



X0405

SCR

4A SCR

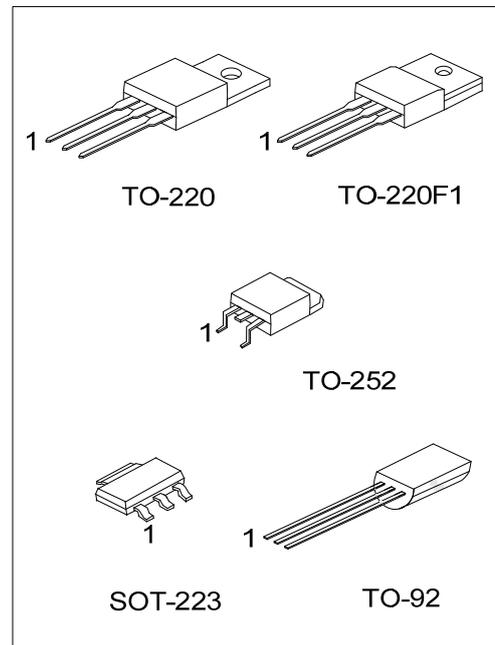
DESCRIPTION

The UTC **X0405** is a 4A SCR, it uses UTC's advanced technology to provide customers with highly sensitive triggering levels, etc.

The UTC **X0405** is suitable for all applications, such as motor control in kitchen aids, capacitive discharge ignitions, and overvoltage crowbar protection in low power supplies, etc.

FEATURES

* Highly sensitive triggering levels



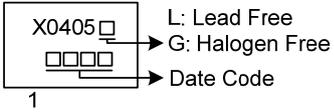
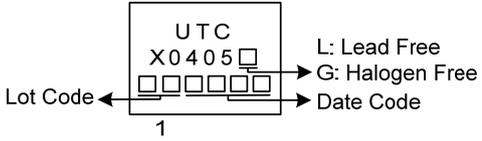
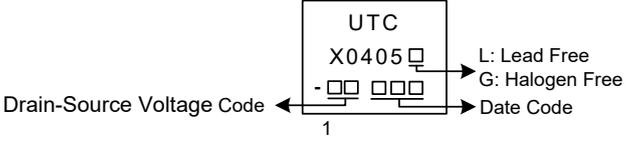
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
X0405L-x-x-AA3-R	X0405G-x-x-AA3-R	SOT-223	K	A	G	Tape Reel
X0405L-x-x-TA3-T	X0405G-x-x-TA3-T	TO-220	K	A	G	Tube
X0405L-x-x-TF1-T	X0405G-x-x-TF1-T	TO-220F1	K	A	G	Tube
X0405L-x-x-TN3-R	X0405G-x-x-TN3-R	TO-252	K	A	G	Tape Reel
X0405L-x-x-T92-B	X0405G-x-x-T92-B	TO-92	G	A	K	Tape Box
X0405L-x-x-T92-K	X0405G-x-x-T92-K	TO-92	G	A	K	Bulk

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

<p>X0405G-x-x-AA3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Drain-Source Voltage (5)Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) AA3: SOT-223, TA3: TO-220, TF1: TO-220F1, TN3: TO-252, T92: TO-92 (3) x: Refer to CLASSIFICATION OF I_{GT} (4) 6: 600V, 8: 800V, 10: 1000V (5) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

PACKAGE	MARKING
SOT-223	 <p>X0405 □ → L: Lead Free □ □ □ → G: Halogen Free □ □ □ → Date Code 1</p>
TO-220/TO-220F1 TO-252	 <p>UTC X0405 □ → L: Lead Free □ □ □ □ □ → G: Halogen Free □ □ □ □ □ → Date Code Lot Code ← □ □ □ □ □ 1</p>
TO-92	 <p>UTC X0405 □ → L: Lead Free - □ □ □ □ □ → G: Halogen Free □ □ □ □ □ → Date Code Drain-Source Voltage Code ← □ □ □ □ □ 1</p>

■ ABSOLUTE MAXIMUM RATINGS (limiting values)

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive Peak Off-State Voltages	X0405-6	V_{DRM}/V_{RRM}	600	V
	X0405-8		800	V
RMS On-State Current (180° Conduction Angle)	$T_J=60^{\circ}\text{C}$	$I_{T(RMS)}$	4	A
	$T_A=25^{\circ}\text{C}$		1.35	A
Average On-State Current (180° Conduction Angle)	$T_J=60^{\circ}\text{C}$	$I_{T(AV)}$	2.5	A
	$T_A=25^{\circ}\text{C}$		0.9	A
Non Repetitive Surge Peak On-State Current	$t_p=8.3\text{ms}, T_J=25^{\circ}\text{C}$	I_{TSM}	33	A
	$t_p=10\text{ms}, T_J=25^{\circ}\text{C}$		30	A
I^2t Value for Fusing	$t_p=10\text{ms}, T_J=25^{\circ}\text{C}$	I^2t	4.5	A^2s
Critical Rate of Rise of On-State Current $I_G=2 \times I_{GT}, t_r \leq 100\text{ns}$	$F=60\text{Hz}, T_J=125^{\circ}\text{C}$	di/dt	50	$\text{A}/\mu\text{s}$
Peak Gate Current	$t_p=20\mu\text{s}, T_J=125^{\circ}\text{C}$	I_{GM}	1.2	A
Average Gate Power Dissipation	$T_J=125^{\circ}\text{C}$	$P_{G(AV)}$	0.2	W
Operating Junction Temperature		T_J	-40 ~ +125	$^{\circ}\text{C}$
Storage Junction Temperature		T_{STG}	-40 ~ +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 Ambient (DC)	SOT-223	θ_{JA}	180	$^{\circ}\text{C}/\text{W}$
	TO-220/TO-220F1		60	$^{\circ}\text{C}/\text{W}$
	TO-252		75	$^{\circ}\text{C}/\text{W}$
	TO-92		200	$^{\circ}\text{C}/\text{W}$
Junction to Case (DC)	SOT-223	θ_{JC}	30	$^{\circ}\text{C}/\text{W}$
	TO-220		2	$^{\circ}\text{C}/\text{W}$
	TO-220F1		4	$^{\circ}\text{C}/\text{W}$
	TO-252		3	$^{\circ}\text{C}/\text{W}$
	TO-92		70	$^{\circ}\text{C}/\text{W}$

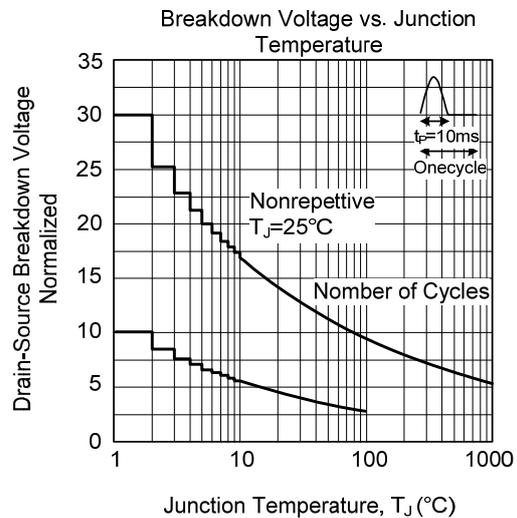
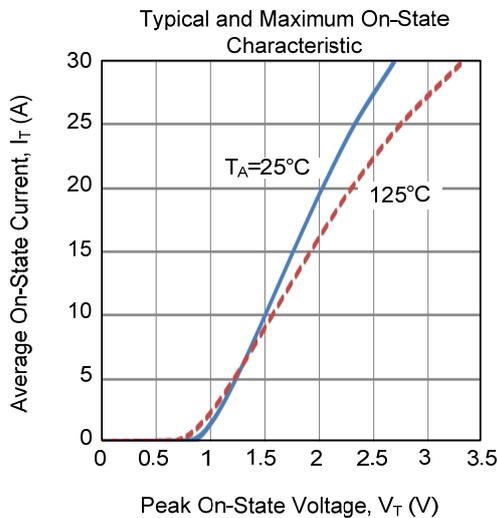
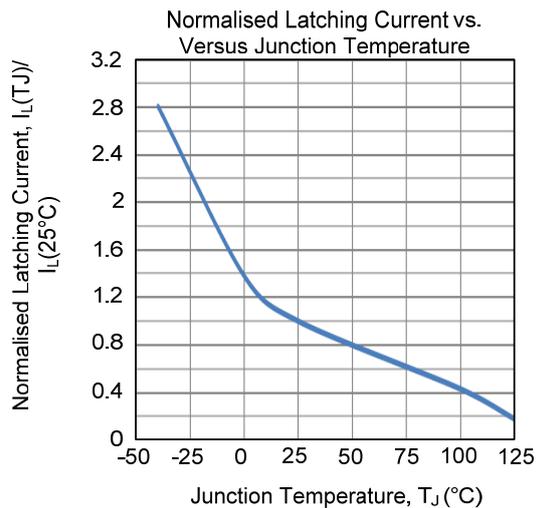
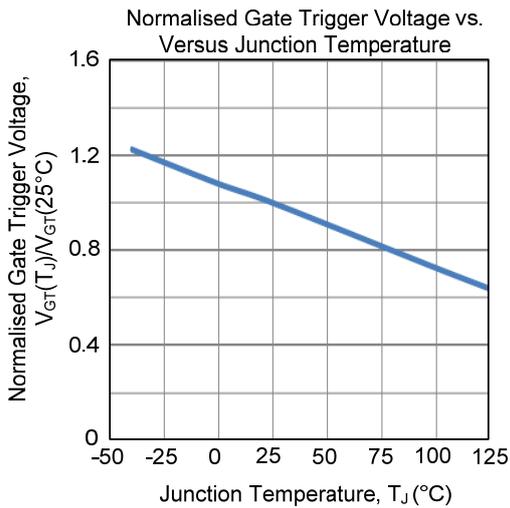
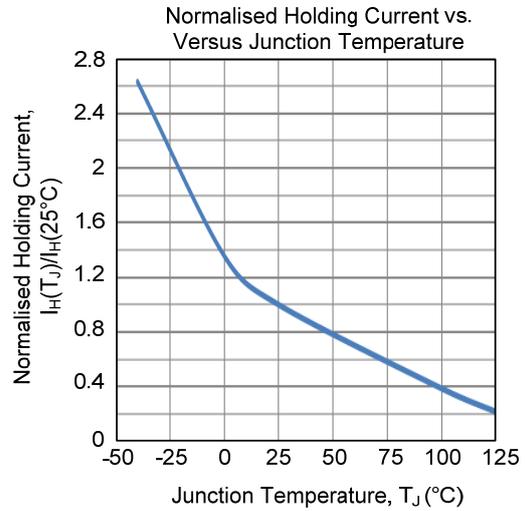
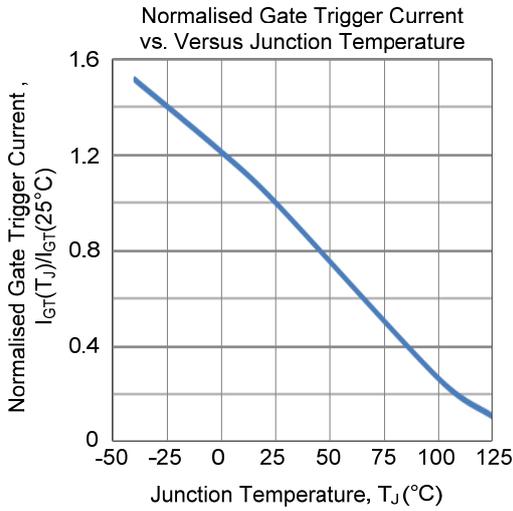
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	I_{GT}	$V_D=12\text{V}, R_L=140\Omega$	20		200	μA
Gate Trigger Voltage	V_{GT}				0.8	V
Gate Non-Trigger Voltage	V_{GD}	$V_D=V_{DRM}, R_L=3.3\text{k}\Omega, R_{GK}=1\text{k}\Omega, T_J=125^{\circ}\text{C}$	0.1			V
Repetitive Gate Voltage	V_{RG}	$I_{RG}=10\mu\text{A}$	8			V
Holding Current	I_H	$I_T=50\text{mA}, R_{GK}=1\text{k}\Omega$			5	mA
Latching Current	I_L	$I_G=1\text{mA}, R_{GK}=1\text{k}\Omega$	6			mA
Critical Rate of Rise of Off-State Voltage	dV/dt	$V_D=67\%V_{DRM}, R_{GK}=1\text{k}\Omega, T_J=110^{\circ}\text{C}$	15			$\text{V}/\mu\text{s}$
Peak On-State Voltage	V_{TM}	$I_{TM}=8\text{A}, t_p=380\mu\text{s}, T_J=25^{\circ}\text{C}$			1.8	V
Threshold Voltage	V_{TO}	$T_J=125^{\circ}\text{C}$			0.95	V
Dynamic Resistance	R_D	$T_J=125^{\circ}\text{C}$			100	$\text{m}\Omega$
Repetitive Peak Off-State Current	I_{DRM}	$V_{DRM}=V_{RRM}, R_{GK}=1\text{k}\Omega, T_J=25^{\circ}\text{C}$			5	μA
	I_{RRM}	$V_{DRM}=V_{RRM}, R_{GK}=1\text{k}\Omega, T_J=125^{\circ}\text{C}$			1	mA

■ CLASSIFICATION OF I_{GT}

RANK	A	B
RANGE	< 200 μA	20 ~ 50 μA

■ TYPICAL CHARACTERISTICS



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