

## CR03AM-16

SCR

### THYRISTOR LOW POWER USE

#### DESCRIPTION

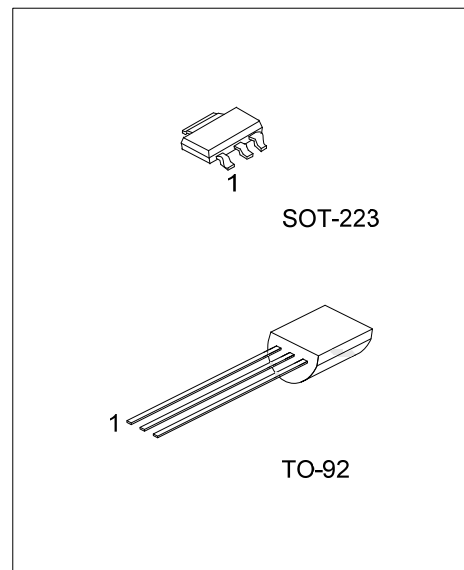
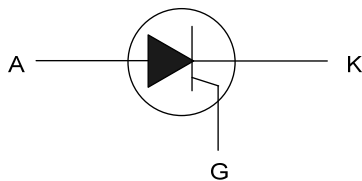
The UTC **CR03AM-16** is a thyristor, it uses UTC's advanced technology to provide customers with low gate trigger current and high repetitive peak off-state voltage, etc.

The UTC **CR03AM-16** is suitable for gas igniter, timer, and leakage protector.

#### FEATURES

- \* Low gate trigger current
- \* High repetitive peak off-state voltage

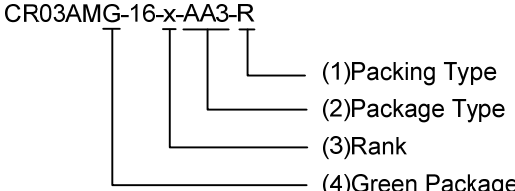
#### SYMBOL



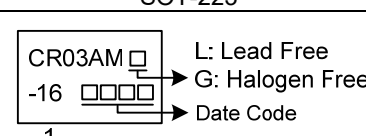
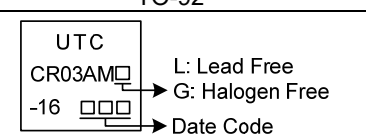
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
CR03AML-16-x-AA3-R	CR03AMG-16-x-AA3-R	SOT-223	K	A	G	Tape Reel
CR03AML-16-x-T92-B	CR03AMG-16-x-T92-B	TO-92	G	A	K	Tape Box
CR03AML-16-x-T92-K	CR03AMG-16-x-T92-K	TO-92	G	A	K	Bulk

Note: Pin assignment: G: Gate A: Anode K: Cathode

<p>CR03AMG-16-x-AA3-R</p>  <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AA3: SOT-223, T92: TO-92 (3) refer to CLASSIFICATION OF I<sub>GT</sub> (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING

SOT-223	TO-92
	

### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive Peak Reverse Voltage		$V_{RRM}$	800	V
Non-Repetitive Peak Reverse Voltage		$V_{RSM}$	960	V
DC Reverse Voltage		$V_{R(DC)}$	640	V
Repetitive Peak Off-State Voltage (Note 1)		$V_{DRM}$	800	V
Non-Repetitive Peak Off-State Voltage (Note 1)		$V_{DSM}$	960	V
DC Off-State Voltage (Note 1)		$V_{D(DC)}$	640	V
RMS On-State Current		$I_{T(RMS)}$	0.47	A
Average On-State Current	Commercial Frequency, Sine Half Wave 180° Conduction, $T_A=62^\circ\text{C}$	$I_{T(AV)}$	0.3	A
Surge On-State Current	60 Hz Sine Half Wave, 1 Full Cycle, Peak Value, Non-Repetitive	$I_{TSM}$	20	A
$I^2t$ for Fusing	Value Corresponding to 1 Cycle of Half Wave 60Hz, Surge On-State Current	$I^2t$	1.6	$\text{A}^2\text{s}$
Peak Gate Power Dissipation		$P_{GM}$	0.5	W
Average Gate Power Dissipation		$P_{G(AV)}$	0.1	W
Peak Gate Forward Voltage		$V_{FGM}$	6	V
Peak Gate Reverse Voltage		$V_{RGM}$	6	V
Peak Gate Forward Current		$I_{FGM}$	0.3	A
Mass (Typical Value)			0.23	g
Ambient Temperature		$T_A$	-40 ~ +110	$^\circ\text{C}$
Operating Junction Temperature		$T_J$	-40 ~ +110	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +125	$^\circ\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied

2. With gate to cathode resistance  $R_{GK}=1\text{k}\Omega$

### ■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223 (S=5cm <sup>2</sup> , Note)	$\theta_{JA}$	60	$^\circ\text{C/W}$
	TO-92		180	$^\circ\text{C/W}$

Note: S=Copper surface under tab.

### ■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Repetitive Peak Reverse Current	$I_{RRM}$	$T_J=110^\circ\text{C}$ , $V_{RRM}$ Applied			0.1	mA
Repetitive Peak Off-State Current	$I_{DRM}$	$T_J=110^\circ\text{C}$ , $V_{DRM}$ Applied, $R_{GK}=1\text{k}\Omega$			0.1	mA
On-State Voltage	$V_{TM}$	$T_J=25^\circ\text{C}$ , $I_{TM}=4\text{A}$ Instantaneous Value			1.8	V
Gate Trigger Voltage	$V_{GT}$	$T_J=25^\circ\text{C}$ , $V_D=6\text{V}$ , $I_T=0.1\text{A}$ (Note 1)			0.8	V
Gate Non-Trigger Voltage	$V_{GD}$	$T_J=110^\circ\text{C}$ , $V_D=1/2V_{DRM}$ $R_{GK}=1\text{k}\Omega$	0.2			V
Gate Trigger Current (Note)	$I_{GT}$	$T_J=25^\circ\text{C}$ , $V_D=6\text{V}$ , $I_T=0.1\text{A}$ (Note 1)	1		100	$\mu\text{A}$
Holding Current	$I_H$	$T_J=25^\circ\text{C}$ , $V_D=12\text{V}$ , $R_{GK}=1\text{k}\Omega$			3	mA

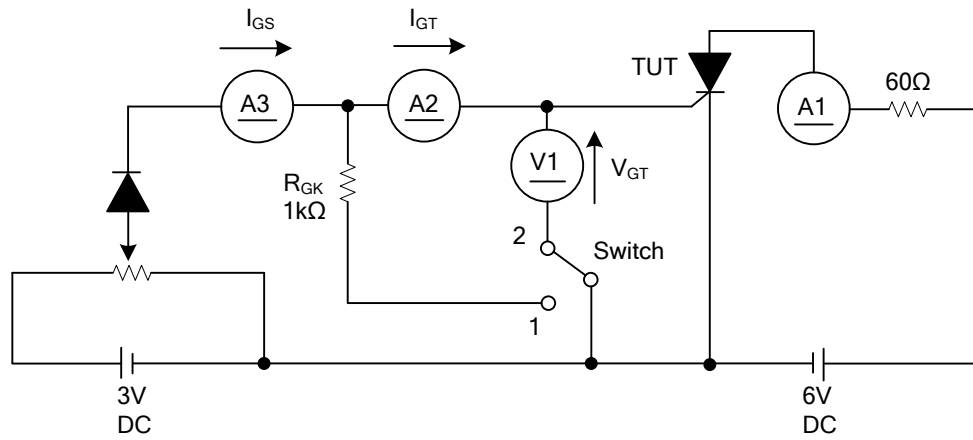
Note: If special values of  $I_{GT}$  are required, choose item D or E from those listed in the table below if possible.

■ CLASSIFICATION OF  $I_{GT}$

RANK	D	E
$I_{GT}$	1~50	20~100

Note: The above values do not include the current flowing through the 1k $\Omega$  resistance between the gate and cathode.

■  $I_{GT}$  ,  $V_{GT}$  MEASUREMENT CIRCUIT

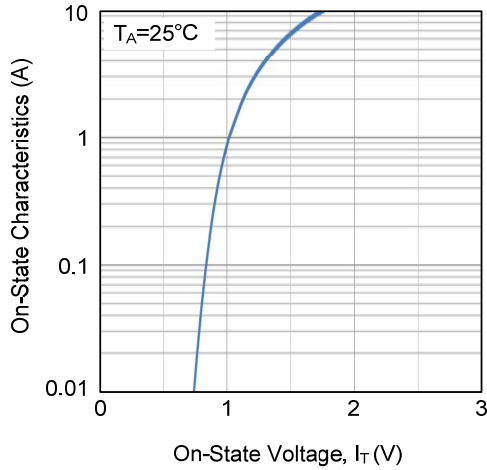


Switch 1:  $I_{GT}$  Measurement  
 Switch 2:  $V_{GT}$  Measurement  
 (Inner resistance of voltage meter is about  $1k\Omega$ )

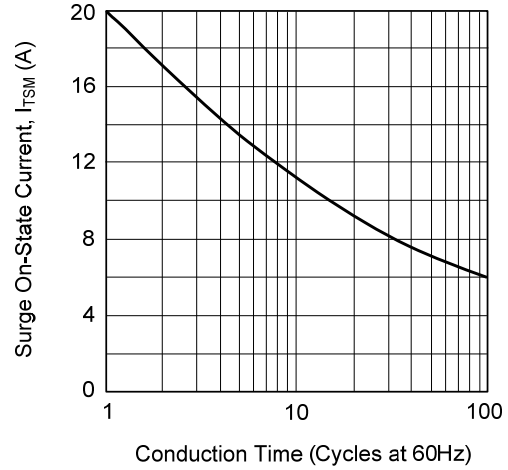
$$\frac{\text{Gate Trigger Current } (T_J = t)}{\text{Gate Trigger Current } (T_J = 25)} \times 100\%$$

■ TYPICAL CHARACTERISTICS

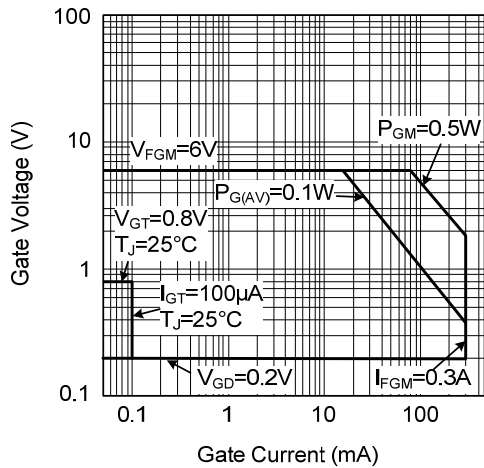
Maximum On-State Characteristics



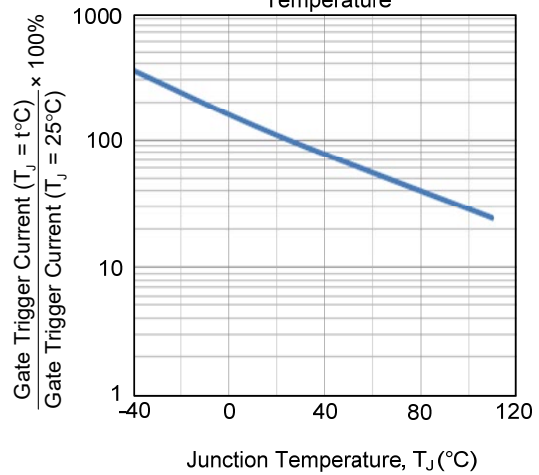
Rated Surge On-State Current



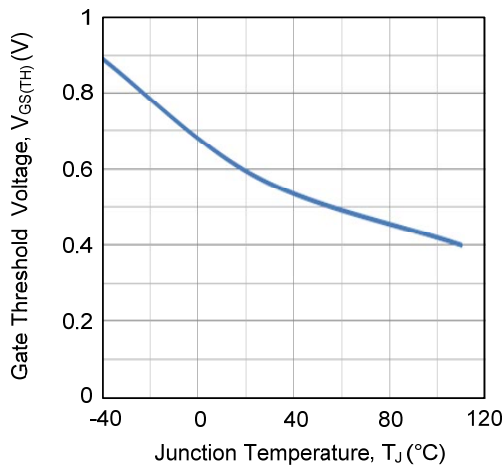
Gate Characteristics



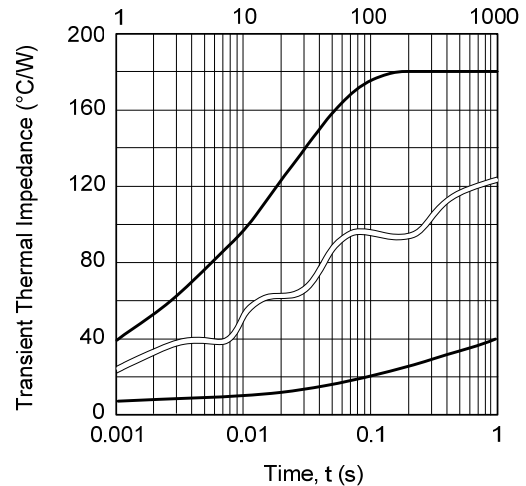
Gate Threshold Current vs. Junction Temperature



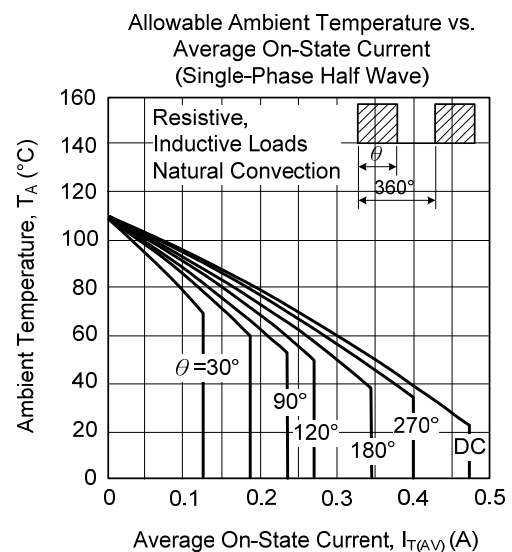
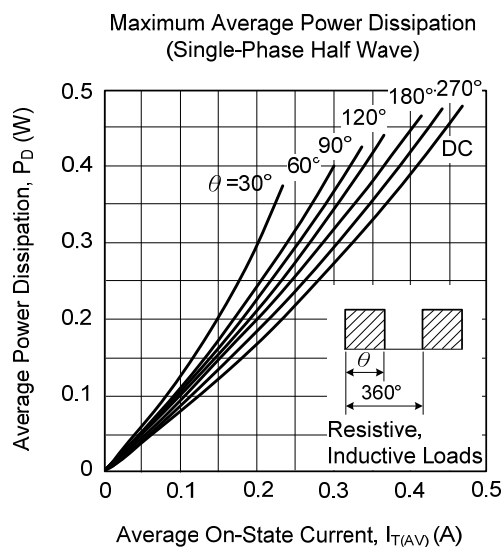
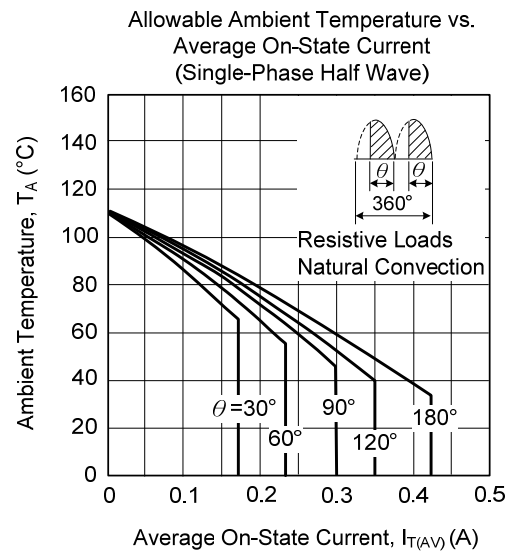
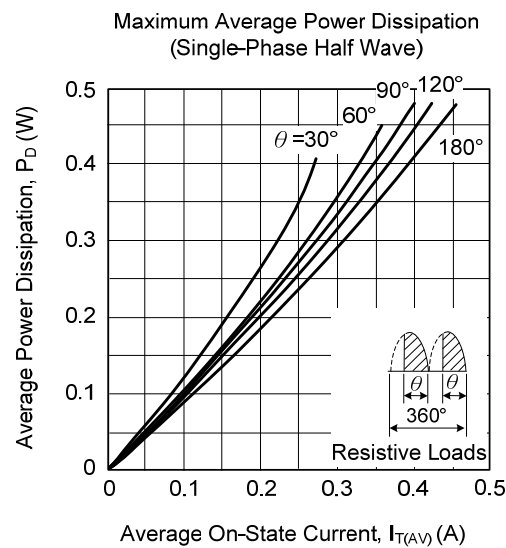
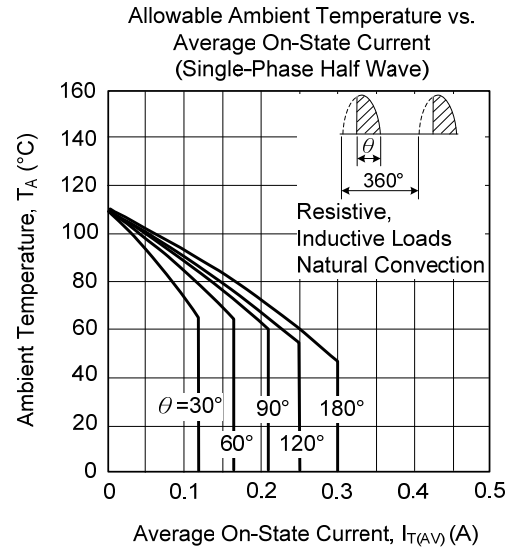
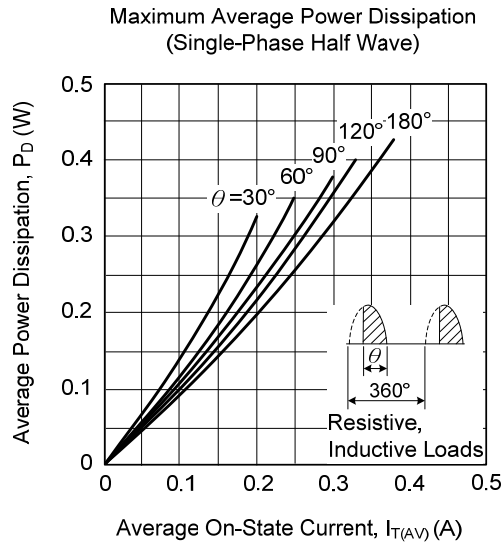
Gate Threshold Voltage vs. Junction Temperature



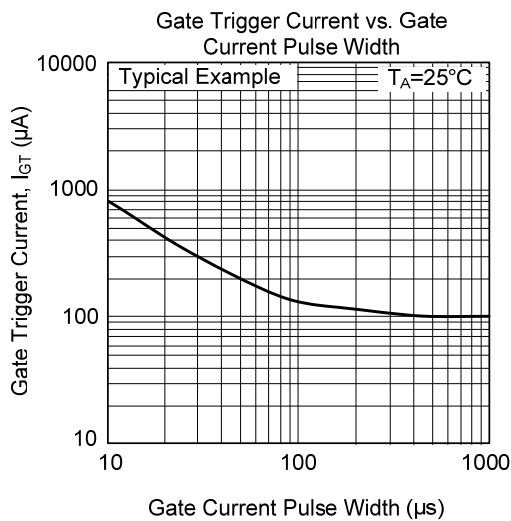
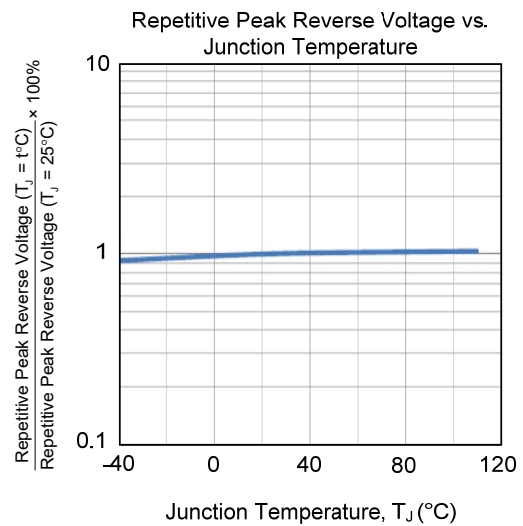
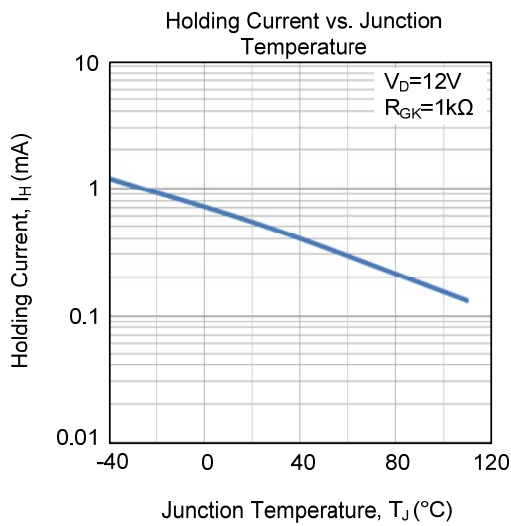
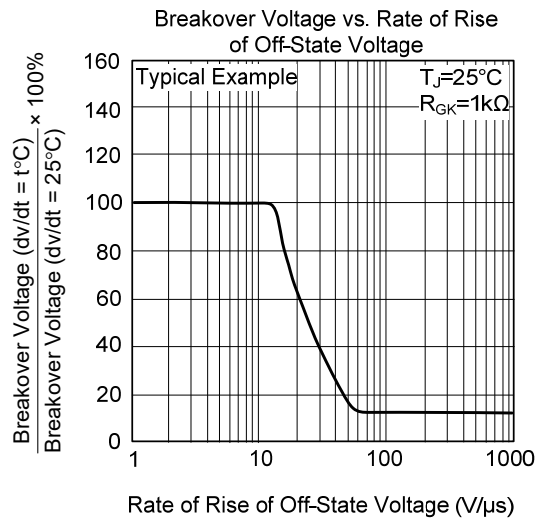
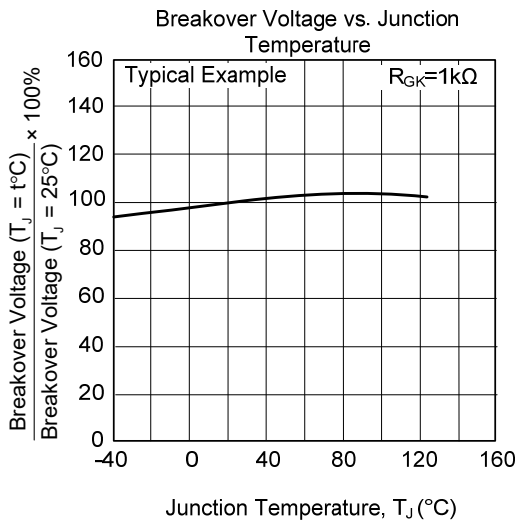
Maximum Transient Thermal Impedance Characteristics (Junction to Ambient)



## ■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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