



## X0405

SCR

### 4A SCR

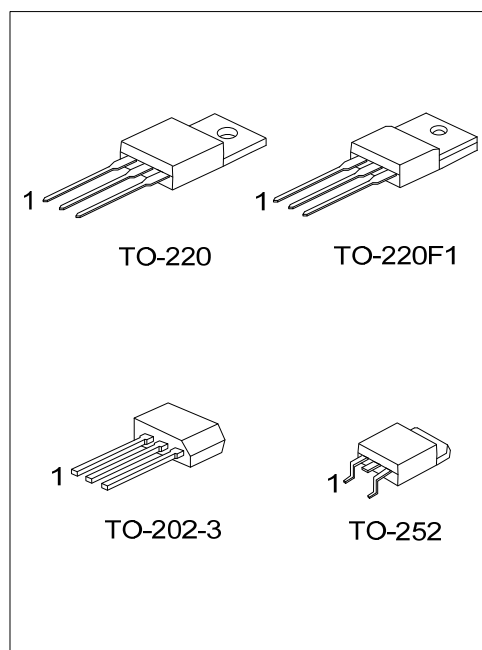
#### DESCRIPTION

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



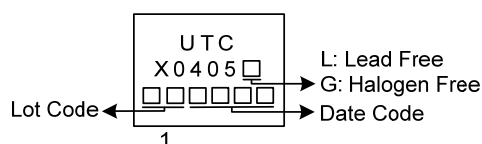
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
X0405L-x-x-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-TD3-T	X0405G-x-x-TD3-T	TO-202-3	K	A	G	Tube
X0405L-x-x-TN3-R	X0405G-x-x-TN3-R	TO-252	K	A	G	Tape Reel

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

<p>X0405G-x-x-TA3-T</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) TA3: TO-220, TF1: TO-220F1, TD3: TO-202-3 TN3: TO-252 (3) x: Refer to CLASSIFICATION OF I<sub>GT</sub> (4) 6: 600V, 8: 800V (5) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



### ■ 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	$\text{A}^2\text{s}$
Critical Rate of Rise of On-State Current $I_G=2I_{GT}, t_r \leq 100\text{ns}$	$F=60\text{Hz}, T_J=125^{\circ}\text{C}$	$di/dt$	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	$T_J$		$-40 \sim +125$	$^{\circ}\text{C}$
Storage Junction Temperature	$T_{STG}$		$-40 \sim +150$	$^{\circ}\text{C}$

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 RESISTANCES CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (DC)	TO-220	$\theta_{JA}$	60	$^{\circ}\text{C}/\text{W}$
	TO-220F1			
	TO-202-3		100	$^{\circ}\text{C}/\text{W}$
	TO-252		75	$^{\circ}\text{C}/\text{W}$
Junction to Case (DC)	TO-220	$\theta_{JC}$	2	$^{\circ}\text{C}/\text{W}$
	TO-220F1		4	$^{\circ}\text{C}/\text{W}$
	TO-202-3		15	$^{\circ}\text{C}/\text{W}$
	TO-252		3	$^{\circ}\text{C}/\text{W}$

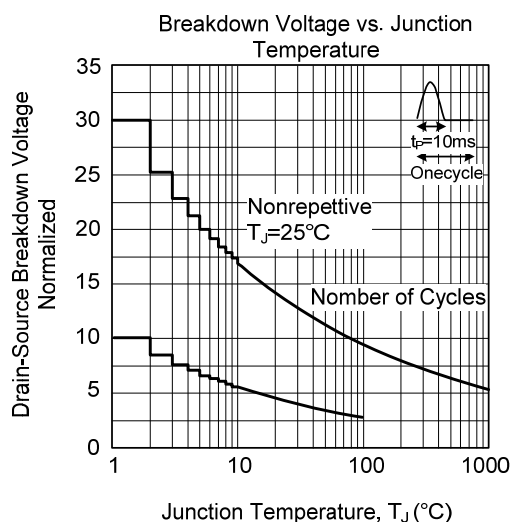
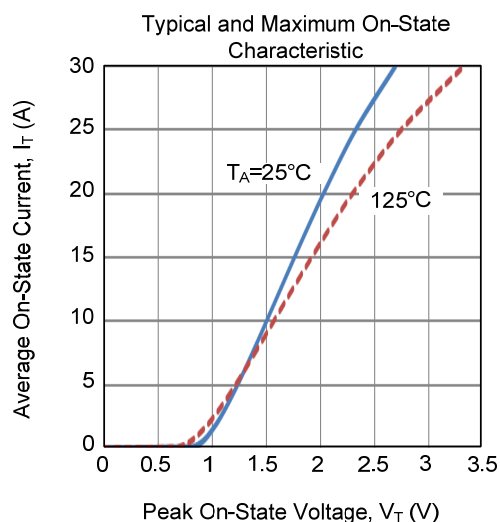
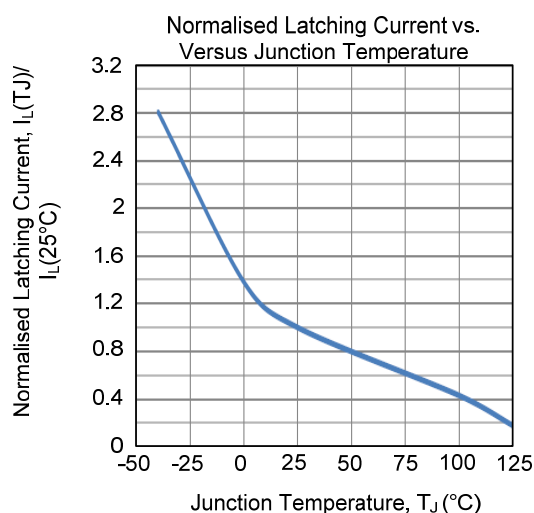
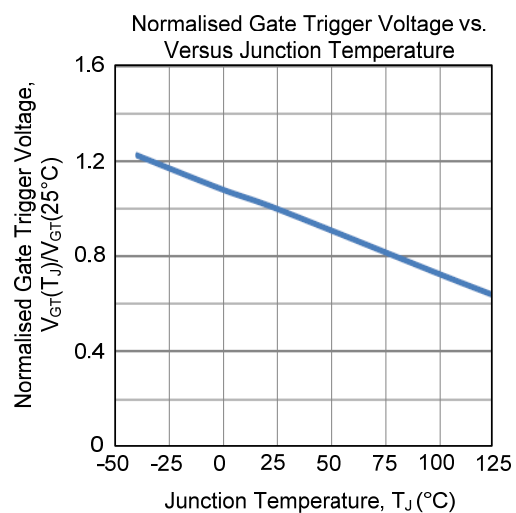
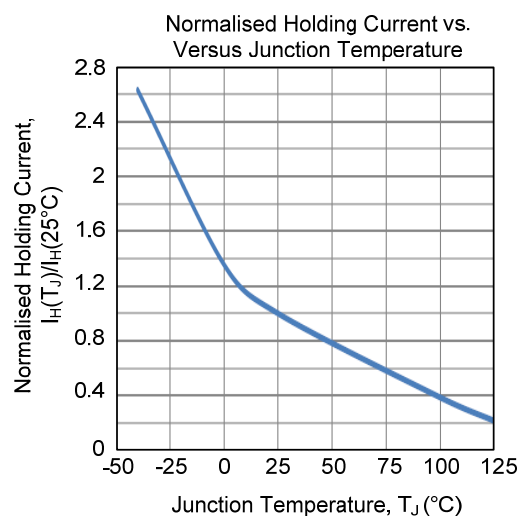
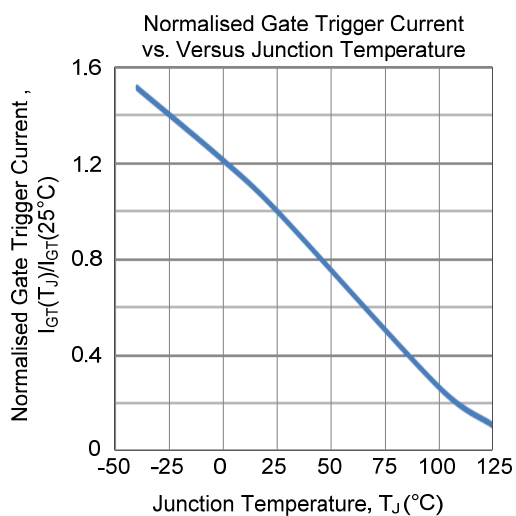
### ■ ELECTRICAL CHARACTERISTICS ( $T_J=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	$I_{GT}$	$V_D=12\text{V}, R_L=140\Omega$	20		200	$\mu\text{A}$
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	$\mu\text{A}$
	$I_{RRM}$	$V_{DRM}=V_{RRM}, R_{GK}=1\text{k}\Omega, T_J=125^{\circ}\text{C}$			1	mA

### ■ CLASSIFICATION OF $I_{GT}$

RANK	A	B
RANGE	$< 200 \mu\text{A}$	$20 \sim 50 \mu\text{A}$

# TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.