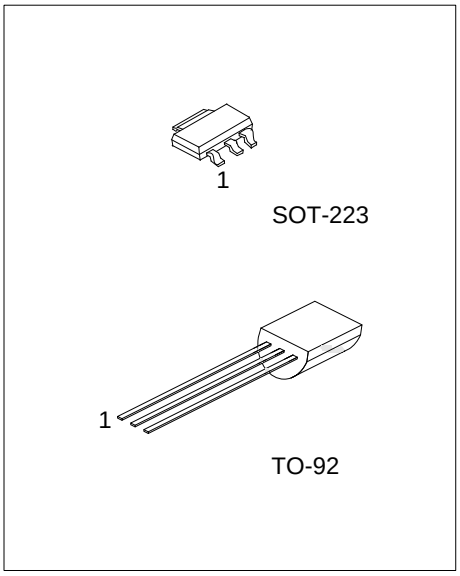
CR03AM-16

SCR

THYRISTOR LOW POWER USE



■ DESCRIPTION

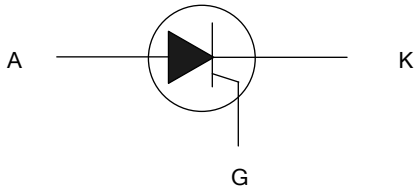
The UTC **CR03AM-16** is a thyristor, it uses UTC's advanced technology to provide customers with low gate trigger current and high repetitive peak off-state voltage, etc.

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



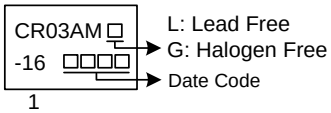
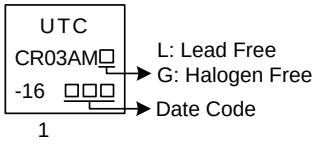
■ ORDERING INFORMATION

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	G	A	K	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

CR03AMG-16-x-AA3-R (1)Packing Type (2)Package Type (3)Rank (4)Green Package	(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AA3: SOT-223, T92: TO-92 (3) refer to CLASSIFICATION OF I_{GT} (4) G: Halogen Free and Lead Free, L: Lead Free

■ 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°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	A^2s
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
Operating Junction Temperature		T_J	-40 ~ +125	°C
Storage Temperature		T_{STG}	-40 ~ +125	°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}=1kΩ

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223 (S=5cm^2, Note)	θ_{JA}	60	°C/W
	TO-92		180	°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=125°C, V_{RRM} Applied			0.1	mA
Repetitive Peak Off-State Current	I_{DRM}	T_J=125°C, V_{DRM} Applied, R_{GK}=1kΩ			0.1	mA
On-State Voltage	V_{TM}	T_J=25°C, I_{TM}=4A Instantaneous Value			1.8	V
Gate Trigger Voltage	V_{GT}	T_J=25°C, V_D=6V, I_T=0.1A (Note 1)			0.8	V
Gate Non-Trigger Voltage	V_{GD}	T_J= 125°C, V_D=1/2V_{DRM} R_{GK}=1kΩ	0.2			V
Gate Trigger Current (Note)	I_{GT}	T_J=25°C, V_D=6V, I_T=0.1A (Note 1)	1		100	μA
Holding Current	I_H	T_J=25°C, V_D=12V, R_{GK}=1kΩ			3	mA

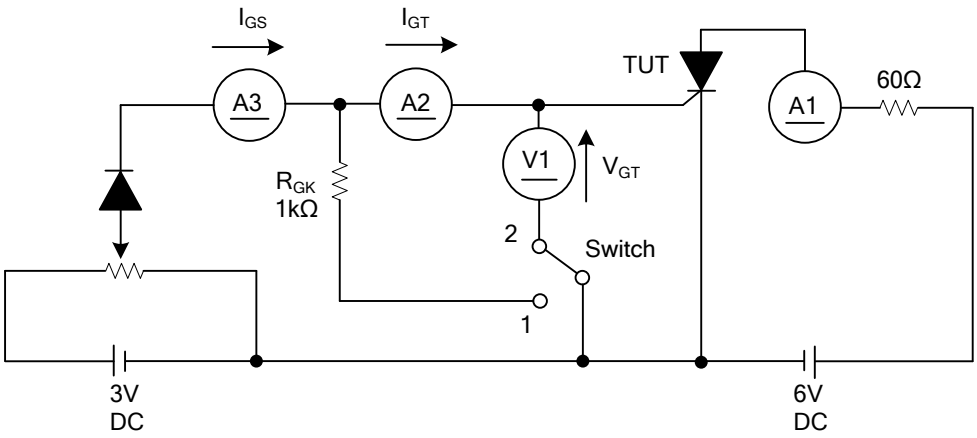
Note: If special values of I_{GT} are required, choose item D or E from those listed in the table below if possible.

■ 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 1kΩ resistance between the gate and cathode.

■ I_{GT} , V_{GT} MEASUREMENT CIRCUIT

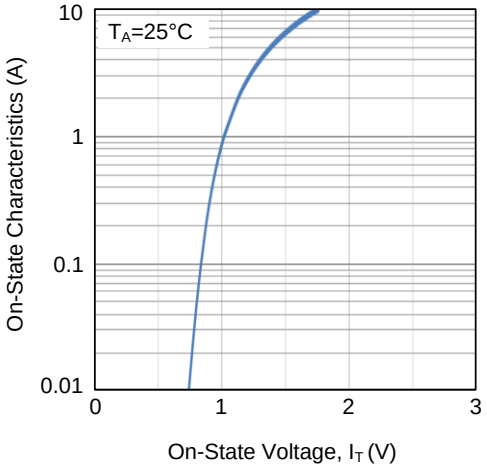


Switch 1: I_{GT} Measurement
Switch 2: V_{GT} Measurement
(Inner resistance of voltage meter is about 1kΩ)

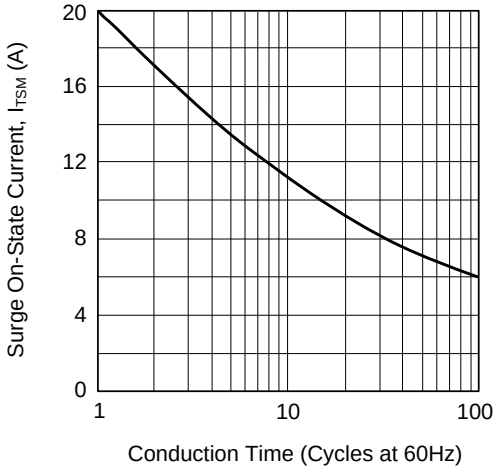
$$\frac{\text{Gate Trigger Current } (T_J = t)}{\text{Gate Trigger Current } (T_J = 25)} \times 100\%$$

■ TYPICAL CHARACTERISTICS

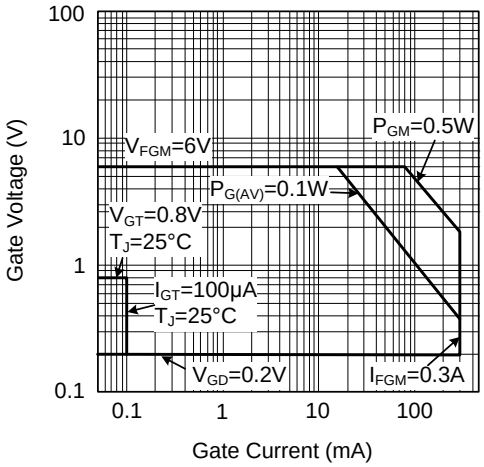
Maximum On-State Characteristics



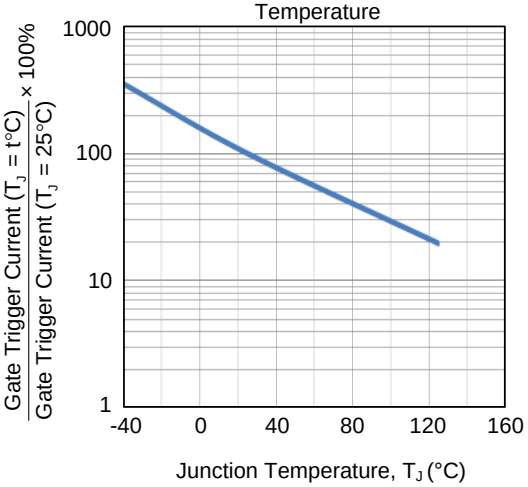
Rated Surge On-State Current



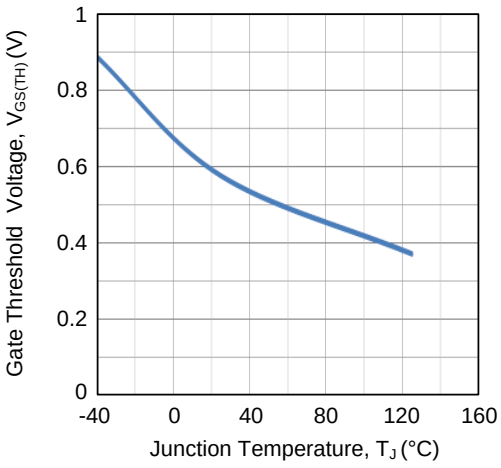
Gate Characteristics



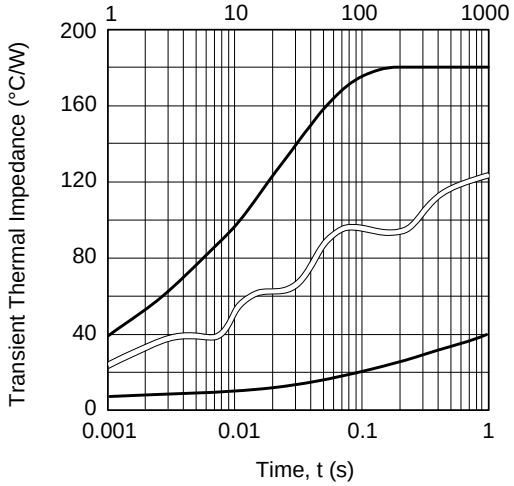
Gate Threshold Current vs. Junction Temperature



Gate Threshold Voltage vs. Junction Temperature

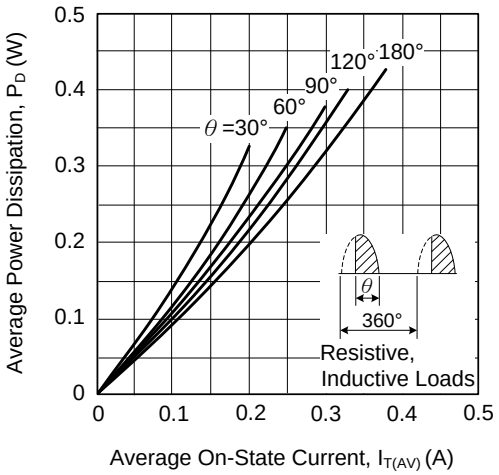


Maximum Transient Thermal Impedance Characteristics (Junction to Ambient)

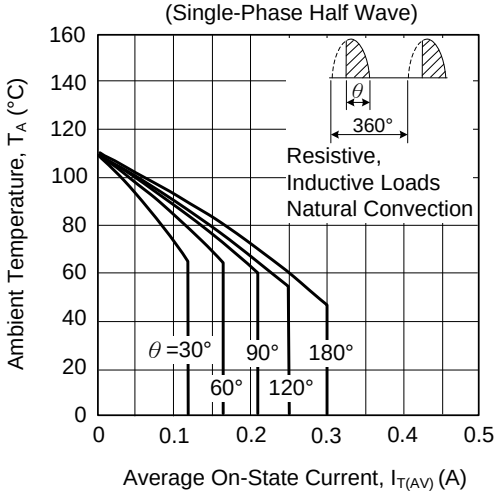


■ TYPICAL CHARACTERISTICS (Cont.)

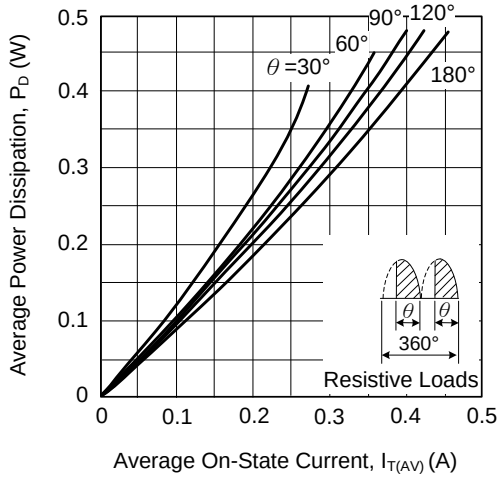
Maximum Average Power Dissipation
(Single-Phase Half Wave)



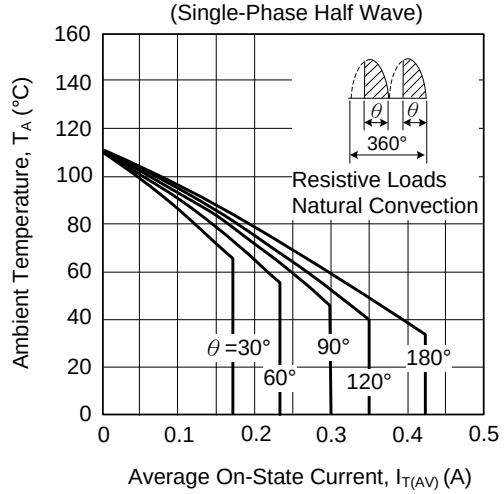
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



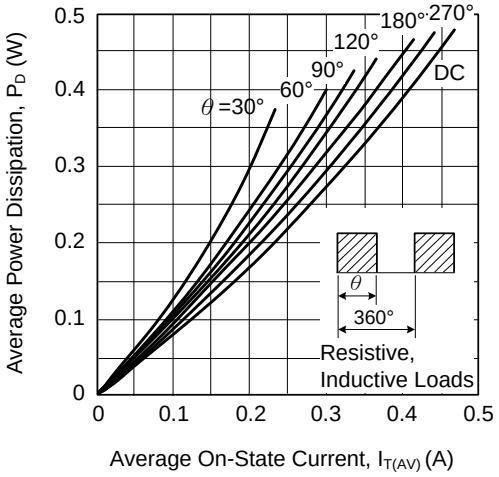
Maximum Average Power Dissipation
(Single-Phase Half Wave)



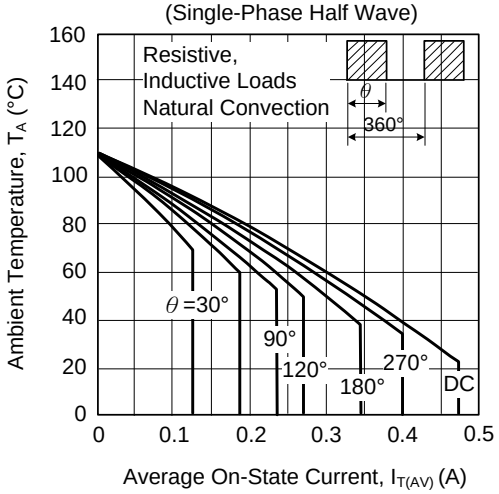
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



Maximum Average Power Dissipation
(Single-Phase Half Wave)

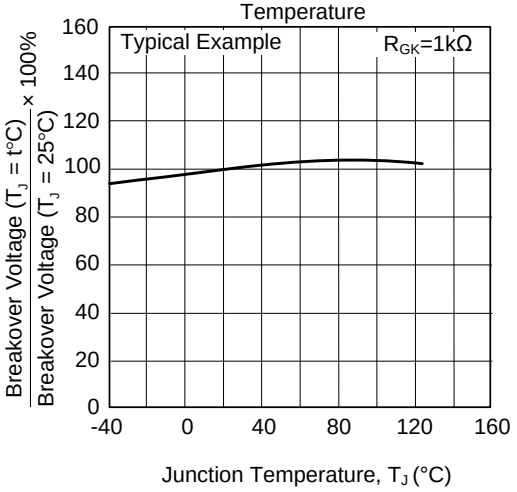


Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)

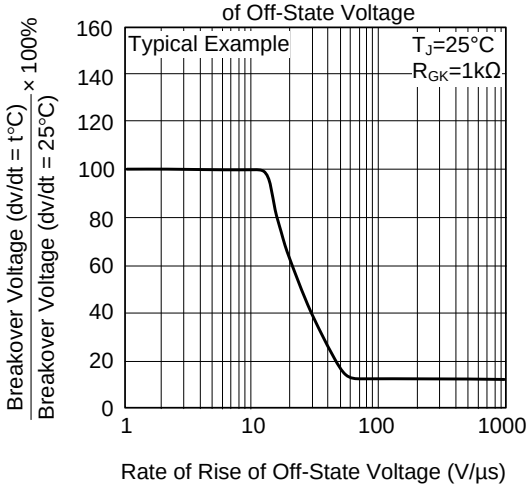


■ TYPICAL CHARACTERISTICS (Cont.)

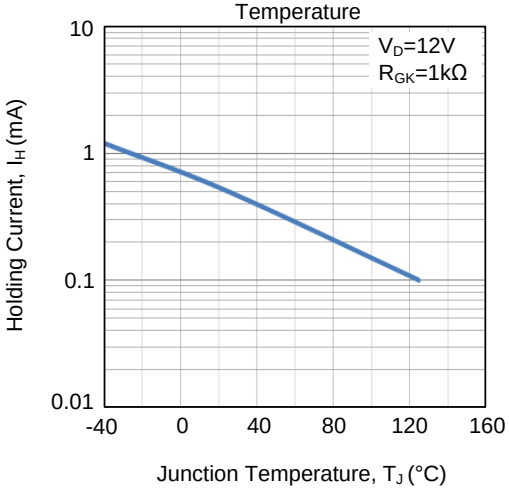
Breakover Voltage vs. Junction Temperature



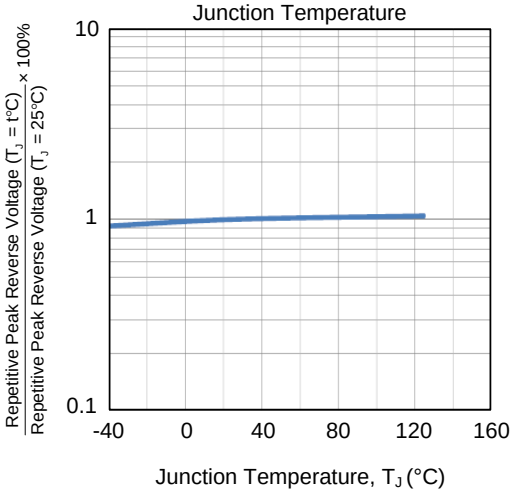
Breakover Voltage vs. Rate of Rise of Off-State Voltage



Holding Current vs. Junction Temperature



Repetitive Peak Reverse Voltage vs. Junction Temperature



Gate Trigger Current vs. Gate Current Pulse Width