

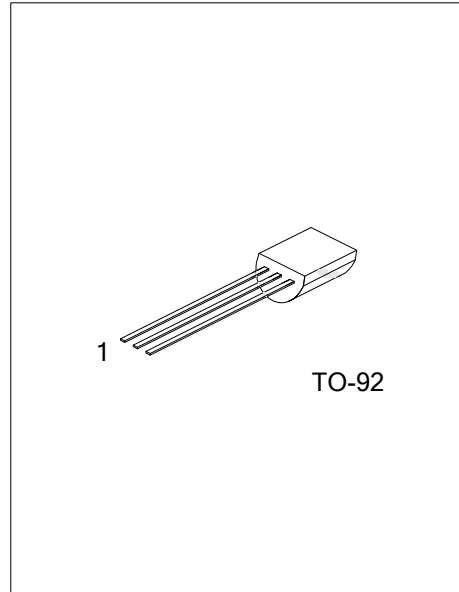


**13002AG**

Preliminary

**NPN SILICON TRANSISTOR**

**HIGH VOLTAGE FAST SWITCHING NPN POWER APPLICATIONS**



■ **DESCRIPTION**

The device is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability.

The UTC **13002AG** is designed for use in Compact Fluorescent Lamps.

■ **FEATURES**

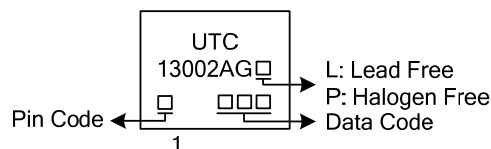
- \* High Voltage Capability
- \* Low Spread of Dynamic Parameters
- \* Very High Switching Speed

■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
13002AGL-T92-A-B	13002AGP-T92-A-B	TO-92	E	C	B	Tape Box
13002AGL-T92-A-K	13002AGP-T92-A-K	TO-92	E	C	B	Bulk

<p>13002AGL-T92-A-B</p> <p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Lead Free</p>	<p>(1) B: Bluk, K: Bulk (2) refer to Pin Assignment (3) T92: TO-92 (4) L: Lead Free, P: Halogen Free</p>
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■ **MARKING**



■ ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector Emitter Voltage ( $V_{BE} = 0$ )	$V_{CES}$	700	V
Collector Emitter Voltage ( $I_B = 0$ )	$V_{CEO}$	400	V
Emitter Base Voltage ( $I_C = 0$ )	$V_{EBO}$	9	V
Collector Current	$I_C$	0.75	A
Collector Peak Current ( $t_p < 5$ ms)	$I_{CM}$	0.5	A
Base Current	$I_B$	0.4	A
Base Peak Current ( $t_p < 5$ ms)	$I_{BM}$	0.75	A
Total Dissipation at $T_a = 25^\circ\text{C}$	$P_D$	0.95	W
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Storage 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

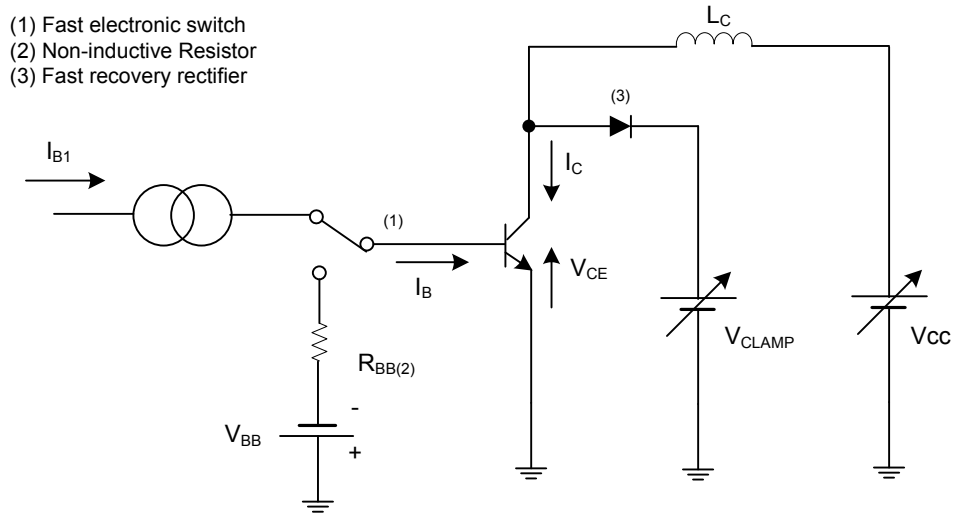
PARAMETER	SYMBOL	RATINGS	UNIT
Thermal Resistance Junction-ambient	$\theta_{JA}$	130	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Emitter Sustaining Voltage ( $I_B = 0$ ) (Note)	$V_{CEO(SUS)}$	$I_C = 1$ mA	700			V
Collector Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C = 0.2$ A, $I_B = 40$ mA		0.2	0.5	V
		$I_C = 0.3$ A, $I_B = 75$ mA		0.3	1	
		$I_C = 0.4$ A, $I_B = 135$ mA		0.4	1.5	
Base Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C = 0.2$ A, $I_B = 40$ mA			1	V
		$I_C = 0.3$ A, $I_B = 75$ mA			1.2	
Emitter Cut off Current ( $I_C = 0$ )	$I_{EBO}$	$V_{EB} = 9$ V			1	mA
Collector Cut off Current ( $V_{BE} = -1.5$ V)	$I_{CEV}$	$V_{CE} = 700$ V			250	$\mu\text{A}$
DC Current Gain	$h_{FE}^*$	$I_C = 0.2$ A, $V_{CE} = 5$ V	12		27	
		$I_C = 0.4$ A, $V_{CE} = 5$ V	7		20	
Inductive Load Fall Time	$t_F$	$I_C = 0.2$ A, $V_{CLAMP} = 300$ V $I_{B1} = -I_{B2} = 40$ mA, $L = 3$ mH		0.3		$\mu\text{s}$

Note: Pulsed: Pulse duration = 300 $\mu\text{s}$ , duty cycle = 1.5 %

■ INDUCTIVE LOAD SWITCHING TEST CIRCUIT



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