# MKP3V120, MKP3V240

# Sidac High Voltage
## Bidirectional Triggers

Bidirectional devices designed for direct interface with the AC power line. Upon reaching the breakover voltage in each direction, the device switches from a blocking state to a low voltage on−state. Conduction will continue like a Triac until the main terminal current drops below the holding current. The plastic axial lead package provides high pulse current capability at low cost. Glass passivation insures reliable operation.

### Features

- High Pressure Sodium Vapor Lighting
- Strobes and Flashers
- Ignitors
- High Voltage Regulators
- Pulse Generators
- Used to Trigger Gates of SCR's and Triacs
- Ⓤ Indicates UL Registered − File #E210057
- These are Pb−Free Devices*

**MAXIMUM RATINGS** ($T_J$ = 25°C unless otherwise noted)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Off−State Voltage (Sine Wave, 50 to 60 Hz, $T_J$ = −40 to 125°C) MKP3V120 MKP3V240 | $V_{DRM}$, $V_{RRM}$ | ±90 ±180 | V |
| On-State RMS Current ($T_L$ = 80°C, Lead Length = 3/8″, All Conduction Angles) | $I_{T(RMS)}$ | ±1.0 | A |
| Peak Non−Repetitive Surge Current (60 Hz One Cycle Sine Wave, Peak Value, $T_J$ = 125°C) | $I_{TSM}$ | ±20 | A |
| Operating Junction Temperature Range | $T_J$ | −40 to +125 | °C |
| Storage Temperature Range | $T_{stg}$ | −40 to +150 | °C |

**THERMAL CHARACTERISTICS**

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction−to−Lead (Lead Length = 3/8″) | $R_{\theta JL}$ | 15 | °C/W |
| Lead Solder Temperature (Lead Length ≥ 1/16″ from Case, 10 s Max) | $T_L$ | 260 | °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.

*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®**

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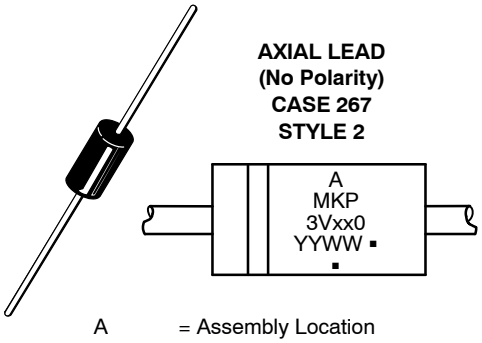
**SIDACS (Ⓤ)**
**1 AMPERE RMS**
**120 and 240 VOLTS**


**MARKING DIAGRAM**




**AXIAL LEAD**
**(No Polarity)**
**CASE 267**
**STYLE 2**

A = Assembly Location
xx = 12 or 24
YY, Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

**ORDERING INFORMATION**

| Device | Package | Shipping† |
|---|---|---|
| MKP3V120G | Axial Lead* | 500 Units/Box |
| MKP3V120RLG | Axial Lead* | 1500/Tape & Reel |
| MKP3V240G | Axial Lead* | 500 Units/Box |
| MKP3V240RLG | Axial Lead* | 1500/Tape & Reel |

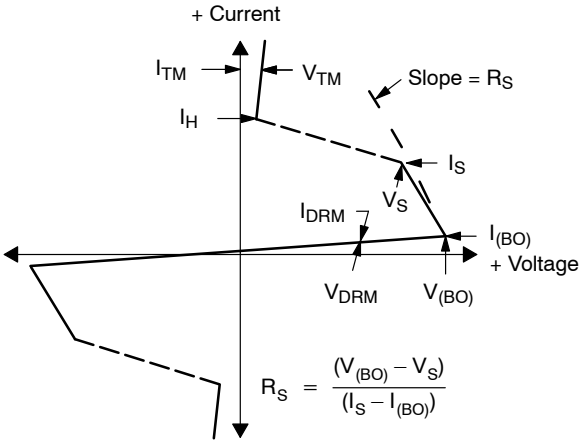
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**ELECTRICAL CHARACTERISTICS** ($T_C$ = 25°C unless otherwise noted; Electricals apply in both directions)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Repetitive Peak Off−State Current (50 to 60 Hz Sine Wave)<br>$V_{DRM}$ = 90 V MKP3V120<br>$V_{DRM}$ = 180 V MKP3V240 | $I_{DRM}$ | − | − | 10 | μA |
| **ON CHARACTERISTICS** | | | | | |
| Breakover Voltage, $I_{BO}$ = 200 μA<br>MKP3V120<br>MKP3V240 | $V_{BO}$ | <br>110<br>220 | <br>−<br>− | <br>130<br>250 | V |
| Breakover Current | $I_{BO}$ | − | − | 200 | μA |
| Peak On−State Voltage ($I_{TM}$ = 1 A Peak, Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%) | $V_{TM}$ | − | 1.1 | 1.5 | V |
| Dynamic Holding Current (Sine Wave, 60 Hz, $R_L$ = 100 Ω) | $I_H$ | − | − | 100 | mA |
| Switching Resistance (Sine Wave, 50 to 60 Hz) | $R_S$ | 0.1 | − | − | kΩ |
| **DYNAMIC CHARACTERISTICS** | | | | | |
| Critical Rate−of−Rise of On−State Current, Critical Damped Waveform Circuit ($I_{PK}$ = 130 Ω, Pulse Width = 10 μsec) | di/dt | − | 120 | − | A/μs |

## Voltage Current Characteristic of SIDAC (Bidirectional Device)

| Symbol | Parameter |
|---|---|
| $I_{DRM}$ | Off State Leakage Current |
| $V_{DRM}$ | Off State Repetitive Blocking Voltage |
| $V_{BO}$ | Breakover Voltage |
| $I_{BO}$ | Breakover Current |
| $I_H$ | Holding Current |
| $V_{TM}$ | On State Voltage |
| $I_{TM}$ | Peak on State Current |



## CURRENT DERATING

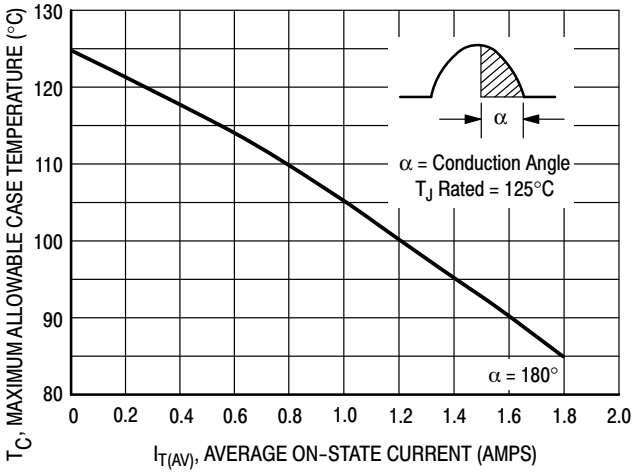



**Figure 1. Maximum Case Temperature**

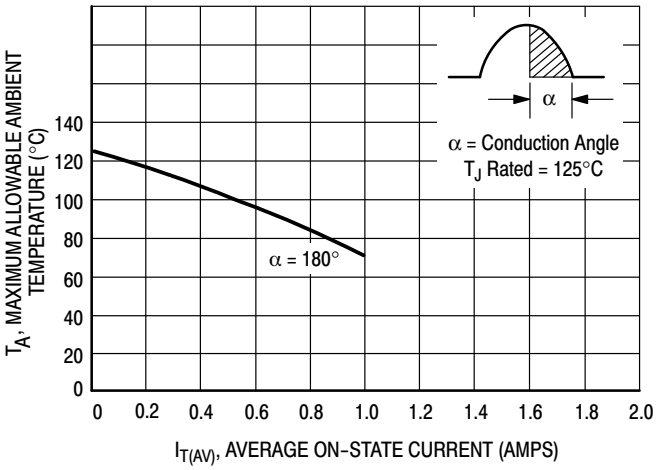



**Figure 2. Maximum Ambient Temperature**

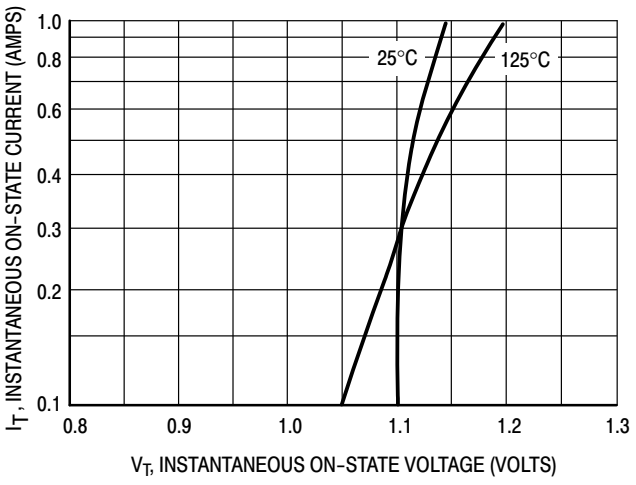



**Figure 3. Typical Forward Voltage**

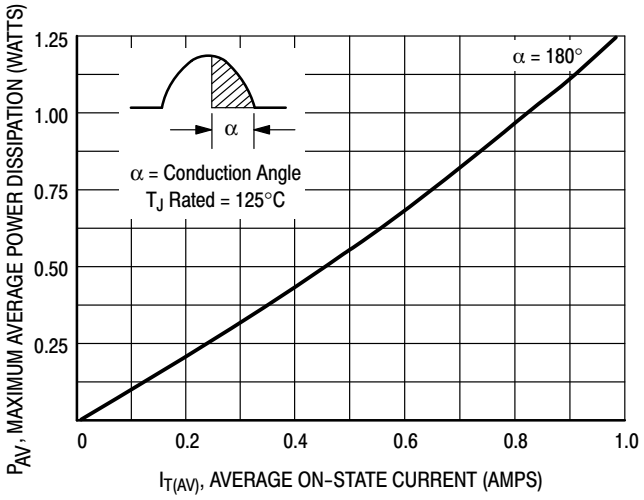



**Figure 4. Typical Power Dissipation**

## THERMAL CHARACTERISTICS

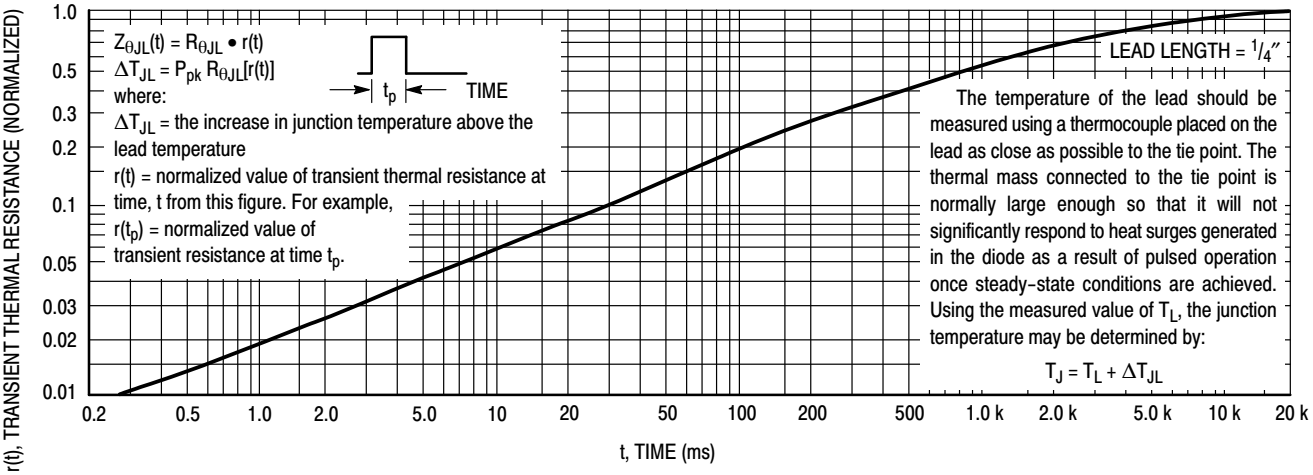



**Figure 5. Thermal Response**

## TYPICAL CHARACTERISTICS

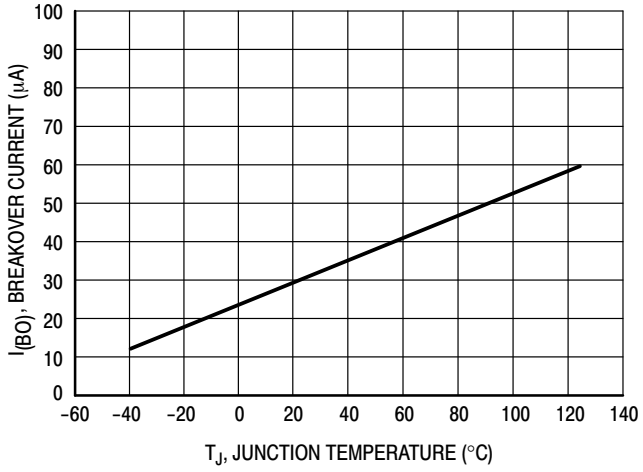



**Figure 6. Typical Breakover Current**

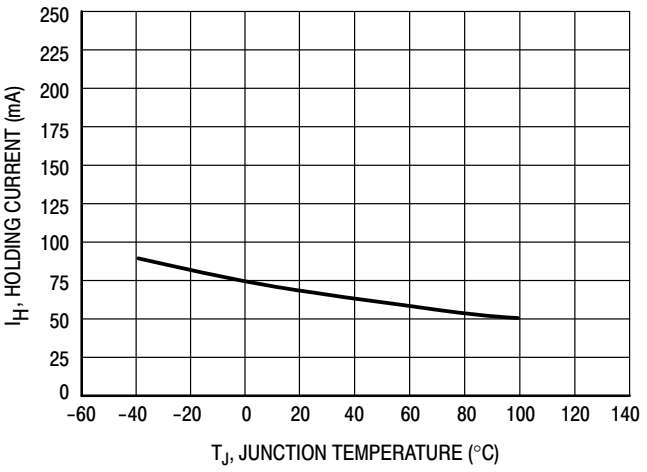
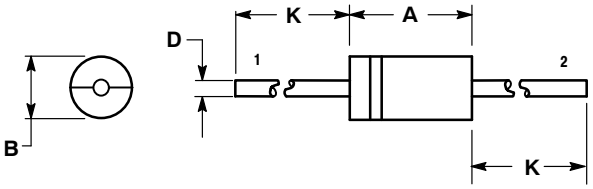



**Figure 7. Typical Holding Current**

## PACKAGE DIMENSIONS

**AXIAL LEAD**
CASE 267
ISSUE G




NOTES:
1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 267-01 AND 267-02 OBSOLETE, NEW STANDARD 267-03.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 0.370 | 0.380 | 9.40 | 9.65 |
| B | 0.190 | 0.210 | 4.83 | 5.33 |
| D | 0.048 | 0.052 | 1.22 | 1.32 |
| K | 1.000 | --- | 25.40 | --- |

STYLE 2:
NO POLARITY



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**MKP3V120/D**

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