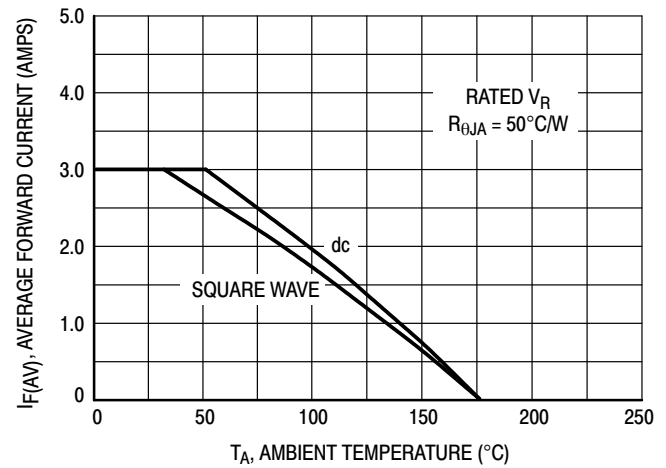


Figure 3. Current Derating  
(Mounting Method #3 Per Note 1)

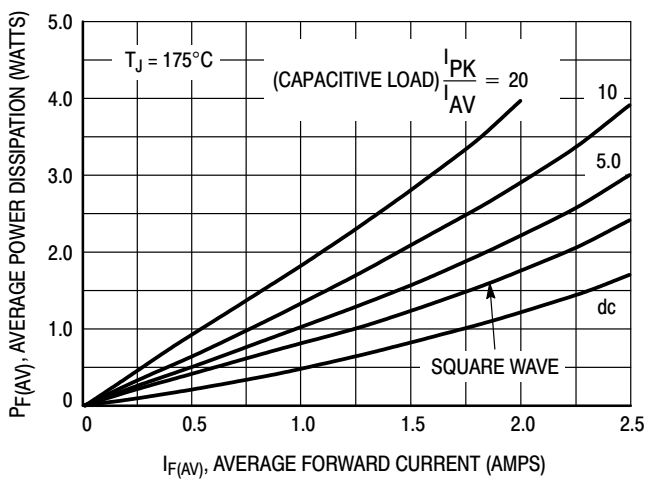


Figure 4. Power Dissipation

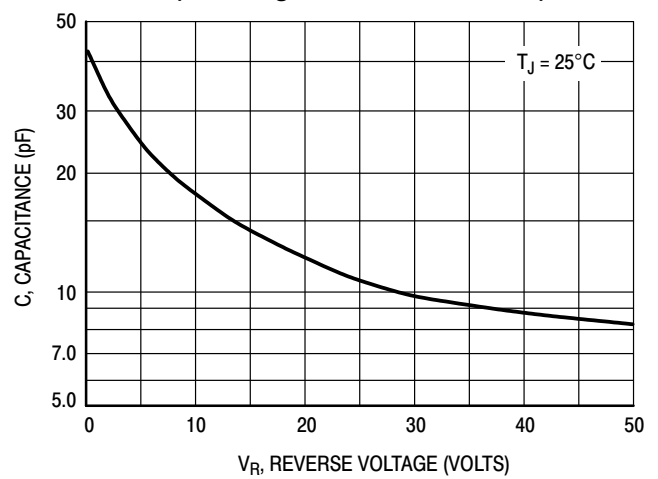


Figure 5. Typical Capacitance

MUR130, MUR140, MUR160

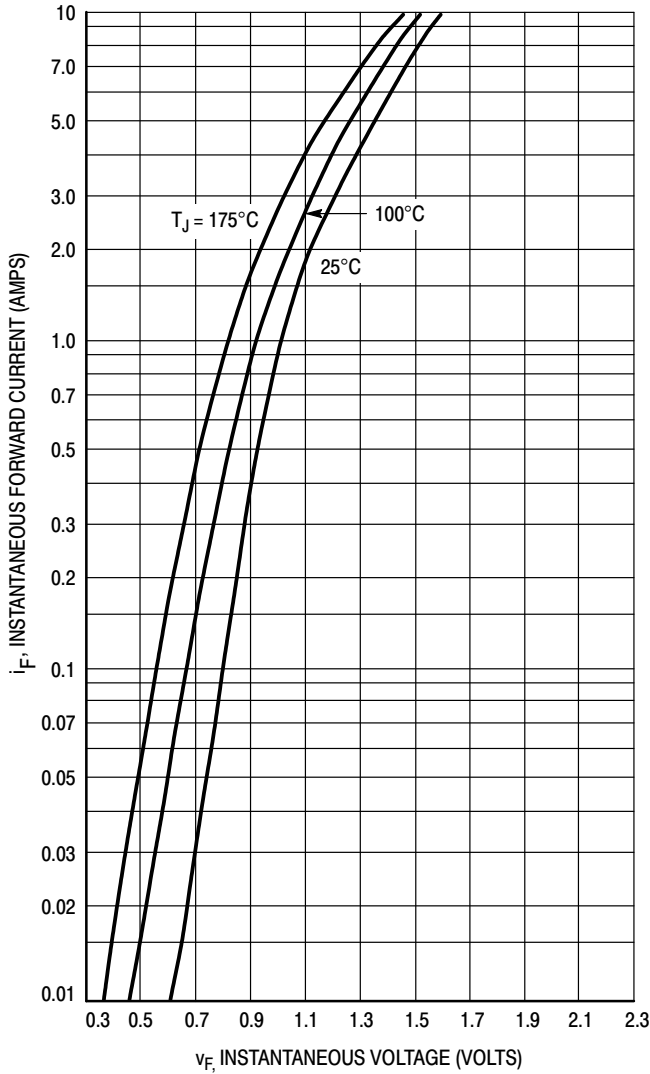


Figure 6. Typical Forward Voltage

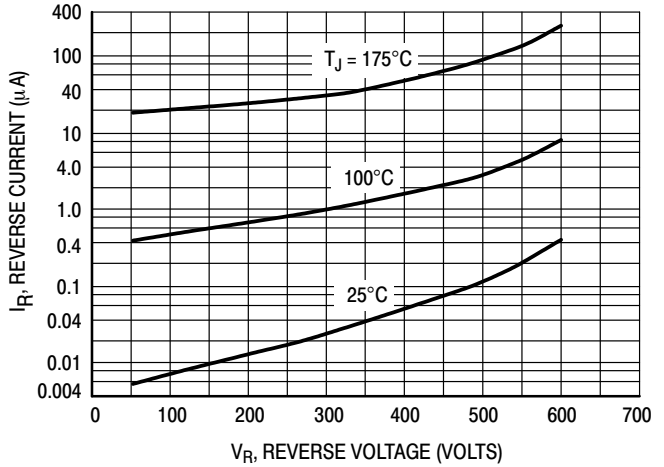


Figure 7. Typical Reverse Current\*

\* 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  $V_R$  is sufficiently below rated  $V_R$ .

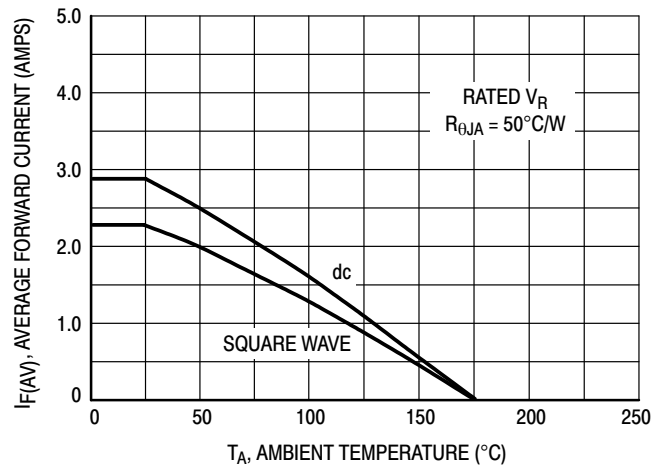


Figure 8. Current Derating (Mounting Method #3 Per Note 2)

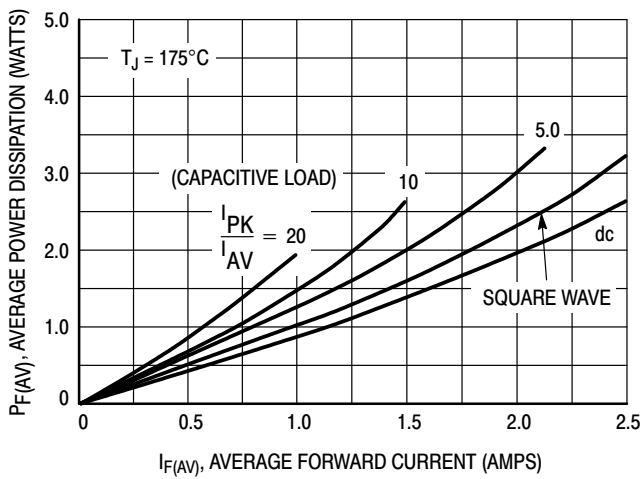


Figure 9. Power Dissipation

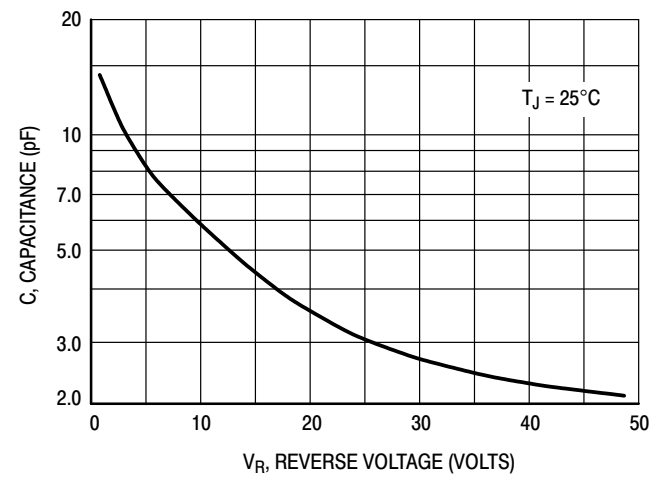


Figure 10. Typical Capacitance

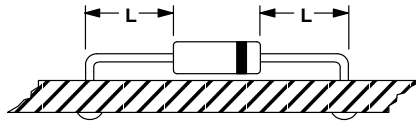
**NOTE 2. — AMBIENT MOUNTING DATA**

Data shown for thermal resistance, junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

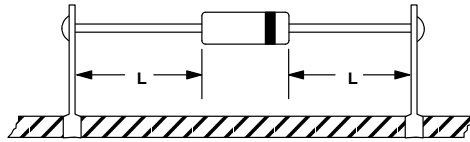
**TYPICAL VALUES FOR  $R_{\theta JA}$  IN STILL AIR**

Mounting Method	$R_{\theta JA}$	Lead Length, L (in.)			Units
		1/8	1/4	1/2	
1		52	65	72	$^{\circ}\text{C/W}$
2		67	80	87	$^{\circ}\text{C/W}$
3		50			$^{\circ}\text{C/W}$

**MOUNTING METHOD 1**

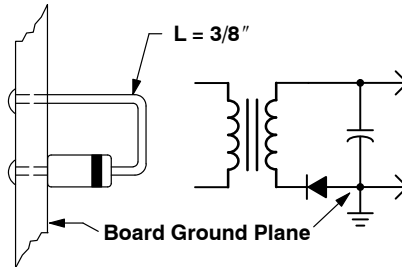


**MOUNTING METHOD 2**



**Vector Pin Mounting**

**MOUNTING METHOD 3**



**P.C. Board with  
1-1/2" X 1-1/2" Copper Surface**

## ORDERING INFORMATION

Device	Marking	Package	Shipping†
MUR110G	MUR110	Axial Lead*	1000 Units / Bag
MUR120G	MUR120	Axial Lead*	1000 Units / Bag
MUR120RLG	MUR120	Axial Lead*	5000 Units / Tape & Reel
MUR140RLG	MUR140	Axial Lead*	5000 Units / Tape & Reel
MUR160G	MUR160	Axial Lead*	1000 Units / Bag
MUR160RLG	MUR160	Axial Lead*	5000 Units / Tape & Reel

## DISCONTINUED (Note 2)

Device	Marking	Package	Shipping†
MUR105	MUR105	Axial Lead*	1000 Units / Bag
MUR105G	MUR105	Axial Lead*	1000 Units / Bag
MUR105RL	MUR105	Axial Lead*	5000 Units / Tape & Reel
MUR105RLG	MUR105	Axial Lead*	5000 Units / Tape & Reel
MUR110	MUR110	Axial Lead*	1000 Units / Bag
MUR110RL	MUR110	Axial Lead*	5000 Units / Tape & Reel
MUR110RLG	MUR110	Axial Lead*	5000 Units / Tape & Reel
MUR115	MUR115	Axial Lead*	1000 Units / Bag
MUR115G	MUR115	Axial Lead*	1000 Units / Bag
MUR115RL	MUR115	Axial Lead*	5000 Units / Tape & Reel
MUR115RLG	MUR115	Axial Lead*	5000 Units / Tape & Reel
MUR120	MUR120	Axial Lead*	1000 Units / Bag
MUR120RL	MUR120	Axial Lead*	5000 Units / Tape & Reel
MUR130	MUR130	Axial Lead*	1000 Units / Bag
MUR130G	MUR130	Axial Lead*	1000 Units / Bag
MUR130RL	MUR130	Axial Lead*	5000 Units / Tape & Reel
MUR130RLG	MUR130	Axial Lead*	5000 Units / Tape & Reel
MUR140	MUR140	Axial Lead*	1000 Units / Bag
MUR140G	MUR140	Axial Lead*	1000 Units / Bag
MUR140RL	MUR140	Axial Lead*	5000 Units / Tape & Reel
MUR160	MUR160	Axial Lead*	1000 Units / Bag
MUR160RL	MUR160	Axial Lead*	5000 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](#).

\* NLV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable.

2. **DISCONTINUED:** This device is not available. Please contact your **onsemi** representative for information. The most current information on this device may be available on [www.onsemi.com](http://www.onsemi.com).

\* This package is inherently Pb-Free.

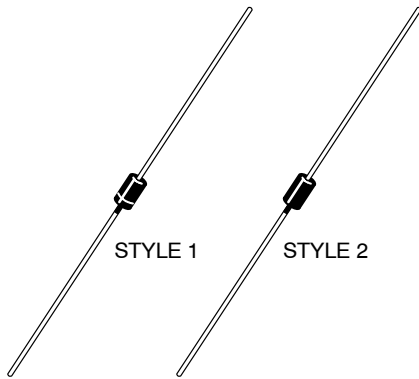
## REVISION HISTORY

Revision	Description of Changes	Date
12	MUR105, MUR105G, MUR105RL, MUR105RLG, MUR110, MUR110RL, MUR110RLG, MUR115, MUR115G, MUR115RL, MUR115RLG, MUR120, MUR120RL, MUR130, MUR130G, MUR130RL, MUR130RLG, MUR140, MUR140G, MUR140RL, MUR160, MUR160RL OPN Marked as Discontinued + Rebranded the Data Sheet to <b>onsemi</b> format	9/8/2025

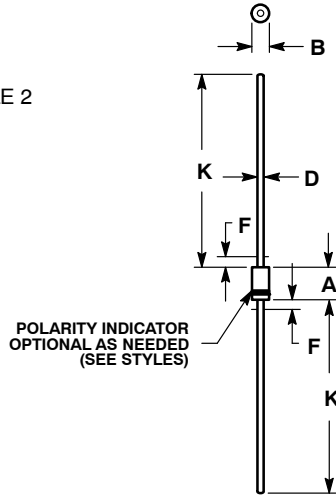
This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

DATE 15 FEB 2005

**AXIAL LEAD  
CASE 59-10  
ISSUE U**



SCALE 1:1



POLARITY INDICATOR  
OPTIONAL AS NEEDED  
(SEE STYLES)

STYLE 1:  
PIN 1. CATHODE (POLARITY BAND)  
2. ANODE

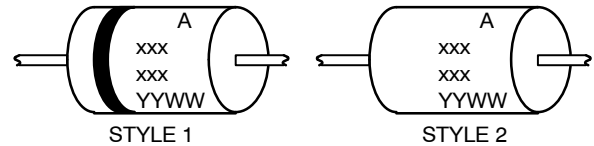
STYLE 2:  
NO POLARITY

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY.
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.161	0.205	4.10	5.20
B	0.079	0.106	2.00	2.70
D	0.028	0.034	0.71	0.86
F	---	0.050	---	1.27
K	1.000	---	25.40	---

**GENERIC  
MARKING DIAGRAM\***



- xxx = Specific Device Code
- A = Assembly Location
- YY = Year
- WW = Work Week

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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