

# MKP3V120, MKP3V240

Preferred Device

## 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 #E116110
- These are Pb-Free Devices\*

### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

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

### THERMAL CHARACTERISTICS

| Characteristic                                                            | Symbol          | Max | Unit                      |
|---------------------------------------------------------------------------|-----------------|-----|---------------------------|
| Thermal Resistance, Junction-to-Lead<br>(Lead Length = 3/8")              | $R_{\theta JL}$ | 15  | $^\circ\text{C}/\text{W}$ |
| Lead Solder Temperature<br>(Lead Length $\geq 1/16"$ from Case, 10 s Max) | $T_L$           | 260 | $^\circ\text{C}$          |

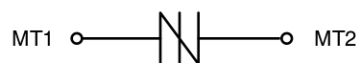
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

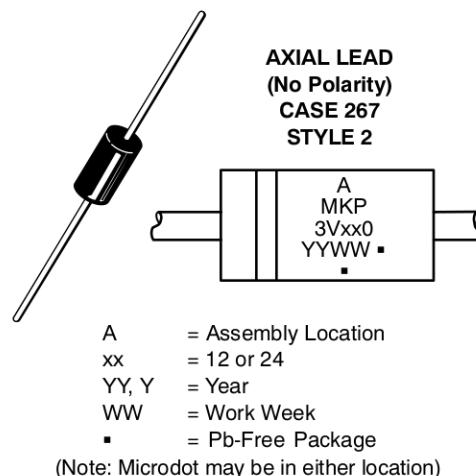


<http://onsemi.com>

## SIDACS (ㄥ) 1 AMPERE RMS 120 and 240 VOLTS



### MARKING DIAGRAM



### ORDERING INFORMATION

| Device      | Package     | Shipping <sup>†</sup> |
|-------------|-------------|-----------------------|
| MKP3V120    | Axial Lead* | 500 Units/Box         |
| MKP3V120G   | Axial Lead* | 500 Units/Box         |
| MKP3V120RLG | Axial Lead* | 1500/Tape & Reel      |
| MKP3V240    | Axial Lead* | 500 Units/Box         |
| MKP3V240G   | Axial Lead* | 500 Units/Box         |
| MKP3V240RL  | Axial Lead* | 1500/Tape & Reel      |
| MKP3V240RLG | Axial Lead* | 1500/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.

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

## MKP3V120, MKP3V240

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted; Electricals apply in both directions)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

### OFF CHARACTERISTICS

|                                                                                                                                   |                      |   |   |    |               |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|----|---------------|
| Repetitive Peak Off-State Current<br>(50 to 60 Hz Sine Wave)<br>$V_{\text{DRM}} = 90\text{ V}$<br>$V_{\text{DRM}} = 180\text{ V}$ | $I_{\text{DRM}}$     | - | - | 10 | $\mu\text{A}$ |
|                                                                                                                                   | MKP3V120<br>MKP3V240 |   |   |    |               |

### ON CHARACTERISTICS

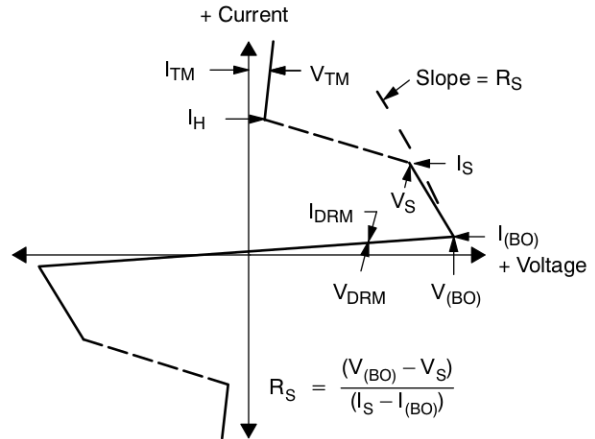
|                                                                                                                                    |                      |            |        |            |               |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------|--------|------------|---------------|
| Breakover Voltage, $I_{\text{BO}} = 200\text{ }\mu\text{A}$                                                                        | $V_{\text{BO}}$      | 110<br>220 | -<br>- | 130<br>250 | V             |
|                                                                                                                                    | MKP3V120<br>MKP3V240 |            |        |            |               |
| Breakover Current                                                                                                                  | $I_{\text{BO}}$      | -          | -      | 200        | $\mu\text{A}$ |
| Peak On-State Voltage<br>( $I_{\text{TM}} = 1\text{ A Peak}$ , Pulse Width $\leq 300\text{ }\mu\text{s}$ , Duty Cycle $\leq 2\%$ ) | $V_{\text{TM}}$      | -          | 1.1    | 1.5        | V             |
| Dynamic Holding Current<br>(Sine Wave, 60 Hz, $R_L = 100\text{ }\Omega$ )                                                          | $I_{\text{H}}$       | -          | -      | 100        | mA            |
| Switching Resistance<br>(Sine Wave, 50 to 60 Hz)                                                                                   | $R_S$                | 0.1        | -      | -          | k $\Omega$    |

### DYNAMIC CHARACTERISTICS

|                                                                                                                                                                     |         |   |     |   |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|-----|---|------------------|
| Critical Rate-of-Rise of On-State Current,<br>Critical Damped Waveform Circuit<br>( $I_{\text{PK}} = 130\text{ }\Omega$ , Pulse Width = $10\text{ }\mu\text{sec}$ ) | $di/dt$ | - | 120 | - | A/ $\mu\text{s}$ |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|-----|---|------------------|

### Voltage Current Characteristic of SIDAC (Bidirectional Device)

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



# MKP3V120, MKP3V240

## CURRENT DERATING

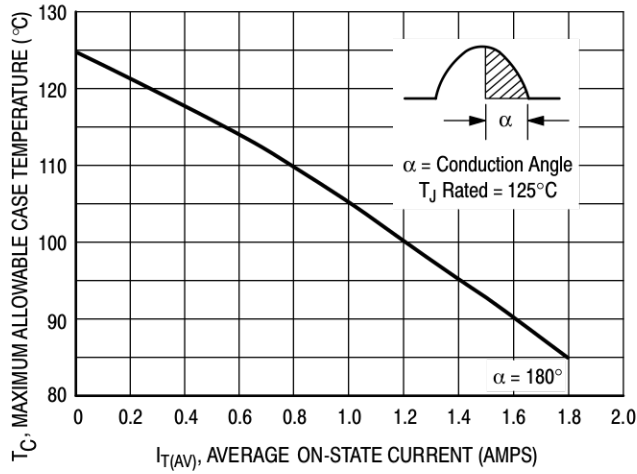


Figure 1. Maximum Case Temperature

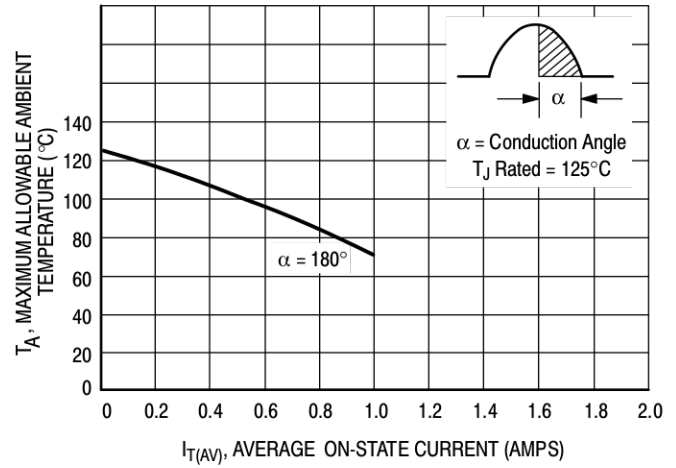


Figure 2. Maximum Ambient Temperature

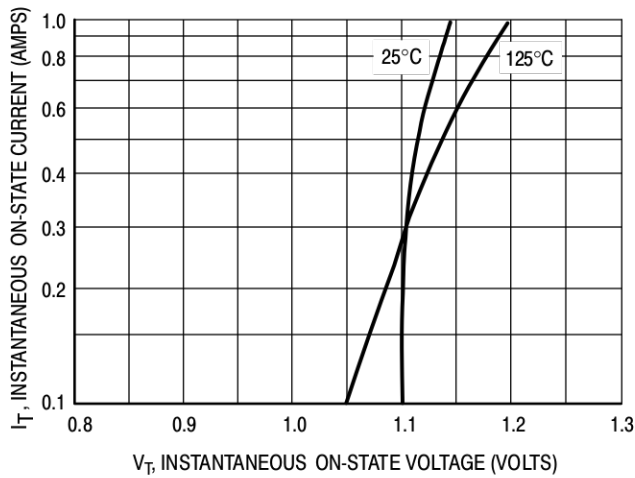


Figure 3. Typical Forward Voltage

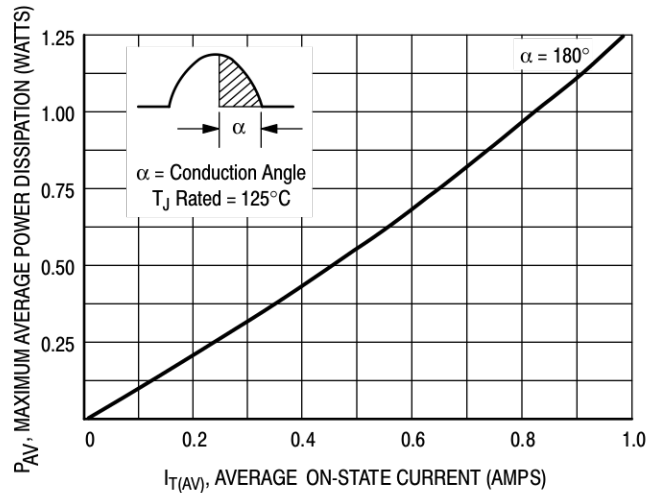


Figure 4. Typical Power Dissipation

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## THERMAL CHARACTERISTICS

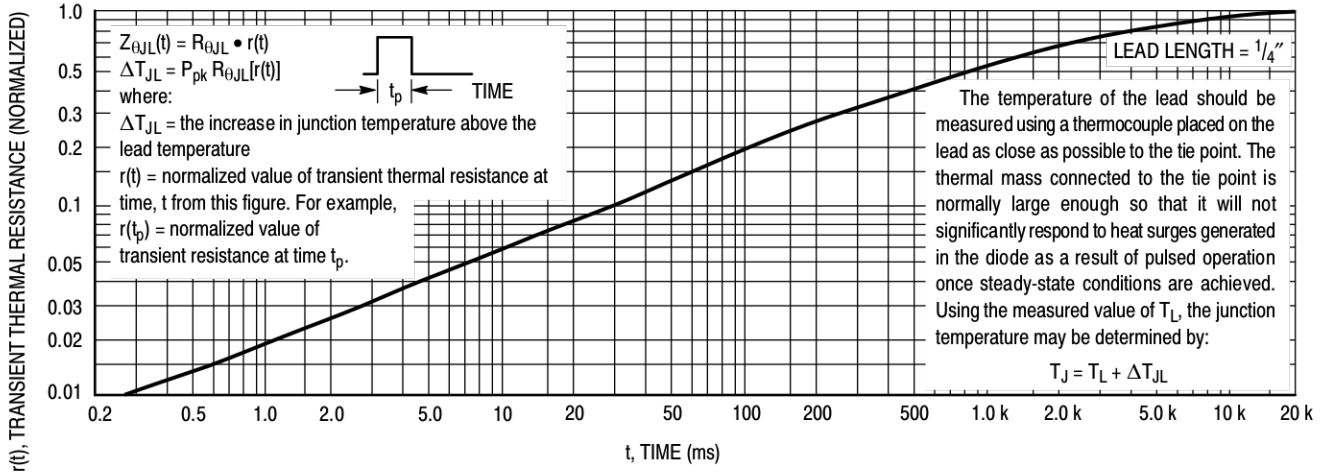


Figure 5. Thermal Response

## TYPICAL CHARACTERISTICS

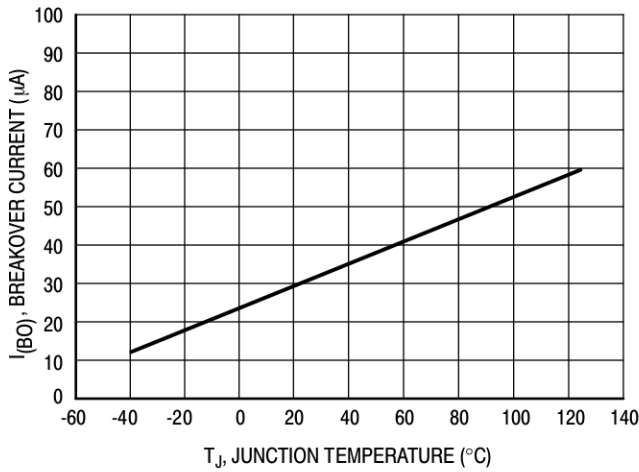


Figure 6. Typical Breakover Current

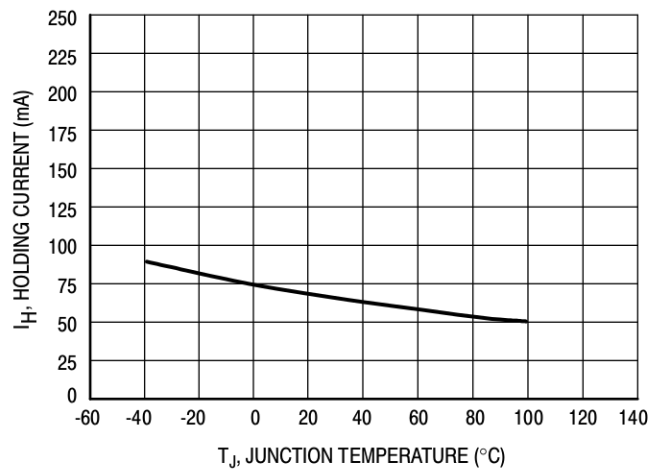
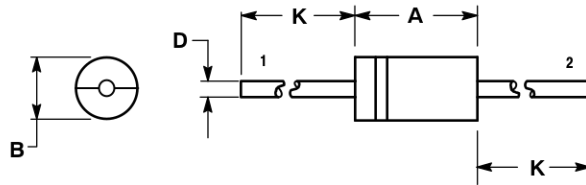


Figure 7. Typical Holding Current

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## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 267-03 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.

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | 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:

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**MKP3V120/D**