


UNISONIC TECHNOLOGIES CO., LTD
X0202/A
SCR

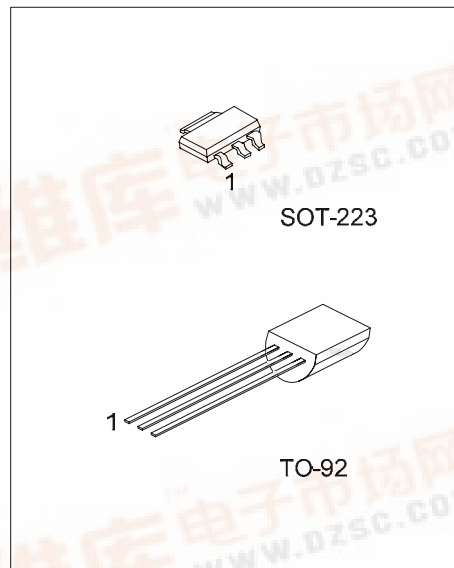
SENSITIVE SCRS

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



*Pb-free plating product number:
X0202L/X0202AL

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
X0202-AA3-R	X0202L-AA3-R	SOT-223	K	A	G	Tape Reel
X0202-T92-B	X0202L-T92-B	TO-92	K	G	A	Tape Box
X0202-T92-K	X0202L-T92-K	TO-92	K	G	A	Bulk
X0202-T92-R	X0202L-T92-R	TO-92	K	G	A	Tape Reel
X0202A-AA3-R	X0202AL-AA3-R	SOT-223	K	A	G	Tape Reel
X0202A-T92-B	X0202AL-T92-B	TO-92	K	G	A	Tape Box
X0202A-T92-K	X0202AL-T92-K	TO-92	K	G	A	Bulk
X0202A-T92-R	X0202AL-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 Plating		(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AA3: SOT-223, T92: TO-92 (3) L: Lead Free Plating, Blank: Pb/Sn
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■ **ABSOLUTE MAXIMUM RATINGS** (unless otherwise specified)

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

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	$^{\circ}\text{C}/\text{W}$
	TO-92		60	$^{\circ}\text{C}/\text{W}$
Junction to Ambient ($S=5\text{cm}$)	SOT-223	θ_{JA}	60	$^{\circ}\text{C}/\text{W}$
	TO-92		150	$^{\circ}\text{C}/\text{W}$

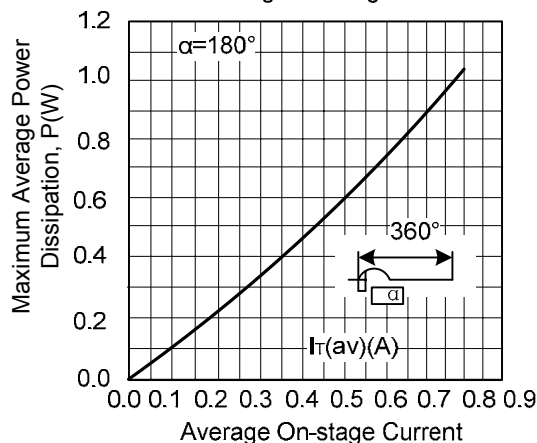
S=Copper surface under tab

■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

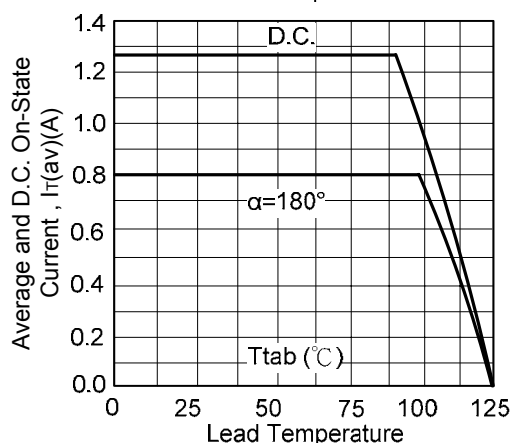
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Peak Forward or Reverse Blocking Current	I_{DRM} , I_{RRM}	$V_{\text{DRM}}=V_{\text{RRM}}$, $R_{\text{GK}}=1\text{k}\Omega$			5	μA
					500	μA
Peak Forward On-State Voltage	V_{TM}	$I_{\text{TM}}=2.5\text{A}$, $t_p=380\mu\text{s}$			1.45	V
Gate Trigger Current	I_{GT}	$V_D=12\text{V}$, $R_L=140\Omega$			200	μA
Gate Trigger Voltage	V_{GT}	$V_D=12\text{V}$, $R_L=140\Omega$			0.8	V
Gate Non-Trigger Voltage	V_{GD}	$V_D=V_{\text{DRM}}$, $R_L=3.3\text{k}\Omega$, $R_{\text{GK}}=1\text{k}\Omega$, ($T_J=125^{\circ}\text{C}$)	0.1			V
Holding Current	I_{H}	$I_T=50\text{mA}$, $R_{\text{GK}}=1\text{k}\Omega$			5	mA
Latch Current	I_{L}	$I_G=1\text{mA}$, $R_{\text{GK}}=1\text{k}\Omega$			6	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_D=67\%V_{\text{DRM}}$, $R_{\text{GK}}=1\text{k}\Omega$, ($T_J=110^{\circ}\text{C}$)	10			$\text{V}/\mu\text{s}$
Peak Reversed Gate Voltage	V_{RG}	$I_{\text{RG}}=10\mu\text{A}$	8			V
Threshold Voltage	V_{TO}	($T_J=125^{\circ}\text{C}$)			0.9	V
Dynamic Resistance	R_d	($T_J=125^{\circ}\text{C}$)			200	$\text{m}\Omega$

■ TYPICAL CHARACTERISTICS

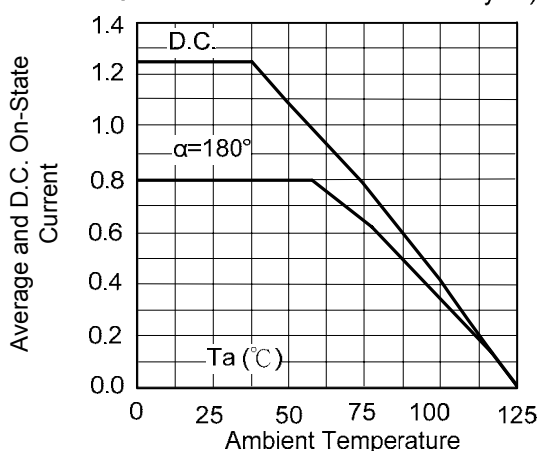
Maximum Average Power Dissipation
vs. Average On-state Current



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

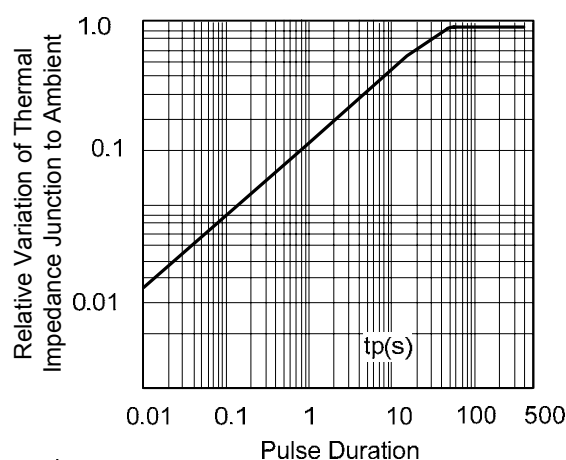


Average and D.C. On-State Current vs.
Ambient Temperature (Device Mounted
On FR4 with Recommended Pad Layout)

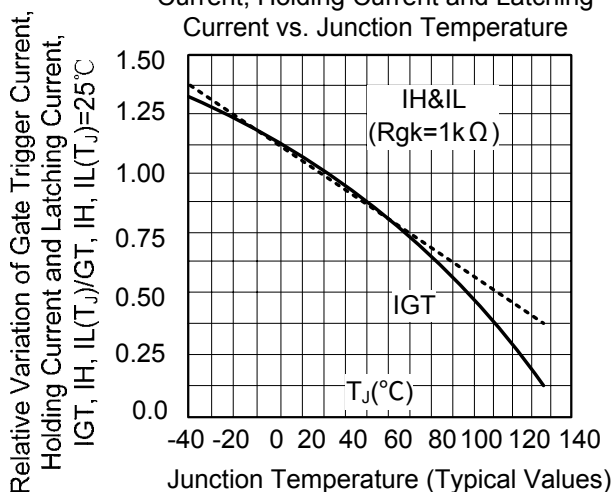


(Device Mounted On FR4 with Recommended Pad Layout)

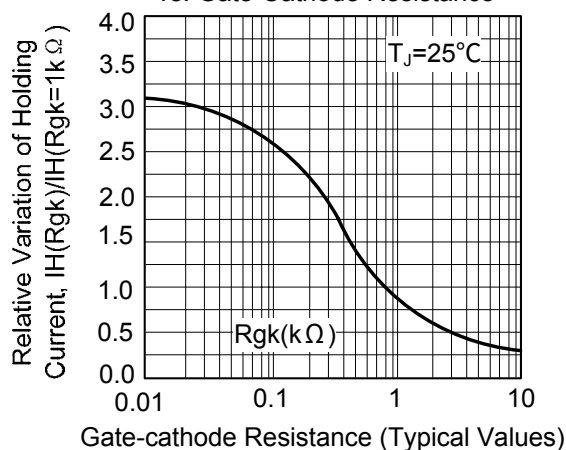
Relative Variation of Thermal Impedance
Junction to Ambient vs. Pulse Duration



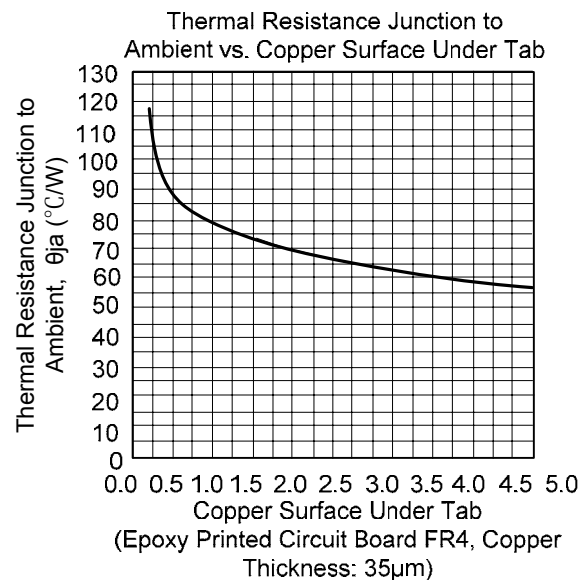
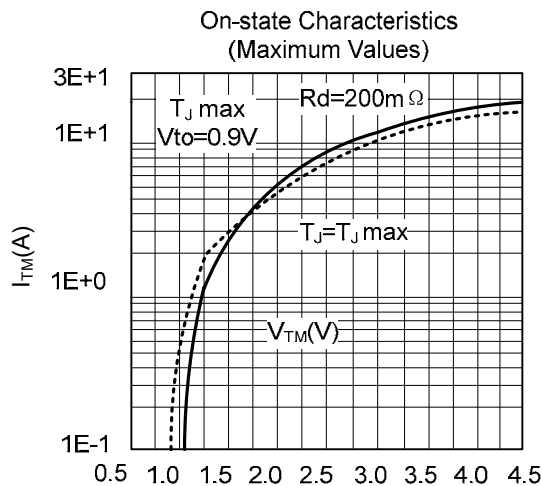
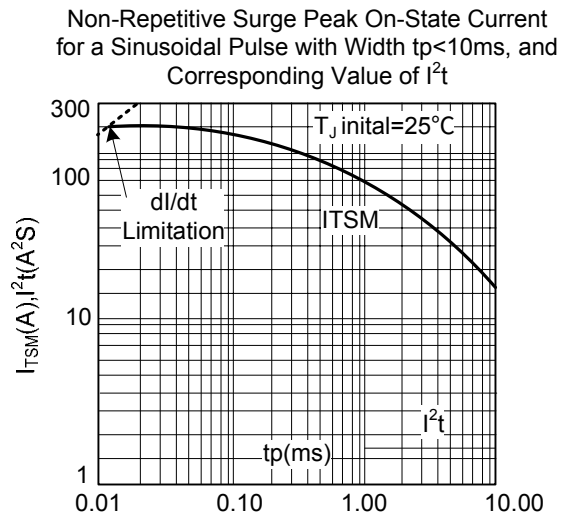
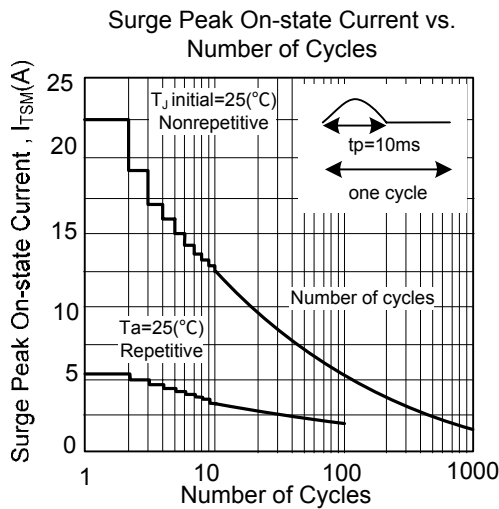
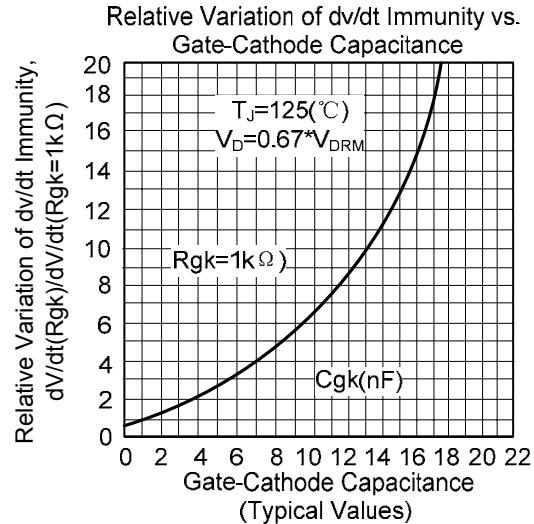
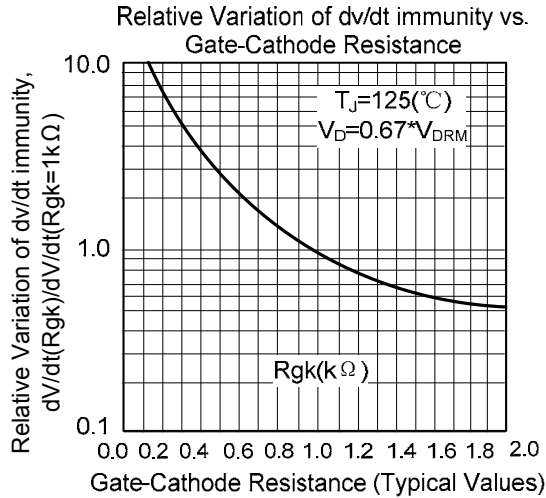
Relative Variation of Gate Trigger
Current, Holding Current and Latching
Current vs. Junction Temperature



Relative Variation of Holding Current
vs. Gate-Cathode Resistance



■ TYPICAL CHARACTERISTICS(Cont.)



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