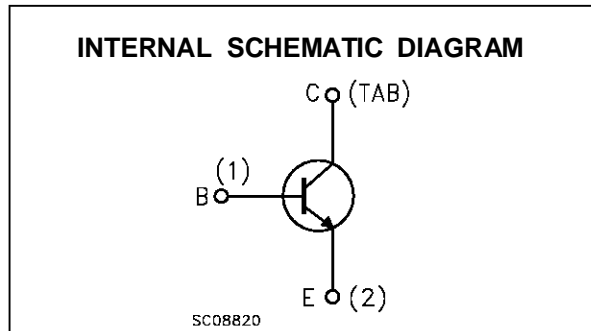
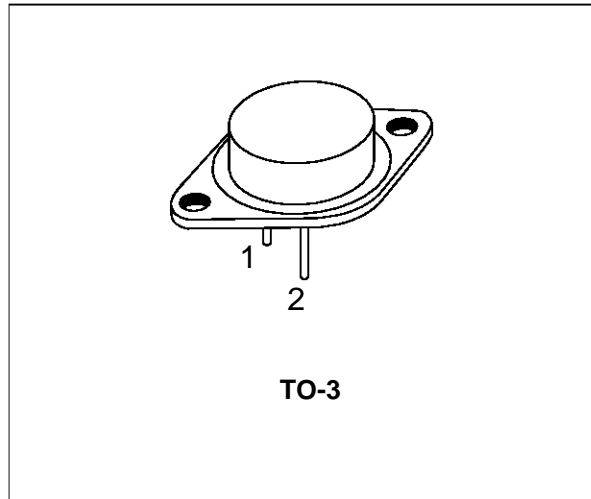


SILICON NPN SWITCHING TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- FAST SWITCHING TIMES
- LOW SWITCHING LOSSES
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN FOR REDUCED LOAD OPERATION



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|------------|--|------------|------------|
| V_{CEV} | Collector-emitter Voltage ($V_{BE} = -1.5V$) | 350 | V |
| V_{CEO} | Collector-emitter Voltage ($I_B = 0$) | 250 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 7 | V |
| I_C | Collector Current | 12 | A |
| I_{CM} | Collector Peak Current | 18 | A |
| I_B | Base Current | 2.5 | A |
| I_{BM} | Base Peak Current | 4 | A |
| P_{Base} | Reverse Bias Base Dissipation (B.E. junction in avalanche) | 1 | A |
| P_{tot} | Total Dissipation at $T_{case} \leq 25^\circ C$ | 120 | W |
| T_{stg} | Storage Temperature | -65 to 200 | $^\circ C$ |
| T_j | Max Operating Junction Temperature | 200 | $^\circ C$ |

BUV42

THERMAL DATA

| | | | | |
|----------------|----------------------------------|-----|------|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 1.46 | $^{\circ}C/W$ |
|----------------|----------------------------------|-----|------|---------------|

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------|---|---|----------|------------|------------|--------------------------|
| I_{CER} | Collector Cut-off Current ($R_{BE} = 10\Omega$) | $V_{CE} = V_{CEV}$ $V_{CE} = V_{CEV} \quad T_C = 100^{\circ}C$ | | | 0.5 2.5 | mA mA |
| I_{CEV} | Collector Cut-off Current | $V_{CE} = V_{CEV} \quad V_{BE} = -1.5V$ $V_{CE} = V_{CEV} \quad V_{BE} = -1.5V \quad T_C = 100^{\circ}C$ | | | 0.5 2 | mA mA |
| I_{EBO} | Emitter Cut-off Current ($I_C = 0$) | $V_{EB} = 5V$ | | | 1 | mA |
| $V_{CEO(sus)*}$ | Collector-Emitter Sustaining Voltage | $I_C = 0.2A$ $L = 25mH$ | 250 | | | V |
| V_{EBO} | Emitter-base Voltage ($I_C = 0$) | $I_E = 50mA$ | 7 | | | V |
| $V_{CE(sat)*}$ | Collector-Emitter Saturation Voltage | $I_C = 2A \quad I_B = 0.13A$ | | 0.25 | 0.8 | V |
| | | $I_C = 4A \quad I_B = 0.4A$ | | 0.4 | 0.9 | V |
| | | $I_C = 6A \quad I_B = 0.75A$ | | 0.5 | 1.2 | V |
| | | $I_C = 2A \quad I_B = 0.13A \quad T_j = 100^{\circ}C$ | | 0.25 | 0.9 | V |
| | | $I_C = 4A \quad I_B = 0.4A \quad T_j = 100^{\circ}C$ | | 0.45 | 1.2 | V |
| | | $I_C = 6A \quad I_B = 0.75A \quad T_j = 100^{\circ}C$ | | 0.6 | 1.5 | V |
| $V_{BE(sat)*}$ | Base-Emitter Saturation Voltage | $I_C = 4A \quad I_B = 0.4A$ | | 1 | 1.3 | V |
| | | $I_C = 6A \quad I_B = 0.75A$ | | 1.1 | 1.5 | V |
| | | $I_C = 4A \quad I_B = 0.4A \quad T_j = 100^{\circ}C$ | | 0.9 | 1.3 | V |
| | | $I_C = 6A \quad I_B = 0.75A \quad T_j = 100^{\circ}C$ | | 1.1 | 1.5 | V |
| di_c/d_t^* | Rated of Rise of on-state Collector Current | $V_{CC} = 200V \quad R_C = 0 \quad I_{B1} = 0.6A$ $T_j = 25^{\circ}C$ $T_j = 100^{\circ}C$ | 25 20 | 40 35 | | A/ μs A/ μs |
| $V_{CE(2\mu s)}$ | Collector Emitter Dynamic Voltage | $V_{CC} = 200V$ $R_C = 50\Omega \quad I_{B1} = 0.4A$ $T_j = 25^{\circ}C$ $T_j = 100^{\circ}C$ | | 1.7 2.5 | 2.5 4 | V V |
| $V_{CE(4\mu s)}$ | Collector Emitter Dynamic Voltage | $V_{CC} = 200V$ $R_C = 50\Omega \quad I_{B1} = 0.4A$ $T_j = 25^{\circ}C$ $T_j = 100^{\circ}C$ | | 0.9 1.1 | 1.7 2 | V V |

* Pulsed: Pulse duration = 300 μs , duty cycle = 2 %

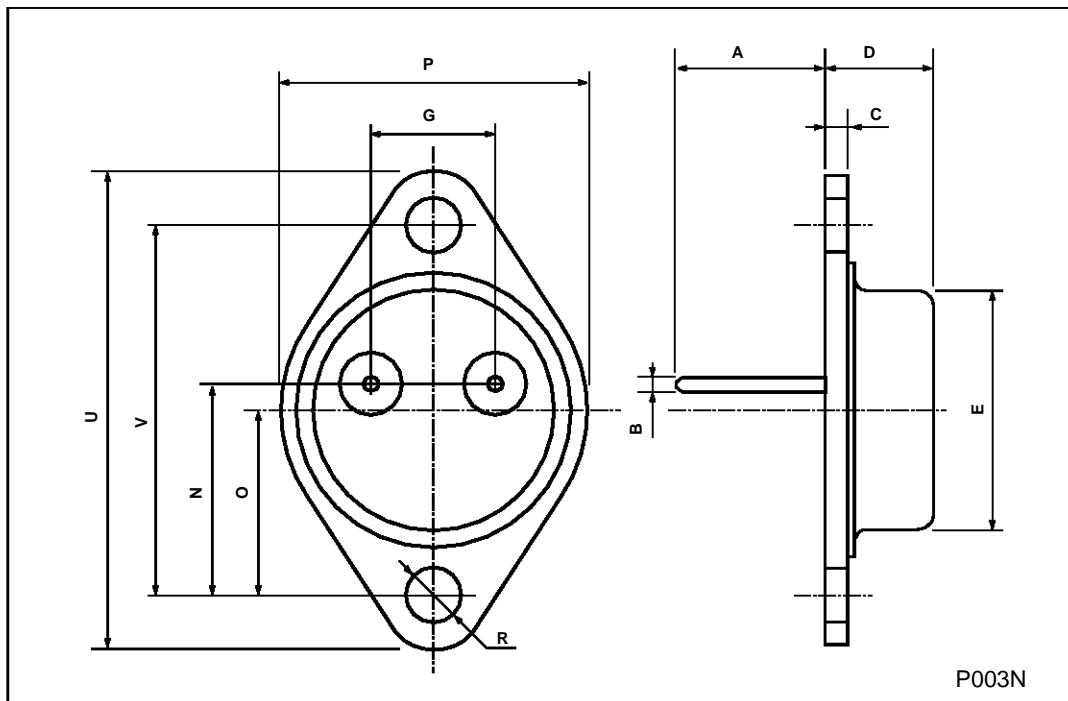
ELECTRICAL CHARACTERISTICS (continued)

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|--------|---------------------------------------|----------------------|----------------------|------|------|------|---------|
| t_r | RESISTIVE LOAD Rise Time | $V_{CC} = 200V$ | $I_C = 6A$ | | 0.3 | 0.4 | μs |
| t_s | | $V_{BB} = -5V$ | $I_{B1} = 0.75A$ | | 1 | 1.6 | μs |
| t_f | | $R_{B2} = 3.3\Omega$ | $T_p = 30\mu s$ | | 0.15 | 0.3 | μs |
| t_s | INDUCTIVE LOAD Storage Time | $V_{CC} = 200V$ | $V_{clamp} = 250V$ | | 1.2 | 1.8 | μs |
| t_f | | $I_{CC} = 4A$ | $I_B = 0.4A$ | | 0.08 | 0.2 | μs |
| t_t | | $V_{BB} = -5V$ | $R_{B2} = 6.3\Omega$ | | 0.03 | 0.12 | μs |
| t_c | | $L_C = 2.5mH$ | | | 0.15 | 0.35 | μs |
| t_s | Storage Time | $V_{CC} = 200V$ | $V_{clamp} = 250V$ | | 1.8 | 2.4 | μs |
| t_f | | $I_{CC} = 4A$ | $I_B = 0.4A$ | | 0.2 | 0.4 | μs |
| t_t | | $V_{BB} = -5V$ | $R_{B2} = 6.3\Omega$ | | 0.08 | 0.2 | μs |
| t_c | | $L_C = 2.5mH$ | $T_j = 100^\circ C$ | | 0.4 | 0.7 | μs |
| t_s | Storage Time | $V_{CC} = 200V$ | $V_{clamp} = 250V$ | | 2.5 | | μs |
| t_f | | $I_{CC} = 4A$ | $I_B = 0.5A$ | | 0.4 | | μs |
| t_t | | $V_{BB} = 0$ | $R_{B2} = 7.5\Omega$ | | 0.15 | | μs |
| | | $L_C = 2.5mH$ | | | | | |
| t_s | Storage Time | $V_{CC} = 200V$ | $V_{clamp} = 250V$ | | 4.8 | | μs |
| t_f | | $I_{CC} = 4A$ | $I_B = 0.4A$ | | 0.7 | | μs |
| t_t | | $V_{BB} = 0$ | $R_{B2} = 7.5\Omega$ | | 0.4 | | μs |
| | | $L_C = 2.5mH$ | $T_j = 100^\circ C$ | | | | |

* Pulsed: Pulse duration = 300 μs , duty cycle = 2 %

TO-3 (H) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|-------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | 11.7 | | | 0.460 | |
| B | 0.96 | | 1.10 | 0.037 | | 0.043 |
| C | | | 1.70 | | | 0.066 |
| D | | | 8.7 | | | 0.342 |
| E | | | 20.0 | | | 0.787 |
| G | | 10.9 | | | 0.429 | |
| N | | 16.9 | | | 0.665 | |
| P | | | 26.2 | | | 1.031 |
| R | 3.88 | | 4.09 | 0.152 | | 0.161 |
| U | | | 39.50 | | | 1.555 |
| V | | 30.10 | | | 1.185 | |



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