



UBCR303

Preliminary

TRIACS

3A TRIAC

DESCRIPTION

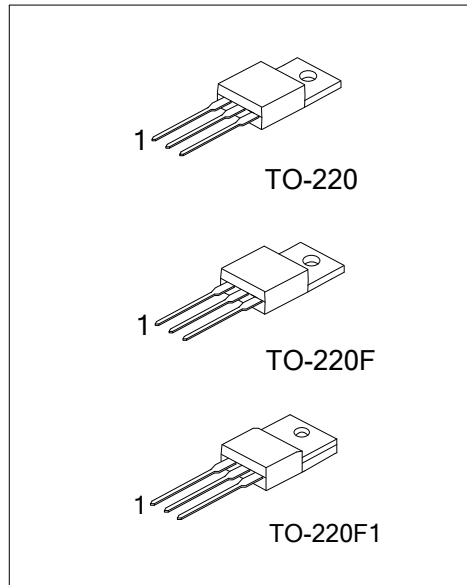
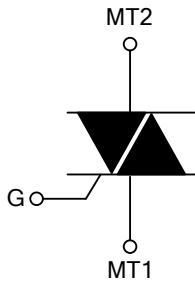
The UTC **UBCR303** is a 3A triacs which can be operated in 3 quadrants only, it uses UTC's advanced technology to provide customers with high commutation performances, etc.

The UTC **UBCR303** is suitable for inversion operation of capacitor motor, washing machine, and other general controlling devices.

FEATURES

- * $I_{T(RMS)}$: 3A
- * V_{DRM} : 800V ($T_J=125^\circ\text{C}$)
- * $I_{FGT\ I}, I_{RGT\ I}, I_{RGT\ III}$: 30mA

SYMBOL



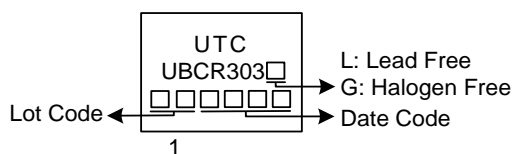
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UBCR303L-x-TA3-T	UBCR303G-x-TA3-T	TO-220	MT1	MT2	G	Tube
UBCR303L-x-TF1-T	UBCR303G-x-TF1-T	TO-220F1	MT1	MT2	G	Tube
UBCR303L-x-TF3-T	UBCR303G-x-TF3-T	TO-220F	MT1	MT2	G	Tube

Note: Pin Assignment: MT1: MT1 MT2: MT2 G: Gate

<p>UBCR303G-x-TA3-T</p> <p>(1) Packing Type (2) Package Type (3) V_{DRM} (4) Green Package</p>	<p>(1) T: Tube (2) TA3: TO-220, TF3: TO-220F, TF1: TO-220F1 (3) 7: 700V, 8: 800V (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Repetitive Peak Off-State Voltage (Note 1)	V_{DRM} / V_{RRM}	800	V
RMS On-State Current (Commercial Frequency, Sine Full Wave 360° Conduction, $T_C=130^{\circ}\text{C}$)	$I_{T(RMS)}$	3.0	A
Surge On-State Current (60Hz Sinewave 1 Full Cycle, Peak Value, Non-Repetitive)	I_{TSM}	30	A
I^2t for Fusing (Value Corresponding to 1 Cycle of Half Wave 60Hz, Surge On-State Current)	I^2t	3.7	A^2s
Peak Gate Power Dissipation	P_{GM}	5	W
Average Gate Power Dissipation	$P_{G(AV)}$	0.5	W
Peak Gate Voltage	V_{GM}	10	V
Peak Gate Current	I_{GM}	2	A
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 Case (Note 3)	TO-220	3.2	$^{\circ}\text{C/W}$
	TO-220F1	5.2	$^{\circ}\text{C/W}$
	TO-220F	5.2	$^{\circ}\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current (Note 2)	I_{GT}	$T_J=25^{\circ}\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	I		30	mA
			II		30	mA
			III		30	mA
Gate Trigger Voltage (Note 2)	V_{GT}	$T_J=25^{\circ}\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	I		1.5	V
			II		1.5	V
			III		1.5	V
Gate Non-Trigger Voltage	V_{GD}	$T_J=150^{\circ}\text{C}$, $V_D=1/2 V_{DRM}$	0.1			V
Holding Current (Note 2)	I_H	$I_T=300\text{mA}$		4.0		mA
Latching Current	I_L	$I_G=1.2I_{GT}$	I-II		8.0	mA
			II		17	mA
Critical Rate of Rise of Off-State commutation Voltage (Note 3)	$(dv/dt)_c$	$T_J=125^{\circ}\text{C}$	5			$\text{V}/\mu\text{s}$

■ STATIC CHARACTERISTICS

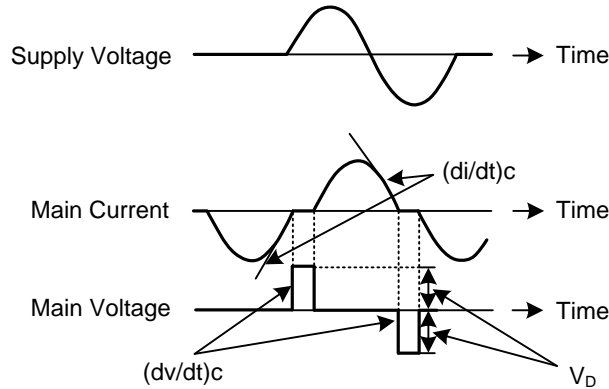
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
On-State Voltage	V_{TM}	$T_J=25^{\circ}\text{C}$, $I_{TM}=4.5\text{A}$, Instantaneous Measurement			1.6	V
Repetitive Peak Off-State Current	I_{DRM}	$T_J=150^{\circ}\text{C}$, V_{DRM} Applied			2.0	mA

Notes: 1. Gate open.

2. Measurement using the gate trigger characteristics measurement circuit.

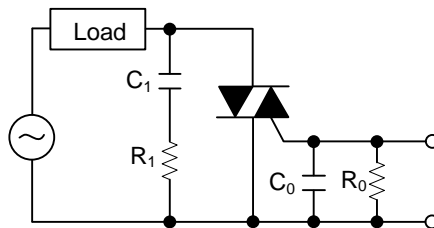
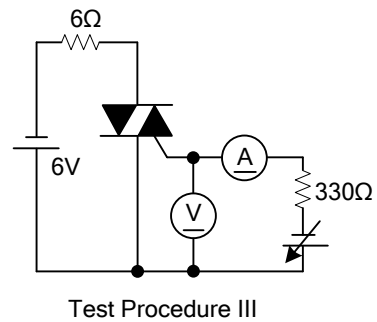
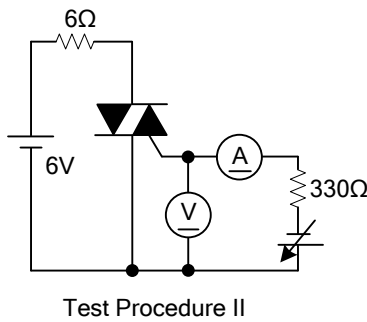
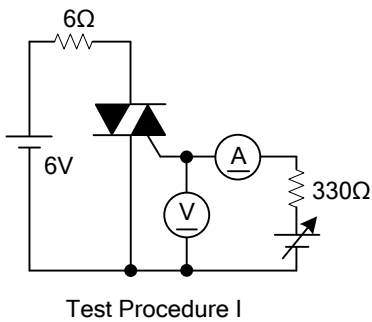
3. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

■ **COMMUTATING VOLTAGE AND CURRENT WAVEFORMS (INDUCTIVE LOAD)**



Note: Test Conditions: 1. Junction temperature: $T_J=125^\circ\text{C}$
 2. Rate of decay of on-state commutating current: $(di/dt)_c=-1.5\text{A/ms}$
 3. Peak off-state voltage: $V_D=400\text{V}$

■ **TEST CIRCUITS**



$C_1=0.1\sim 0.47\mu\text{F}$ $C_0=0.1\mu\text{F}$
 $R_1=47\sim 100\Omega$ $R_0=100\Omega$

Recommended Circuit Values Around The Triac

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