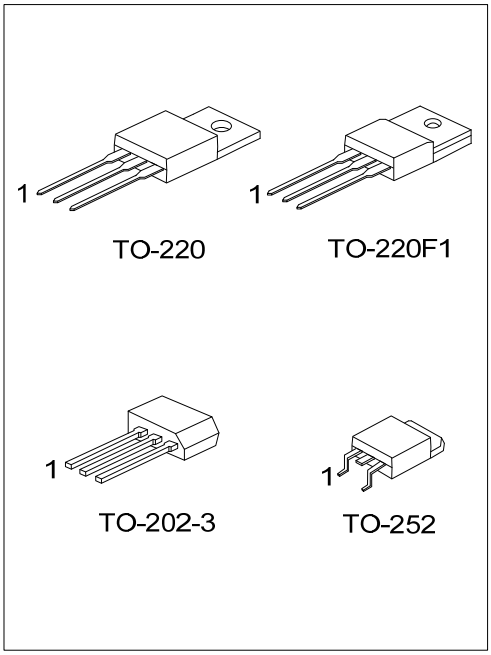
4A SCR



■ 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.

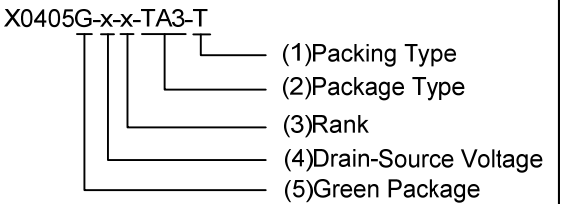
■ FEATURES

* Highly sensitive triggering levels

■ ORDERING INFORMATION

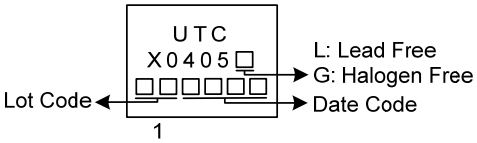
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
X0405L-x-x-TA3-T	X0405G-x-x-TA3-T	TO-220	K	A	G	Tube
X0405L-x-x-TF1-T	X0405G-x-x-TF1-T	TO-220F1	K	A	G	Tube
X0405L-x-x-TD3-T	X0405G-x-x-TD3-T	TO-202-3	K	A	G	Tube
X0405L-x-x-TN3-R	X0405G-x-x-TN3-R	TO-252	K	A	G	Tape Reel

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



(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_{GT}
(4) 6: 600V, 8: 800V
(5) G: Halogen Free and Lead Free, L: Lead Free

■ 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_l=60°C	$I_{T(RMS)}$	4	A
	T_A=25°C		1.35	A
Average On-State Current (180° Conduction Angle)	T_l=60°C	$I_{T(AV)}$	2.5	A
	T_A=25°C		0.9	A
Non Repetitive Surge Peak On-State Current	t_P=8.3ms, T_J=25°C	I_{TSM}	33	A
	t_P=10ms, T_J=25°C		30	A
I^2t Value for Fusing	t_P=10ms, T_J=25°C	I^2t	4.5	A^2s
Critical Rate of Rise of On-State Current I_G=2xI_{GT} ,tr≤100ns	F=60Hz, T_J=125°C	dI/dt	50	A/μs
Peak Gate Current	t_P=20μs, T_J=125°C	I_{GM}	1.2	A
Average Gate Power Dissipation	T_J=125°C	$P_{G(AV)}$	0.2	W
Operating Junction Temperature		T_J	-40 ~ +125	°C
Storage Junction Temperature		T_{STG}	-40 ~ +150	°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 TO-220F1	θ_{JA}	60	°C/W
	TO-202-3		100	°C/W
	TO-252		75	°C/W
Junction to Case (DC)	TO-220	θ_{JC}	2	°C/W
	TO-220F1		4	°C/W
	TO-202-3		15	°C/W
	TO-252		3	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

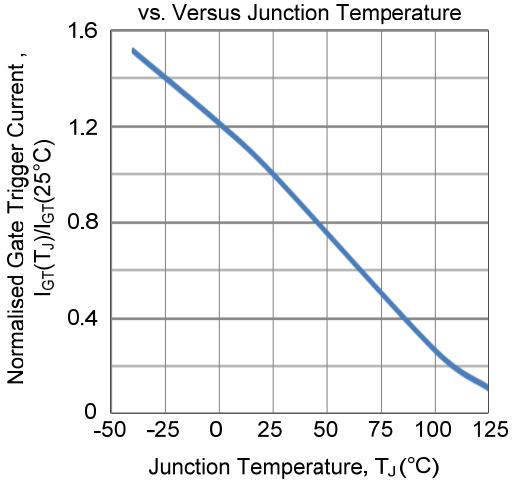
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	I_{GT}	V_D=12V, R_L=140Ω	20		200	μA
Gate Trigger Voltage	V_{GT}				0.8	V
Gate Non-Trigger Voltage	V_{GD}	V_D=V_{DRM}, R_L=3.3kΩ, R_{GK}=1kΩ, T_J=125°C	0.1			V
Repetitive Gate Voltage	V_{RG}	I_{RG}=10μA	8			V
Holding Current	I_H	I_T=50mA, R_{GK}=1kΩ			5	mA
Latching 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°C	15			V/μs
Peak On-State Voltage	V_{TM}	I_{TM}=8A, t_p=380μs, T_J=25°C			1.8	V
Threshold Voltage	V_{TO}	T_J=125°C			0.95	V
Dynamic Resistance	R_D	T_J=125°C			100	mΩ
Repetitive Peak Off-State Current	I_{DRM}	V_{DRM}=V_{RRM}, R_{GK}=1kΩ, T_J=25°C			5	μA
	I_{RRM}	V_{DRM}=V_{RRM}, R_{GK}=1kΩ, T_J=125°C			1	mA

■ CLASSIFICATION OF I_{GT}

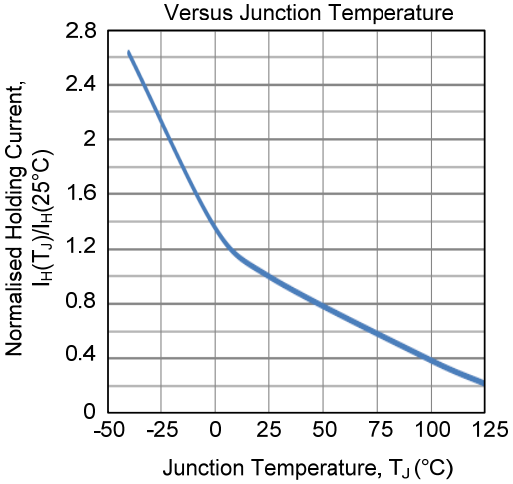
RANK	A	B
RANGE	< 200 μA	20 ~ 50 μA

■ TYPICAL CHARACTERISTICS

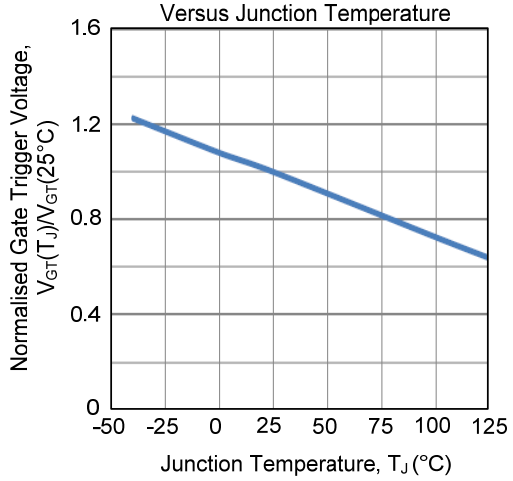
Normalised Gate Trigger Current vs. Versus Junction Temperature



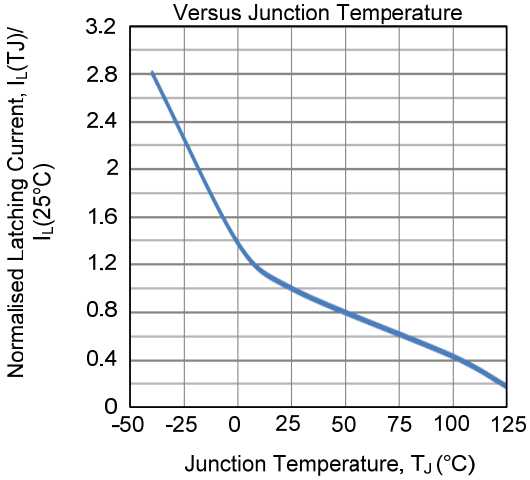
Normalised Holding Current vs. Versus Junction Temperature



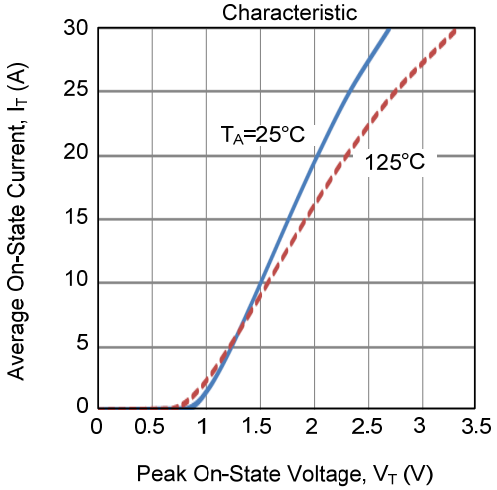
Normalised Gate Trigger Voltage vs. Versus Junction Temperature



Normalised Latching Current vs. Versus Junction Temperature



Typical and Maximum On-State Characteristic



Breakdown Voltage vs. Junction Temperature