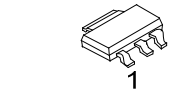
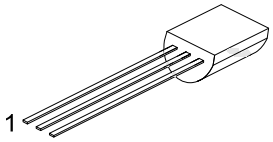
SENSITIVE SCRS



SOT-223



TO-92

■ DESCRIPTION

The UTC **X0202/A** SCR series is suitable for all applications where the available gate current is limited, such as ground fault circuit interruptors, overvoltage crowbar protection in low power supplies, capacitive ignition circuit, …….

■ FEATURES

* $I_{T(RMS)}$: 1.25A
* V_{DRM}/V_{RRM} :600/800V

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
X0202L-AA3-R	X0202G-AA3-R	SOT-223	K	A	G	Tape Reel
X0202L-T92-B	X0202G-T92-B	TO-92	K	G	A	Tape Box
X0202L-T92-K	X0202G-T92-K	TO-92	K	G	A	Bulk
X0202L-T92-R	X0202G-T92-R	TO-92	K	G	A	Tape Reel
X0202AL-AA3-R	X0202AG-AA3-R	SOT-223	K	A	G	Tape Reel
X0202AL-T92-B	X0202AG-T92-B	TO-92	K	G	A	Tape Box
X0202AL-T92-K	X0202AG-T92-K	TO-92	K	G	A	Bulk
X0202AL-T92-R	X0202AG-T92-R	TO-92	K	G	A	Tape Reel

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

X0202L-AA3-R (1)Packing Type (2)Package Type (3)Lead Free	(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AA3: SOT-223, T92: TO-92 (3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

PARAMETERS		SYMBOL	RATINGS	UNIT
Peak Repetitive Forward and Reverse Blocking Voltage (T_J=110℃, R_{GK}=1kΩ)	X0202	V_{DRM}, V_{RRM}	600	V
	X0202A		800	V
RMS On-State Current (Ttab=95℃) 180℃ Conduction Angle		$I_{T(RMS)}$	1.25	A
Average On-State Current (Ttab=95℃) 180℃ Conduction Angle		$I_{T(AV)}$	0.8	A
Non Repetitive Surge Peak on-State Current (tp=8.3ms T_J=25℃)		I_{TSM}	25	A
Non Repetitive Surge Peak on-State Current (tp=10ms T_J=25℃)		I_{TSM}	22.5	A
I^2t Value for Fusing (tp=10ms T_J=25℃)		I^2t	2.5	A^2S
Critical Rate Of Rise Of On-state Current I_G=2*I_{GT},tr≤100ns, f=60Hz, T_J=125℃		dI/dt	50	A/μs
Peak Gate Current (p=20μs T_J=125℃)		I_{GM}	1.2	A
Average Gate Power Dissipation (T_J=125℃)		$P_{G(AV)}$	0.2	W
Operating Junction Temperature Range		T_J	-40 ~ +125	℃
Storage Junction Temperature Range		T_{STG}	-40 ~ +150	℃

Note: 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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Tab	SOT-223	$θ_{JT}$	25	℃/W
	TO-92		60	℃/W
Junction to Ambient (S=5cm)	SOT-223	$θ_{JA}$	60	℃/W
	TO-92		150	℃/W

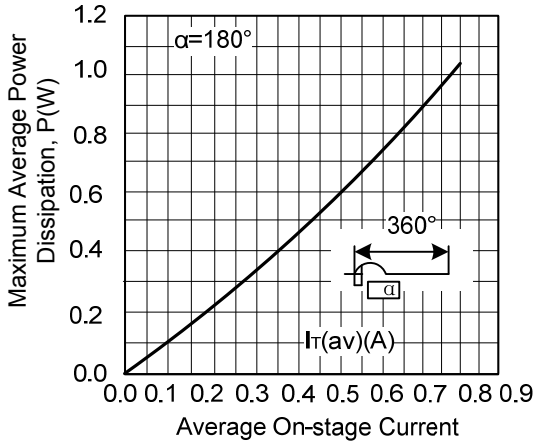
S=Copper surface under tab

■ ELECTRICAL CHARACTERISTICS (T_J=25℃, unless otherwise specified)

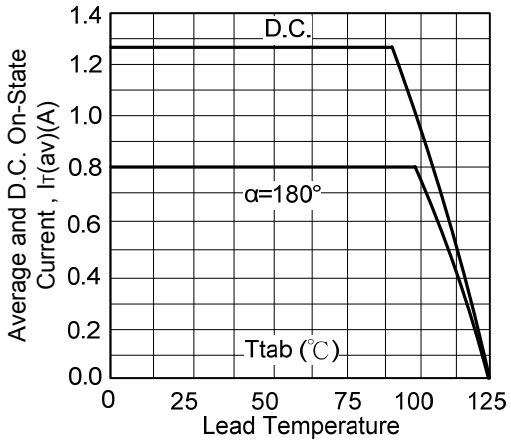
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Peak Forward or Reverse Blocking Current	T_J=25℃	I_{DRM}, I_{RRM}	V_{DRM}=V_{RRM}, R_{GK}=1kΩ			5	μA
	T_J=125℃					500	μA
Peak Forward On-State Voltage		V_{TM}	I_{TM}= 2.5A, tp=380μs			1.45	V
Gate Trigger Current		I_{GT}	V_D=12V, R_L=140Ω			200	μA
Gate Trigger Voltage		V_{GT}	V_D=12V, R_L=140Ω			0.8	V
Gate Non-Trigger Voltage		V_{GD}	V_D=V_{DRM}, R_L=3.3kΩ, R_{GK}=1kΩ, (T_J=125℃)	0.1			V
Holding Current		I_H	I_T=50mA, R_{GK}=1kΩ			5	mA
Latch Current		I_L	I_G=1mA, R_{GK}=1kΩ			6	mA
Critical Rate of Rise of Off-State Voltage		dv/dt	V_D=67%V_{DRM}, R_{GK}=1kΩ, (T_J=110℃)	10			V/μs
Peak Reversed Gate Voltage		V_{RG}	I_{RG}=10μA	8			V
Threshold Voltage		V_{TO}	(T_J=125℃)			0.9	V
Dynamic Resistance		Rd	(T_J=125℃)			200	mΩ

■ TYPICAL CHARACTERISTICS

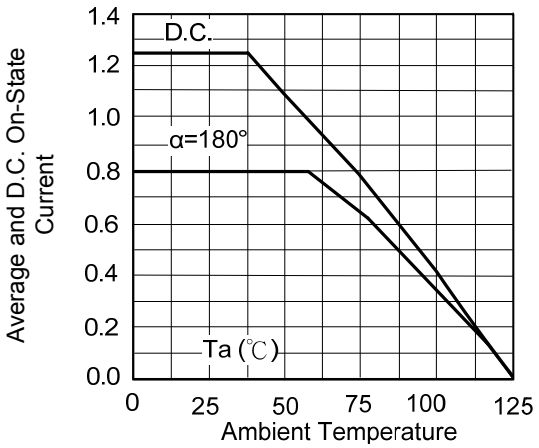
Maximum Average Power Dissipation vs. Average On-stage Current



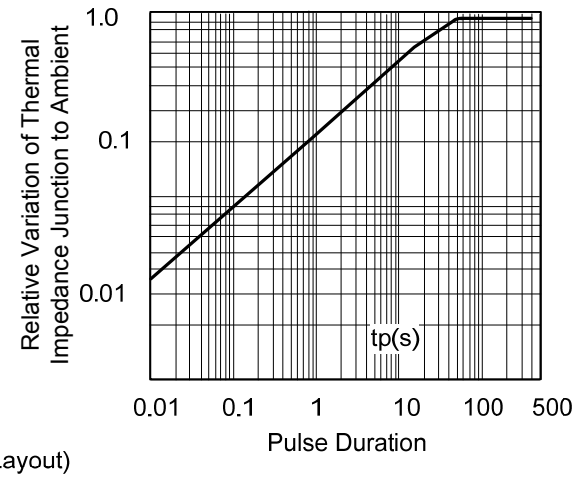
Average and D.C. On-state Current vs. Lead Temperature



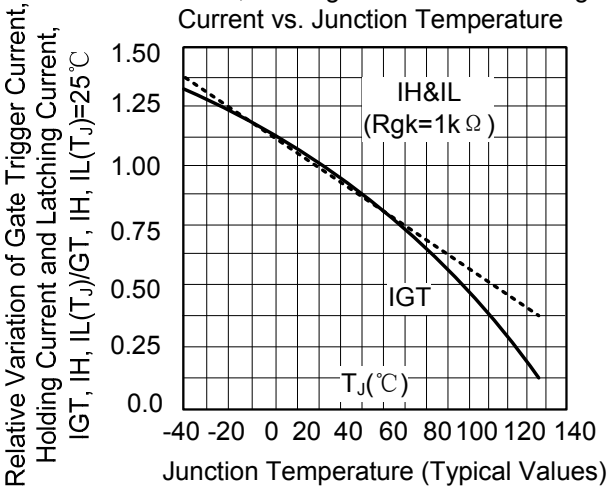
Average and D.C. On-State Current vs. Ambient Temperature (Device Mounted On FR4 with Recomended Pad Layout)



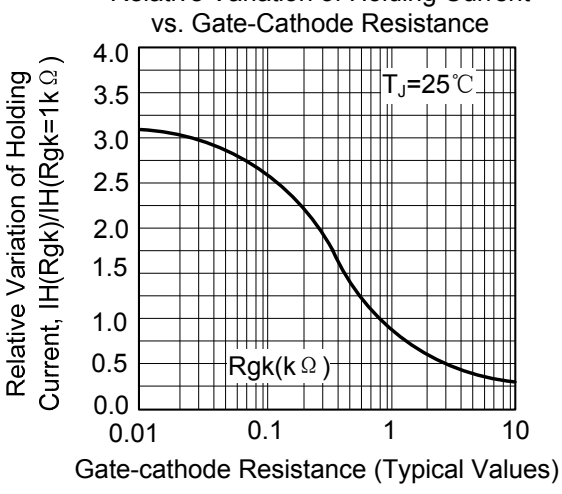
Relative Variation of Thermal Impedance Junction to Ambient vs. Pulse Duration



Relative Variation of Gate Trigger Current, Holding Current and Latching Current vs. Junction Temperature

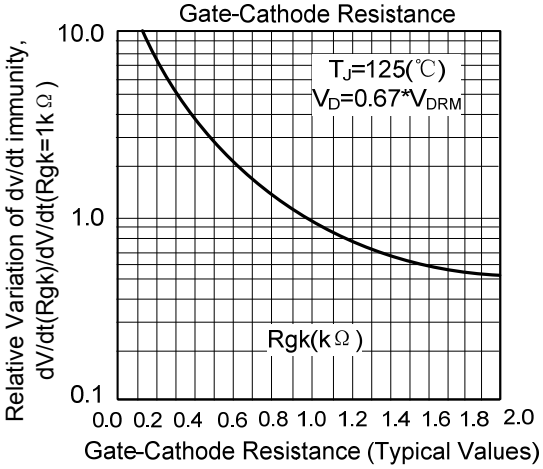


Relative Variation of Holding Current vs. Gate-Cathode Resistance

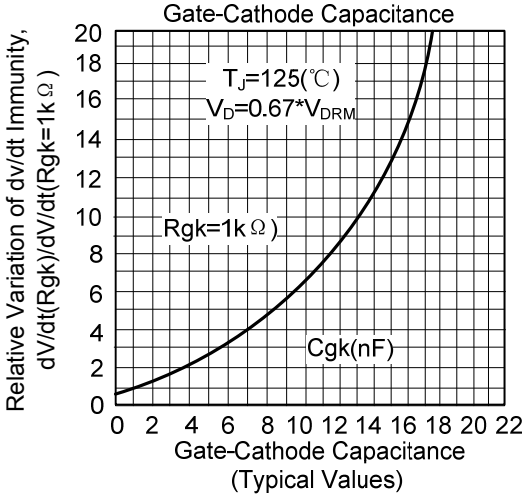


■ TYPICAL CHARACTERISTICS(Cont.)

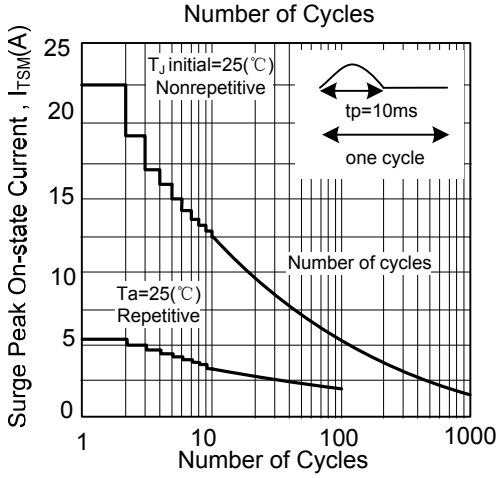
Relative Variation of dv/dt immunity vs. Gate-Cathode Resistance



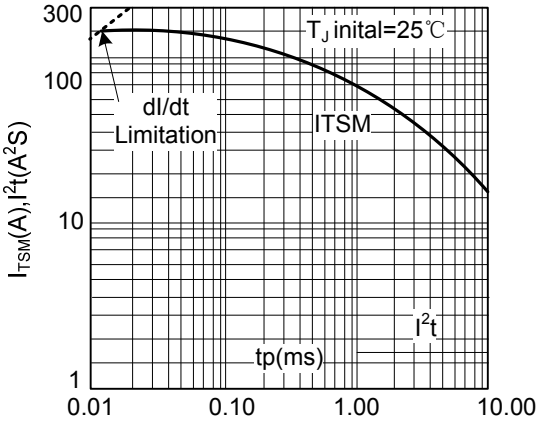
Relative Variation of dv/dt Immunity vs. Gate-Cathode Capacitance



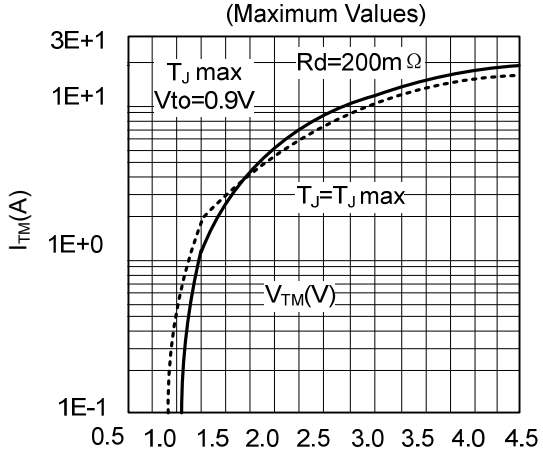
Surge Peak On-state Current vs. Number of Cycles



Non-Repetitive Surge Peak On-State Current for a Sinusoidal Pulse with Width tp<10ms, and Corresponding Value of I^2t



On-state Characteristics (Maximum Values)



Thermal Resistance Junction to Ambient vs. Copper Surface Under Tab