

# MKP1V120 Series


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<sub>J</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (Sine Wave, 50 to 60 Hz, T <sub>J</sub> = -40 to 125°C) MKP1V120, MKP1V130, MKP1V160 MKP1V240	V <sub>DRM</sub> , V <sub>RRM</sub>	± 90 ± 180	V
On-State Current RMS (T <sub>L</sub> = 80°C, Lead Length = 3/8", All Conduction Angles)	I <sub>T(RMS)</sub>	± 0.9	A
Peak Non-repetitive Surge Current (60 Hz One Cycle Sine Wave, T <sub>J</sub> = 125°C)	I <sub>TSM</sub>	± 4.0	A
Operating Junction Temperature Range	T <sub>J</sub>	-40 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Lead Lead Length = 3/8"	R <sub>θJL</sub>	40	°C/W
Lead Solder Temperature (Lead Length ≥ 1/16" from Case, 10 s Max)	T <sub>L</sub>	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.

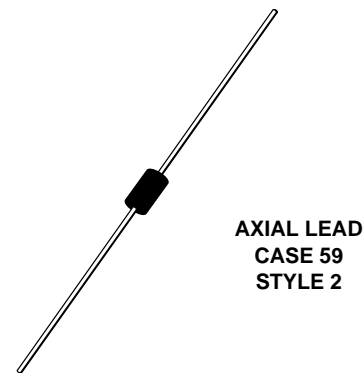
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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**SIDACS(∞)**  
**0.9 AMPERES RMS**  
**120 – 240 VOLTS**



AXIAL LEAD  
CASE 59  
STYLE 2

#### MARKING DIAGRAM



A = Assembly Location  
MKP1Vxx0 = Device Number  
x = 12, 13, 16 or 24  
YY = Year  
WW = Work Week  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

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

## MKP1V120 Series

### 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 $T_J = 25^\circ\text{C}$ (50 to 60 Hz Sine Wave) $V_{\text{DRM}} = 90\text{ V}$ , MKP1V120, MKP1V130 and MKP1V160 $V_{\text{DRM}} = 180\text{ V}$ , MKP1V240	$I_{\text{DRM}}$	-	-	5.0	$\mu\text{A}$
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#### ON CHARACTERISTICS

Breakover Voltage $I_{\text{BO}} = 35\ \mu\text{A}$ MKP1V120 $35\ \mu\text{A}$ MKP1V130 $200\ \mu\text{A}$ MKP1V160 $35\ \mu\text{A}$ MKP1V240	$V_{\text{BO}}$	110 120 150 220	- - - -	130 140 170 250	V
Peak On-State Voltage ( $I_{\text{TM}} = 1\text{ A Peak}$ , Pulse Width $\leq 300\ \mu\text{s}$ , Duty Cycle $\leq 2\%$ )	$V_{\text{TM}}$	-	1.3	1.5	V
Dynamic Holding Current (Sine Wave, 50 to 60 Hz, $R_L = 100\ \text{Ohm}$ )	$I_{\text{H}}$	-	-	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 ( $I_{\text{PK}} = 130\text{ Amps}$ , Pulse Width = $10\ \mu\text{sec}$ )	$di/dt$	-	120	-	$\text{A}/\mu\text{s}$
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#### ORDERING INFORMATION

Device	Package*	Shipping†
MKP1V120RL	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V120RLG	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V130RL	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V130RLG	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V160	DO-41, Axial Lead	1000 Units / Bulk
MKP1V160G	DO-41, Axial Lead	1000 Units / Bulk
MKP1V160RL	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V160RLG	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V240	DO-41, Axial Lead	1000 Units / Bulk
MKP1V240G	DO-41, Axial Lead	1000 Units / Bulk
MKP1V240RL	DO-41, Axial Lead	5000 / Tape & Reel
MKP1V240RLG	DO-41, Axial Lead	5000 / Tape & Reel

\*This package is inherently Pb-Free.

†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.

# MKP1V120 Series

## 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

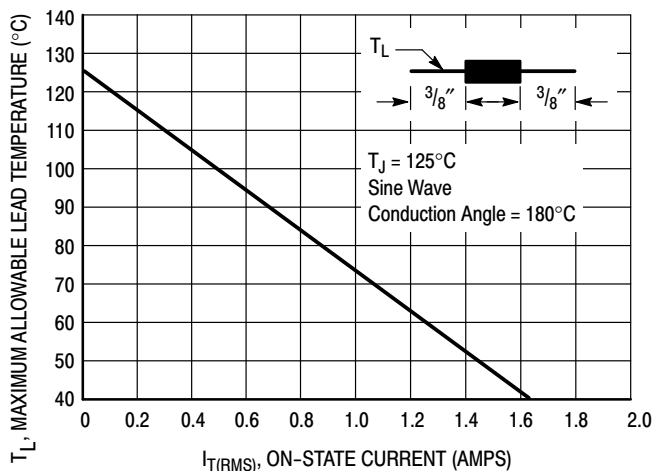
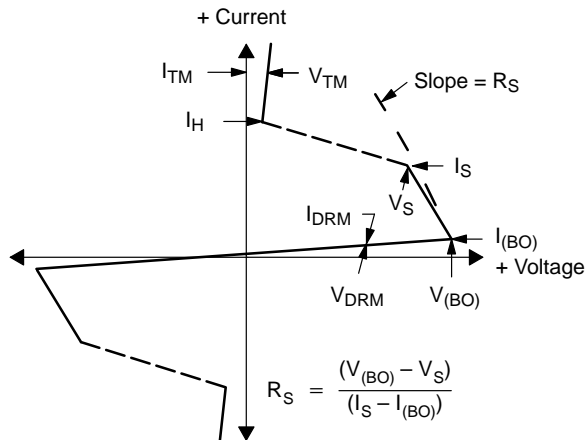


Figure 1. Maximum Lead Temperature

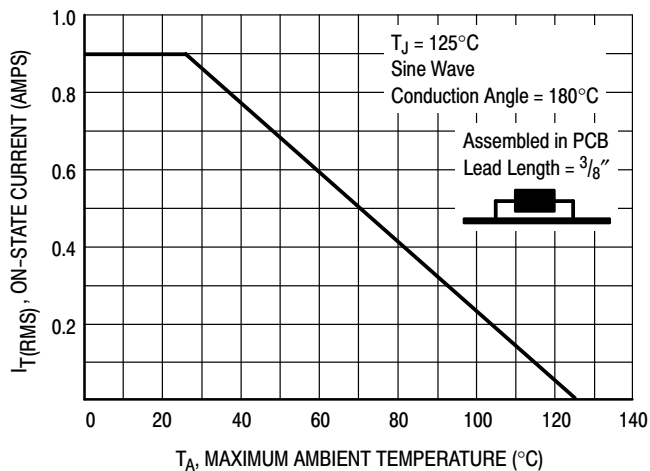


Figure 2. Maximum Ambient Temperature

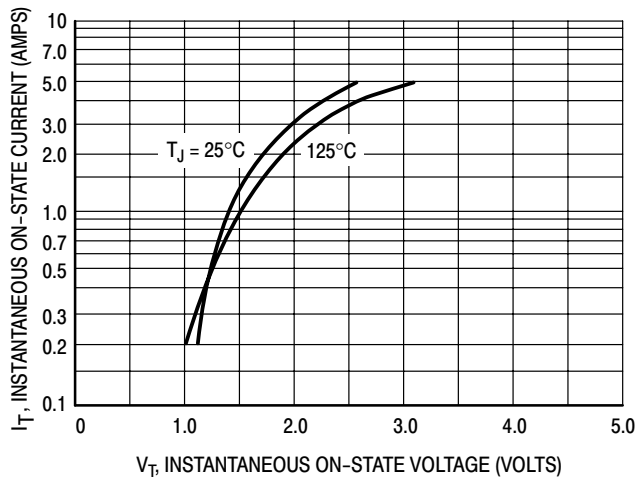


Figure 3. Typical On-State Voltage

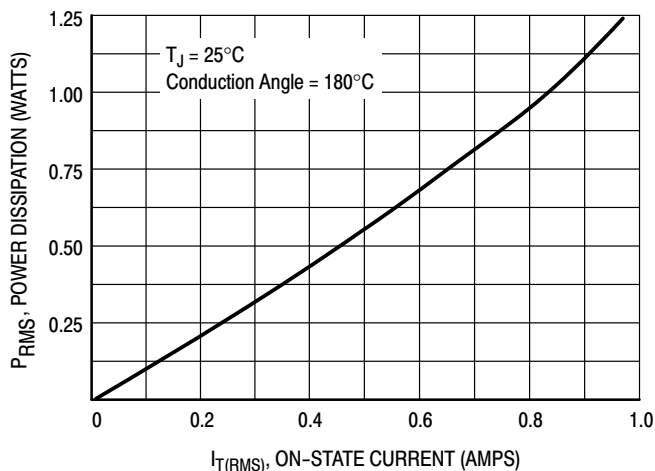


Figure 4. Typical Power Dissipation

# MKP1V120 Series

## THERMAL CHARACTERISTICS

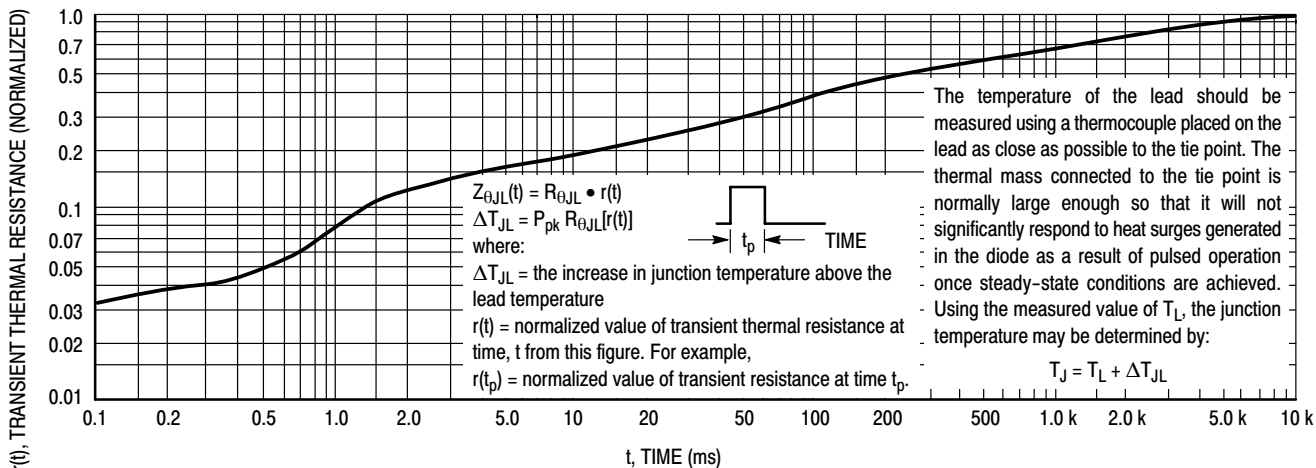


Figure 5. Thermal Response

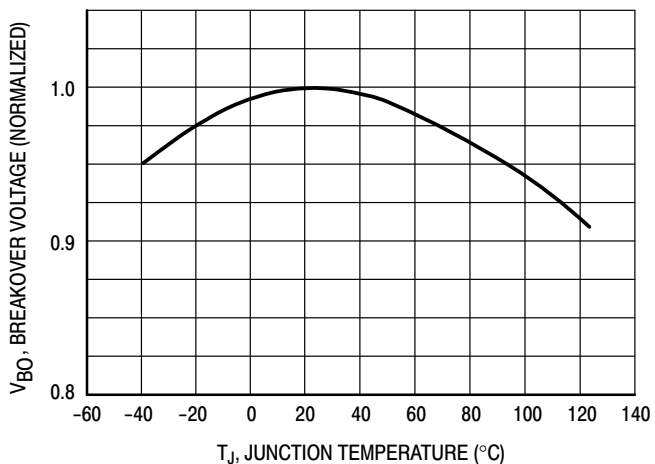


Figure 6. Typical Breakover Voltage

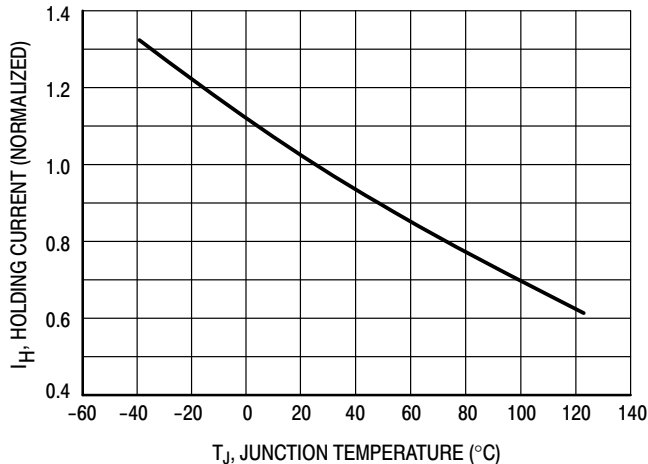


Figure 7. Typical Holding Current

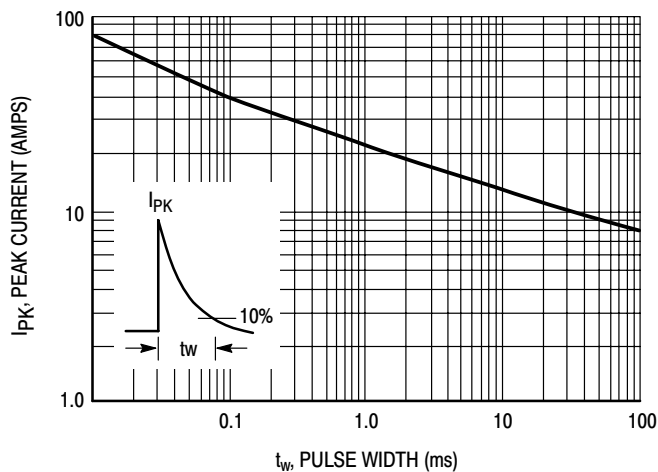
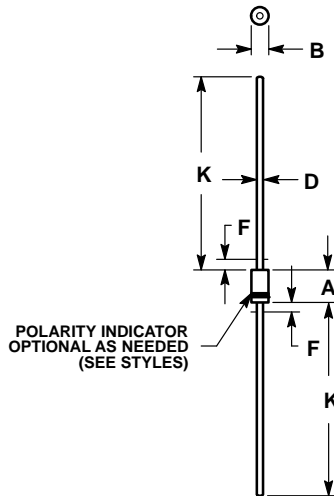


Figure 8. Pulse Rating Curve

# MKP1V120 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 2:  
NO POLARITY

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