



13002AG

Preliminary

NPN SILICON TRANSISTOR

HIGH VOLTAGE FAST SWITCHING NPN POWER APPLICATIONS

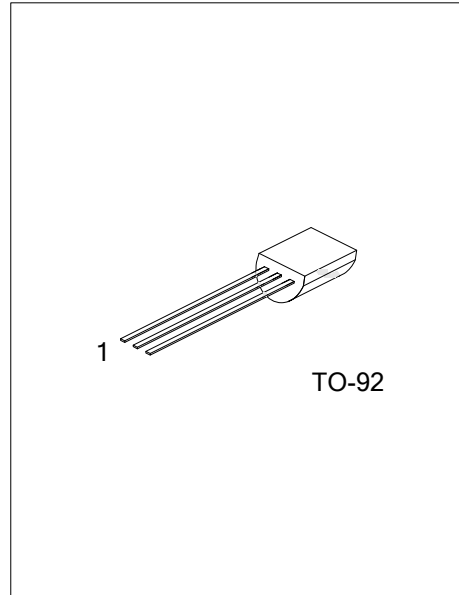
DESCRIPTION

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

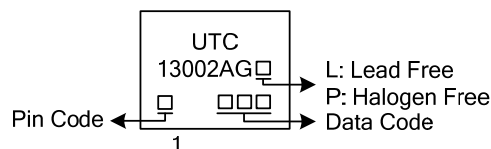


ORDERING INFORMATION

| 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> |
|---|--|

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

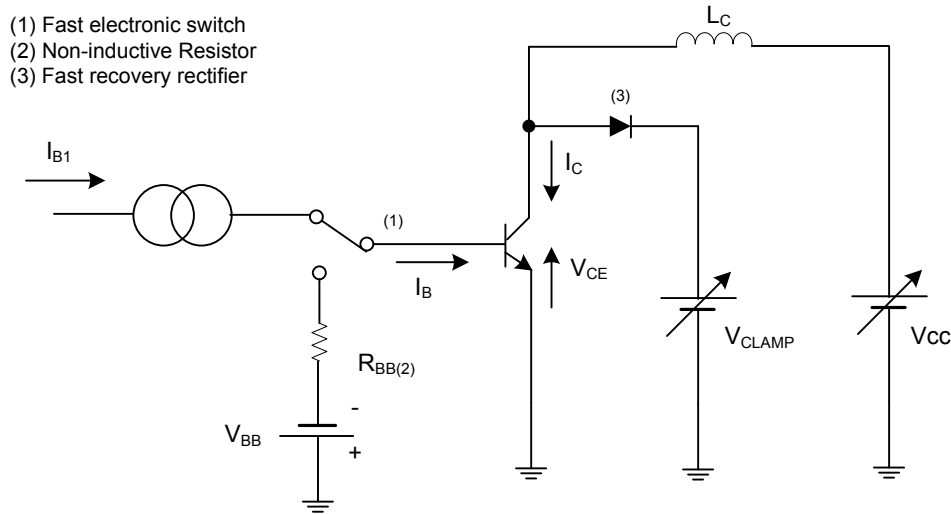
| PARAMETER | SYMBOL | RATINGS | UNIT |
|-------------------------------------|---------------|---------|--------------------|
| Thermal Resistance Junction-ambient | θ_{JA} | 130 | $^\circ\text{C/W}$ |

■ 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 | μA |
| 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 | | μs |

Note: Pulsed: Pulse duration = 300 μs , duty cycle = 1.5 %

■ INDUCTIVE LOAD SWITCHING TEST CIRCUIT



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