

# MUR120 Series

Preferred Devices

## SWITCHMODE™ 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

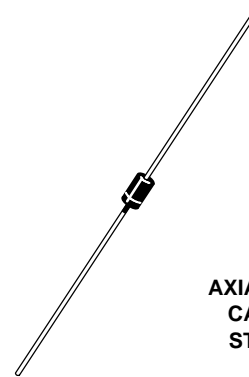
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

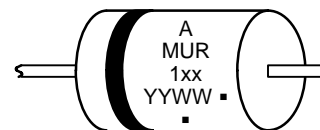
<http://onsemi.com>

ULTRAFAST RECTIFIERS  
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.

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

# MUR120 Series

## MAXIMUM RATINGS

| Rating  | Symbol                          | MUR                             |     |     |     |                                 |     |     | Unit             |
|---|---------------------------------|---------------------------------|-----|-----|-----|---------------------------------|-----|-----|------------------|
|   |                                 | 105                             | 110 | 115 | 120 | 130                             | 140 | 160 |                  |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50                              | 100 | 150 | 200 | 300                             | 400 | 600 | V                |
| Average Rectified Forward Current<br>(Square Wave Mounting Method #3 Per Note 2)                            | $I_{F(AV)}$                     | 1.0 @ $T_A = 130^\circ\text{C}$ |     |     |     | 1.0 @ $T_A = 120^\circ\text{C}$ |     |     | A                |
| Nonrepetitive Peak Surge Current<br>(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 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          | Max    | Unit               |
|---|-----------------|--------|--------------------|
| Maximum Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | Note 2 | $^\circ\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

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

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

# MUR120 Series

## MUR105, MUR110, MUR115, MUR120

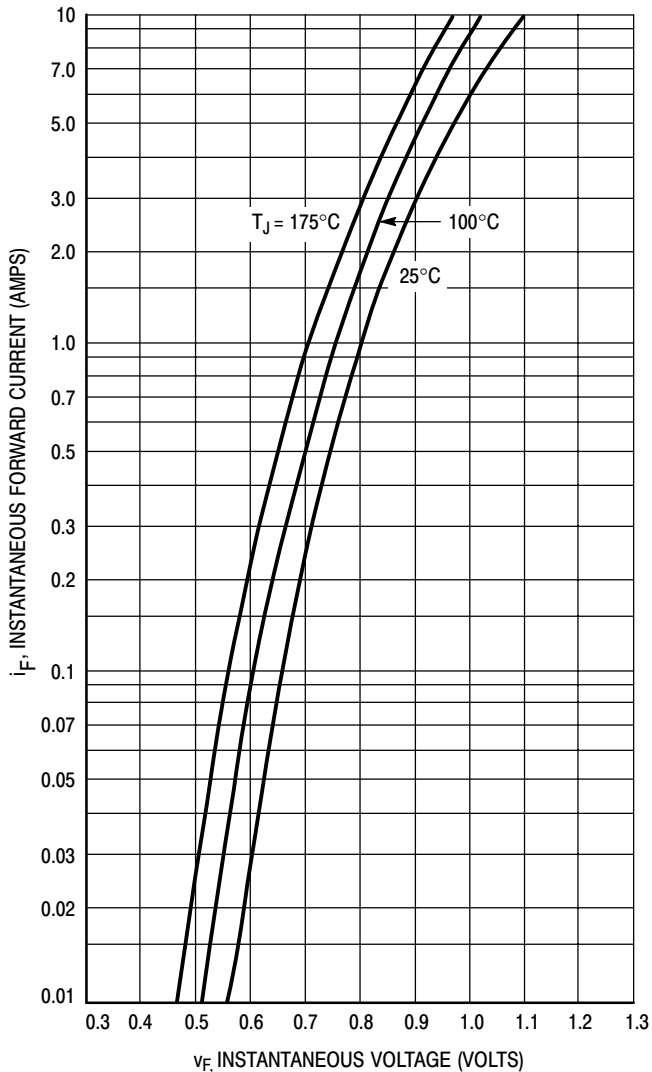


Figure 1. Typical Forward Voltage

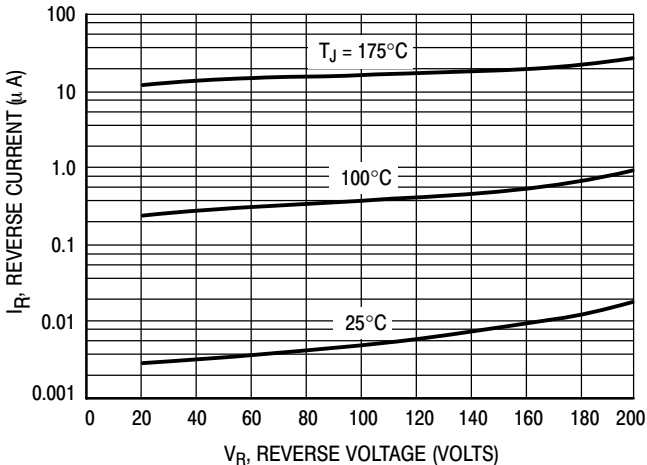


Figure 2. Typical Reverse Current\*

\* 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  $V_R$ .

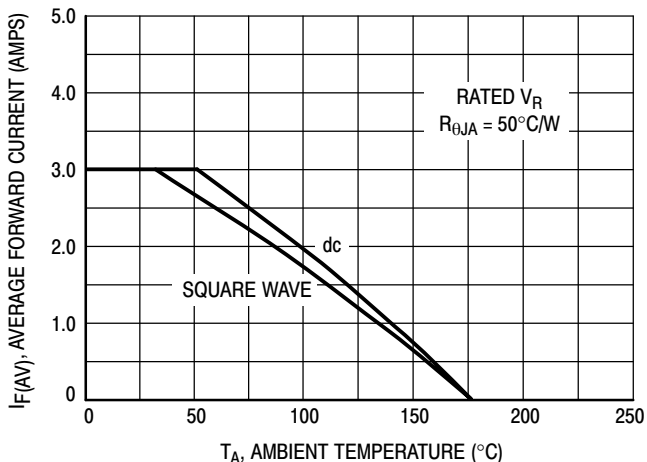


Figure 3. Current Derating (Mounting Method #3 Per Note 1)

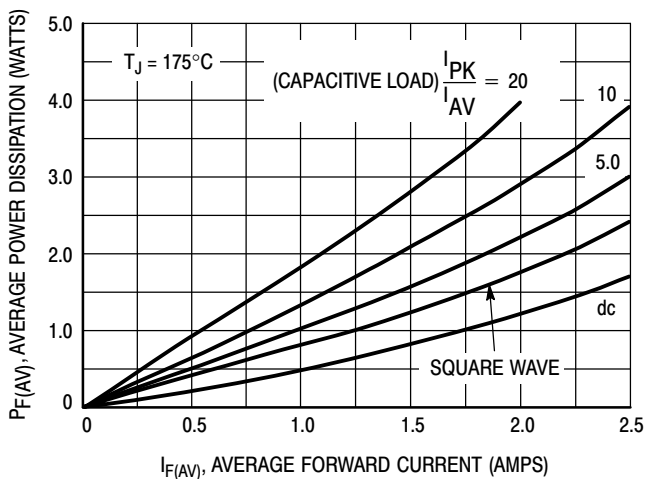


Figure 4. Power Dissipation

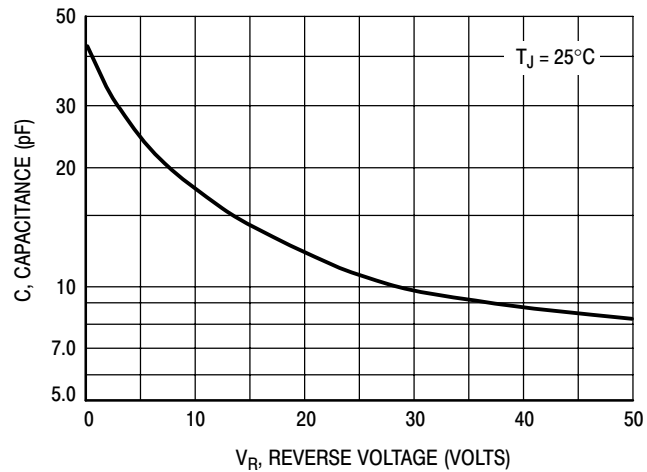
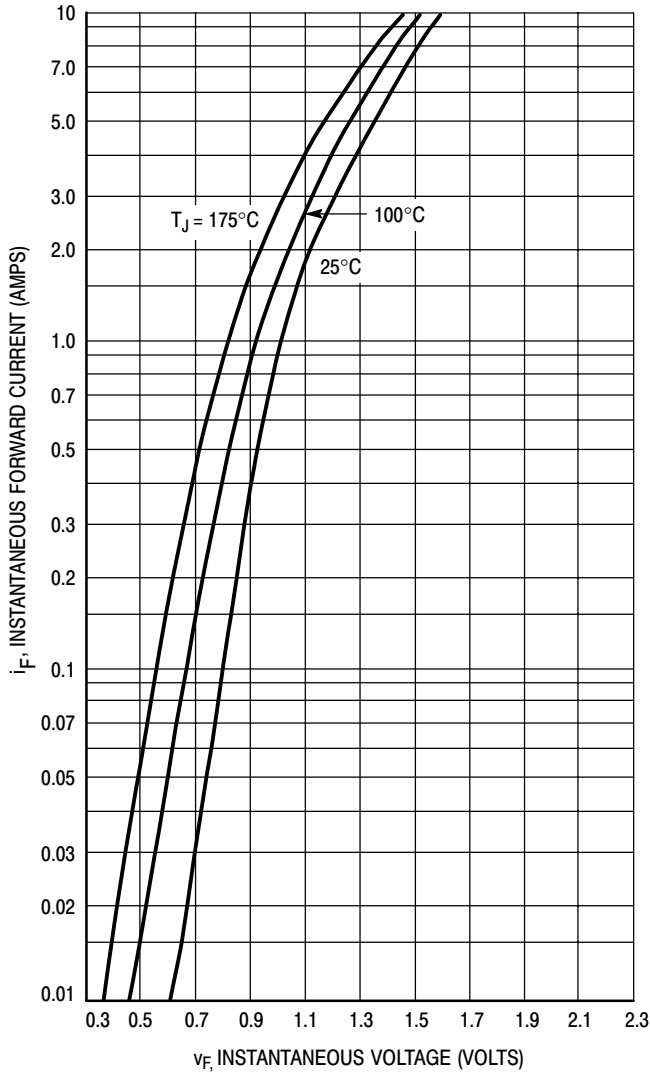


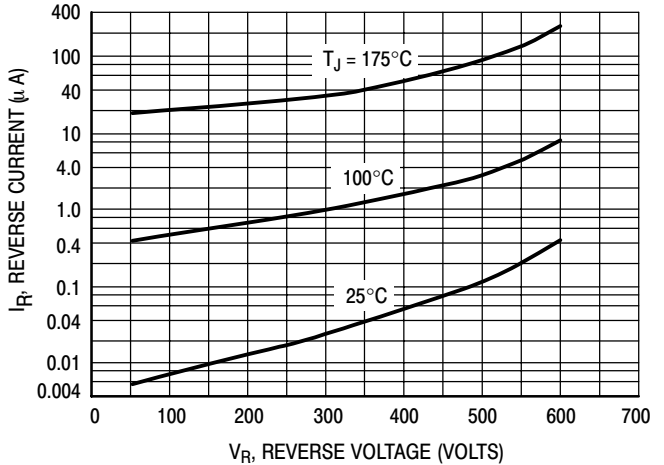
Figure 5. Typical Capacitance

# MUR120 Series

## MUR130, MUR140, MUR160

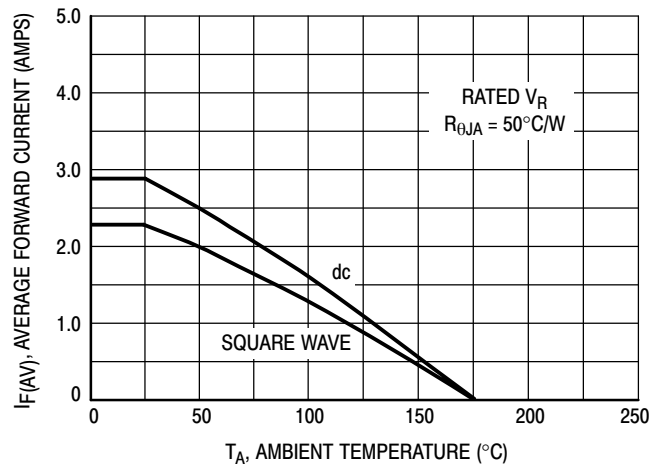


**Figure 6. Typical Forward Voltage**

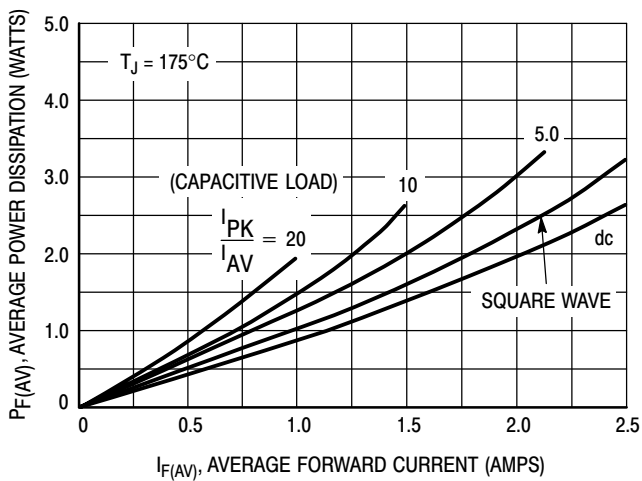


**Figure 7. Typical Reverse Current\***

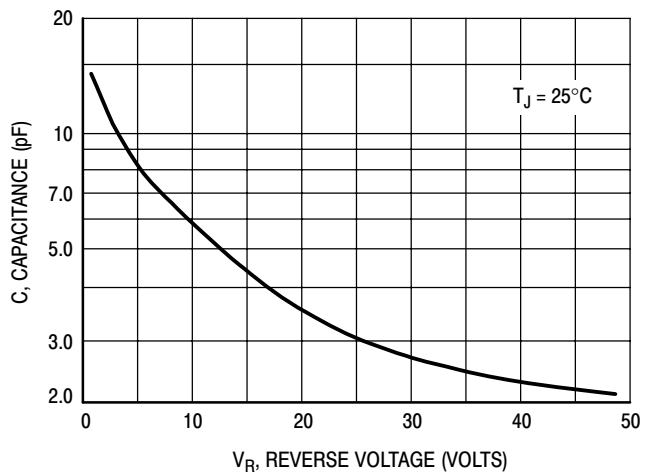
\* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



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



**Figure 9. Power Dissipation**



**Figure 10. Typical Capacitance**

# MUR120 Series

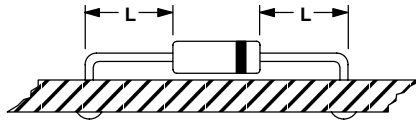
## NOTE 2. — AMBIENT MOUNTING DATA

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.

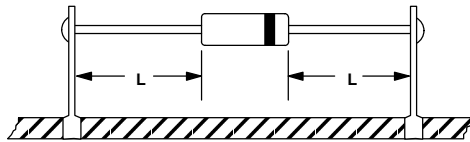
### TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

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

#### MOUNTING METHOD 1

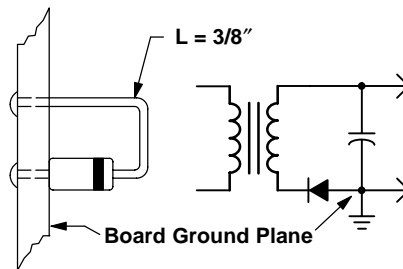


#### MOUNTING METHOD 2



#### Vector Pin Mounting

#### MOUNTING METHOD 3



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

## MUR120 Series

### ORDERING INFORMATION

| 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         |
| MUR110G   | 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         |
| MUR120G   | MUR120  | Axial Lead* | 1000 Units / Bag         |
| MUR120RL  | MUR120  | Axial Lead* | 5000 Units / Tape & Reel |
| MUR120RLG | 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 |
| MUR140RLG | MUR140  | Axial Lead* | 5000 Units / Tape & Reel |
| MUR160    | MUR160  | Axial Lead* | 1000 Units / Bag         |
| MUR160G   | MUR160  | Axial Lead* | 1000 Units / Bag         |
| MUR160RL  | MUR160  | Axial Lead* | 5000 Units / Tape & Reel |
| MUR160RLG | MUR160  | Axial Lead* | 5000 Units / Tape & Reel |

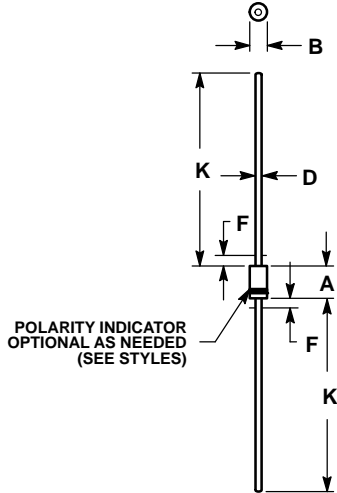
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*This package is inherently Pb-Free.

# MUR120 Series

## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 59-10 ISSUE U



#### 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       | ---- |

#### STYLE 1:

1. CATHODE (POLARITY BAND)
2. ANODE

SWITCHMODE is a trademark of Semiconductor Components Industries, LLC.

**ON Semiconductor** and **ON** are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT:**  
Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** orderlit@onsemi.com

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local  
Sales Representative



## Стандарт Электрон Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

### Наши контакты:

**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331