

# 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
- $\text{Ⓝ}$  Indicates UL Registered – File #E210057
- 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 (Sine Wave, 50 to 60 Hz, $T_J = -40$ to $125^\circ\text{C}$ ) MKP3V120 MKP3V240	$V_{\text{DRM}}$ , $V_{\text{RRM}}$	$\pm 90$ $\pm 180$	V
On-State RMS Current ( $T_L = 80^\circ\text{C}$ , Lead Length = 3/8", All Conduction Angles)	$I_{\text{T(RMS)}}$	$\pm 1.0$	A
Peak Non-Repetitive Surge Current (60 Hz One Cycle Sine Wave, Peak Value, $T_J = 125^\circ\text{C}$ )	$I_{\text{TSM}}$	$\pm 20$	A
Operating Junction Temperature Range	$T_J$	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{\text{stg}}$	-40 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Lead (Lead Length = 3/8")	$R_{\theta\text{JL}}$	15	$^\circ\text{C/W}$
Lead Solder Temperature (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.



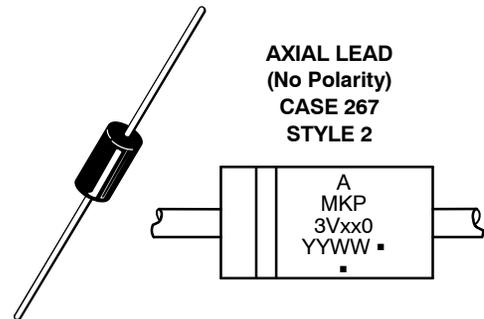
ON Semiconductor®

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**SIDACS ( $\text{Ⓝ}$ )**  
**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.

# MKP3V120, MKP3V240

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

Characteristic	Symbol	Min	Typ	Max	Unit
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## OFF CHARACTERISTICS

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

## ON CHARACTERISTICS

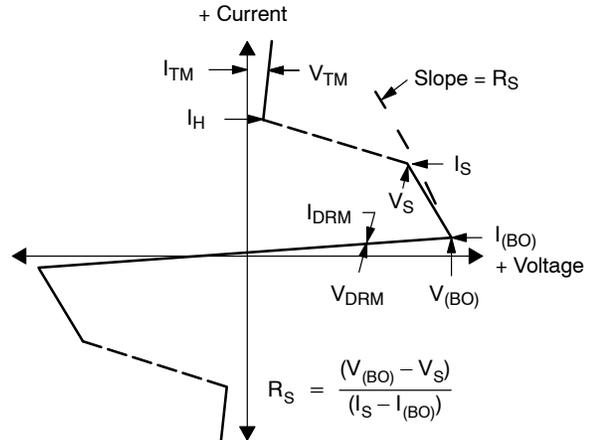
Breakover Voltage, $I_{\text{BO}} = 200\ \mu\text{A}$	$V_{\text{BO}}$	110 220	– –	130 250	V
	MKP3V120 MKP3V240				
Breakover Current	$I_{\text{BO}}$	–	–	200	$\mu\text{A}$
Peak On-State Voltage ( $I_{\text{TM}} = 1\text{ A Peak}$ , Pulse Width $\leq 300\ \mu\text{s}$ , Duty Cycle $\leq 2\%$ )	$V_{\text{TM}}$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

## DYNAMIC CHARACTERISTICS

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



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## CURRENT DERATING

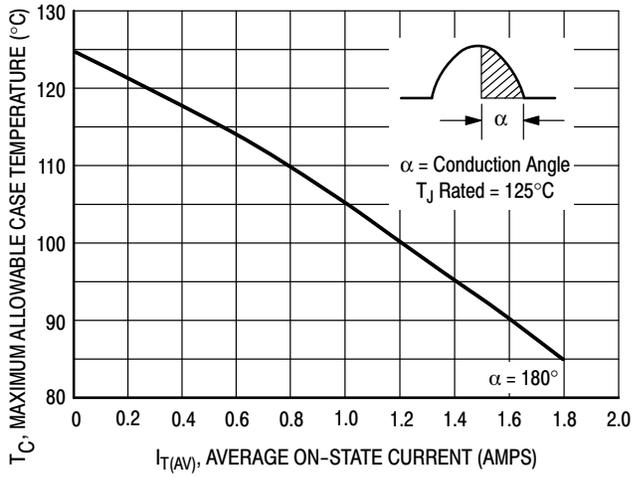


Figure 1. Maximum Case Temperature

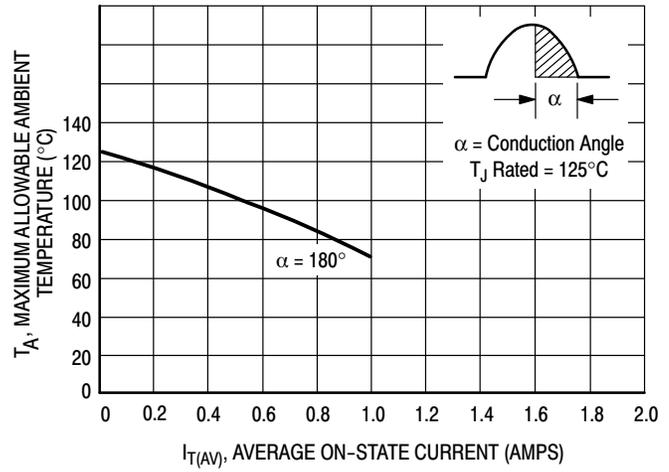


Figure 2. Maximum Ambient Temperature

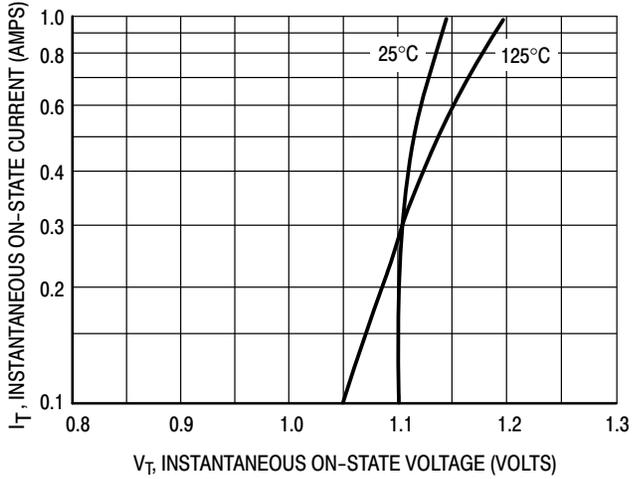


Figure 3. Typical Forward Voltage

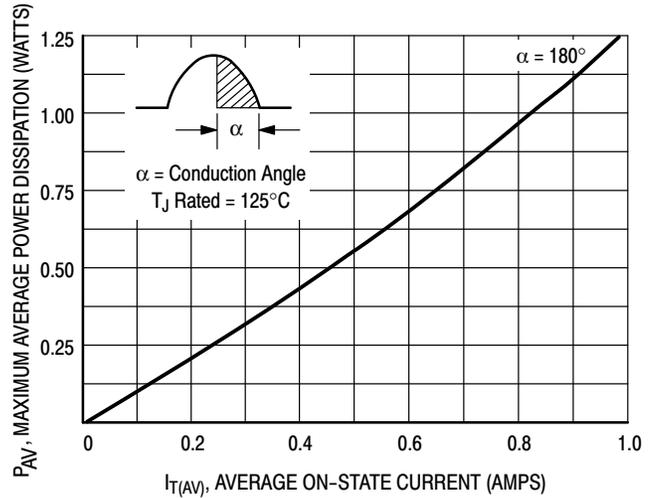


Figure 4. Typical Power Dissipation

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## THERMAL CHARACTERISTICS

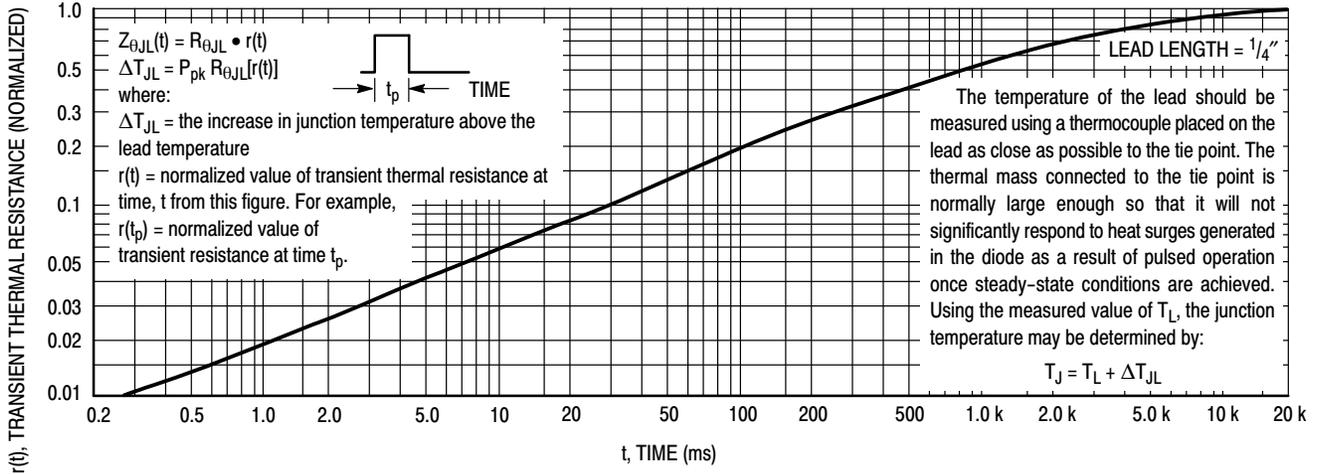


Figure 5. Thermal Response

## TYPICAL CHARACTERISTICS

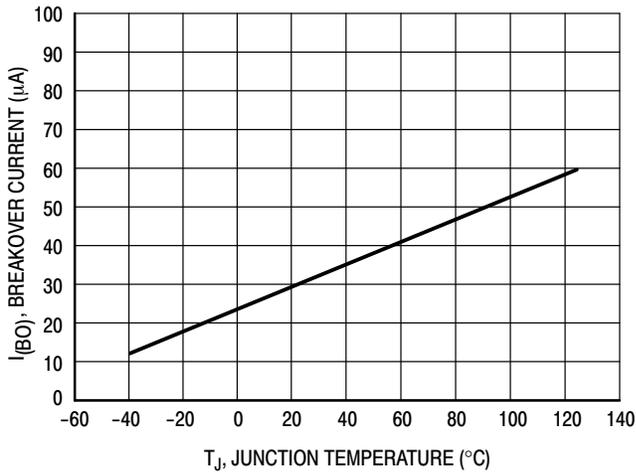


Figure 6. Typical Breakover Current

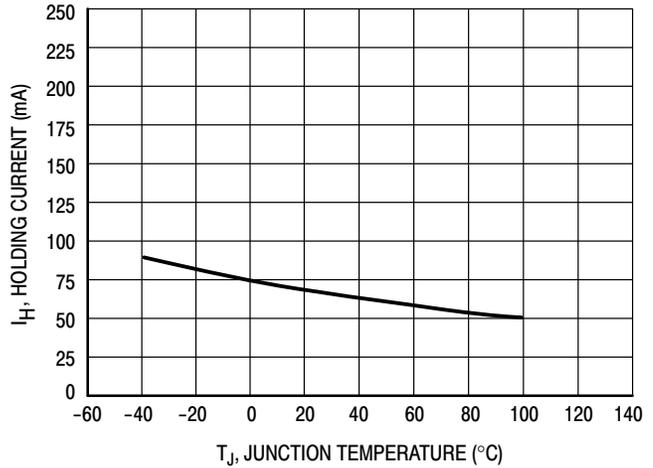
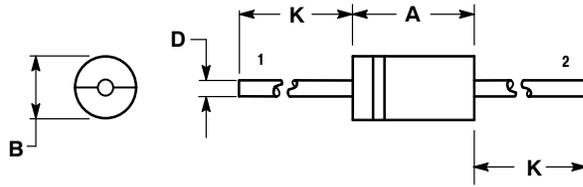


Figure 7. Typical Holding Current

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## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 267 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:

NO POLARITY

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