



BTA320A

Preliminary

TRIAC

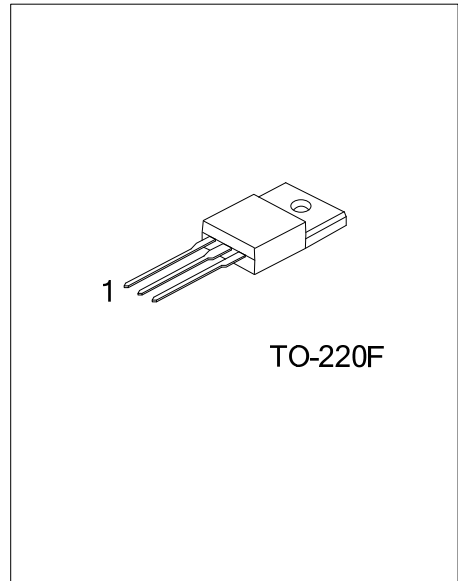
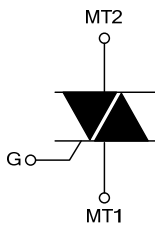
20A TRIACS

■ DESCRIPTION

The UTC **BTA320A** is a 20A 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 **BTA320A** is suitable for inductive load switching operations, also can be used in ON/OFF function applications such as induction motor starting circuits, heating regulation, static relays etc.

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BTA320AL-x-xx-TF3-T	BTA320AG-x-xx-TF3-T	TO-220F	MT1	MT2	G	Tube

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

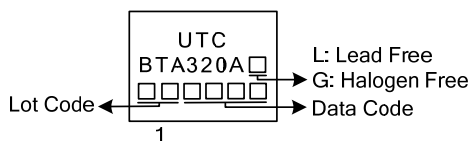
<p>BTA320AL-x-xx-TF3-T</p>	<p>(1) T: Tube (2) TF3: TO-220F (3) refer to SENSITIVITY AND TYPE (4) 6: 600V, 7: 700V (5) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ SENSITIVITY AND TYPE

PART NUMBER	VOLTAGE		SENSITIVITY	TYPE
	600V	700V		
BW		⊙	50mA	SNUBBERLESS
CW	⊙	⊙	35mA	SNUBBERLESS

⊙: Available

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER			SYMBOL	RATINGS	UNIT
RMS On-State Current (Full Sine Wave)		$T_C=70^\circ\text{C}$	$I_{T(RMS)}$	20	A
Non Repetitive Surge Peak On-State Current (Full Cycle, T_J initial= 25°C)	F=50 Hz	$t=10\text{ms}$	I_{TSM}	210	A
	F=60 Hz	$t=8.3\text{ms}$		200	A
I^2t Value for Fusing	$t_p=10\text{ms}$		I^2t	200	A^2s
Critical Rate of Rise of On-State Current $I_G=500\text{mA}$, $dI_G/dt = 1\text{A}/\mu\text{s}$	Repetitive, F=50 Hz	$T_J=125^\circ\text{C}$	dI/dt	50	$\text{A}/\mu\text{s}$
	Non Repetitive			100	$\text{A}/\mu\text{s}$
Non Repetitive Surge Peak Off-State Voltage	$t_p=10\text{ms}$	$T_J=25^\circ\text{C}$	V_{DSM}/V_{RSM}	$V_{DSM}/V_{RSM}+100$	V
Peak Gate Current	$t_p=20\mu\text{s}$	$T_J=125^\circ\text{C}$	I_{GM}	4	A
Peak Positive Gate Voltage	$t_p=20\mu\text{s}$		V_{GM}	16	V
Average Gate Power Dissipation		$T_J=125^\circ\text{C}$	$P_{G(AV)}$	1	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 RESISTANCES

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	60	$^\circ\text{C}/\text{W}$
Junction to Case (AC)	θ_{JC}	2.0	$^\circ\text{C}/\text{W}$
Junction to Case (DC)		2.8	$^\circ\text{C}/\text{W}$

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

FOR SNUBBERLESS (3 QUADRANTS)

PARAMETER	SYMBOL	TEST CONDITIONS	BW			CW			UNIT	
			MIN	TYP	MAX	MIN	TYP	MAX		
Gate Trigger Current (Note 1)	I_{GT}	$V_D=12\text{V}$, $R_L=33\Omega$	I-II-III	2		50	1		35	mA
Gate Trigger Voltage	V_{GT}		I-II-III			1.5			1.5	V
Gate Non-Trigger Voltage	V_{GD}	$V_D=V_{DRM}$, $R_L=3.3\text{k}\Omega$, $T_J=125^\circ\text{C}$	I-II-III	0.2			0.2			V
Holding Current (Note 2)	I_H	$I_T=500\text{mA}$, Gate Open				75			50	mA
Latching Current	I_L	$I_G=1.2I_{GT}$	I-III		50					mA
			II		90					mA
			I-II-III						80	mA
Critical Rate of Rise of Off-State Voltage (Note 2)	dV/dt	$V_D=67\%V_{DRM}$, Gate Open, $T_J=125^\circ\text{C}$		500	750		250	500		$\text{V}/\mu\text{s}$
Critical Rate of Rise of Off-State Voltage at Commutation (Note 2)	$(dV/dt)_c$	$(dI/dt)_c=20\text{A}/\text{ms}$, $T_J=125^\circ\text{C}$		18	36		11	22		$\text{V}/\mu\text{s}$

■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Peak On-State Voltage (Note 2)	V_{TM}	$I_{TM}=28\text{A}$, $t_p=380\mu\text{s}$		$T_J=25^\circ\text{C}$		1.70	V
Repetitive Peak Off-State Current	I_{DRM}	$V_{DRM}=V_{RRM}$		$T_J=25^\circ\text{C}$		10	μA
	I_{RRM}			$T_J=125^\circ\text{C}$		3	mA

Note: 1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.

2. For both polarities of MT2 referenced to MT1.

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