

HIGH CURRENT NPN SILICON TRANSISTOR

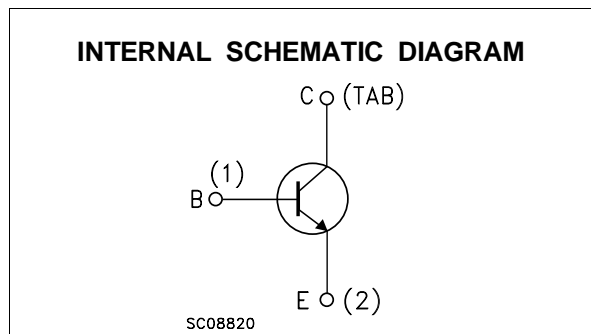
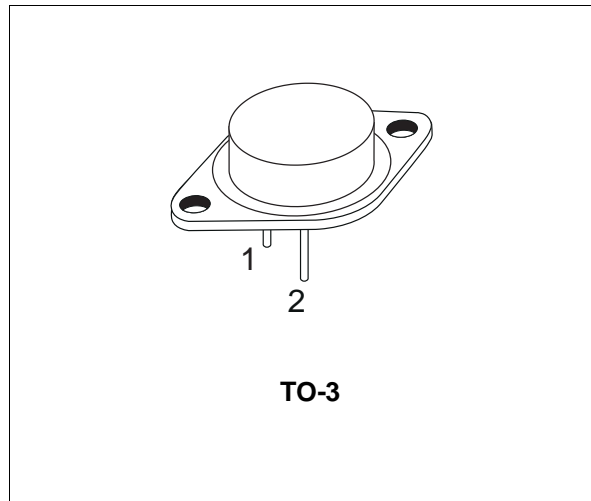
■ SGS-THOMSON PREFERRED SALESTYPE

APPLICATIONS

LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BDY90 is a silicon epitaxial planar NPN power transistors in Jedec TO-3 metal case. They are intended for use in switching and linear applications in military and industrial equipment.



ABSOLUTE MAXIMUM RATINGS

| | | Value | |
|-----------|--|--------------|------------|
| V_{CBO} | Collector-base Voltage ($I_E = 0$) | 120 | V |
| V_{CEV} | Collector-emitter Voltage ($V_{BE} = -1.5V$) | 120 | V |
| V_{CEO} | Collector-emitter Voltage ($I_B = 0$) | 100 | V |
| V_{EBO} | Emitter-base Voltage ($I_C = 0$) | 6 | V |
| I_C | Collector Current | 10 | A |
| I_{CM} | Collector Peak Current (repetitive) | 15 | A |
| I_B | Base Current | 2 | A |
| P_{tot} | Total Dissipation at $T_c \leq 25^\circ C$ | 60 | W |
| T_{stg} | Storage Temperature | -65 to 175 | $^\circ C$ |
| T_j | Max. Operating Junction Temperature | 175 | $^\circ C$ |

BDY90

THERMAL DATA

| | | | | |
|----------------|----------------------------------|-----|-----|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 2.5 | $^{\circ}C/W$ |
|----------------|----------------------------------|-----|-----|---------------|

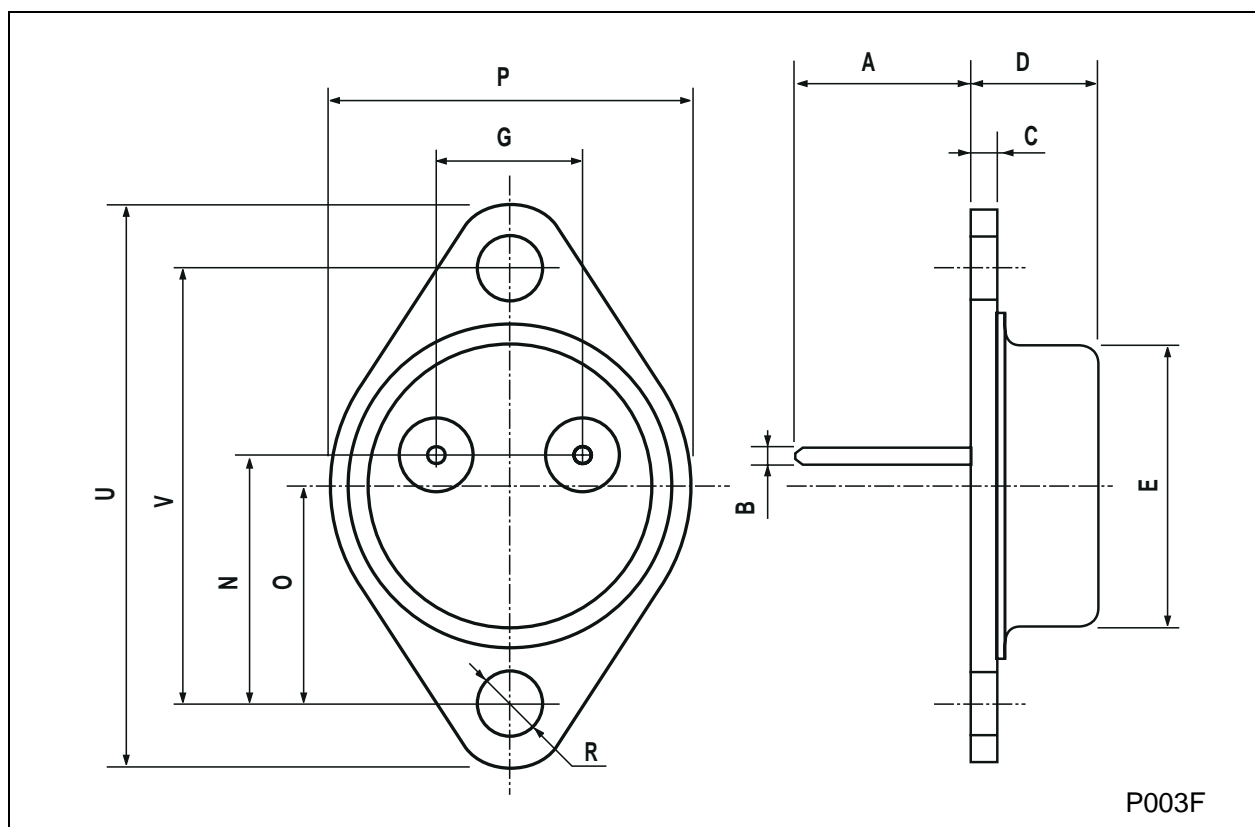
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------|--|---|--|----------------|------------|----------|
| I_{CBO} | Collector Cut-off Current ($I_E = 0$) | $V_{CE} = V_{CBO}$ | | | 1 | mA |
| I_{CEV} | Collector Cut-off Current ($V_{BE} = -1.5V$) | $V_{CE} = V_{CEV}$ $T_{case} = 150^{\circ}C$ $V_{CE} = V_{CEV}$ | | | 1 3 | mA mA |
| I_{EBO} | Emitter Cut-off Current ($I_C = 0$) | $V_{EB} = 6 V$ | | | 1 | mA |
| $V_{CEO(sus)}^*$ | Collector-Emitter Sustaining Voltage ($I_B = 0$) | $I_C = 100 mA$ | 100 | | | V |
| $V_{CE(sat)}^*$ | Collector-emitter Saturation Voltage | $I_C = 5 A$ $I_C = 10 A$ | $I_B = 0.5 A$ $I_B = 1 A$ | | 0.5 1.5 | V V |
| $V_{BE(sat)}^*$ | Base-emitter Saturation Voltage | $I_C = 5 A$ $I_C = 10 A$ | $I_B = 0.5 A$ $I_B = 1 A$ | | 1.2 1.5 | V V |
| h_{FE}^* | DC Current Gain | $I_C = 1 A$ $I_C = 5 A$ $I_C = 10 A$ | $V_{CE} = 2 V$ $V_{CE} = 5 V$ $V_{CE} = 5 V$ | 30 30 20 | 120 | |
| f_t | Transition-Frequency | $I_C = 0.5 A$ $f = 5 MHz$ | $V_{CE} = 5 V$ | 70 | | MHz |
| t_{on} | Turn-on Time | $I_C = 5 A$ $V_{CC} = 30 V$ | $I_{B1} = 0.5 A$ | | 0.35 | μs |
| t_s | Storage Time | $I_C = 5 A$ $V_{CC} = 30 V$ | $I_{B1} = -I_{B2} = 0.5 A$ | | 1.3 | μs |
| t_f | Fall Time | | | | 0.2 | μs |

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

TO-3 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 11.00 | | 13.10 | 0.433 | | 0.516 |
| B | 0.97 | | 1.15 | 0.038 | | 0.045 |
| C | 1.50 | | 1.65 | 0.059 | | 0.065 |
| D | 8.32 | | 8.92 | 0.327 | | 0.351 |
| E | 19.00 | | 20.00 | 0.748 | | 0.787 |
| G | 10.70 | | 11.10 | 0.421 | | 0.437 |
| N | 16.50 | | 17.20 | 0.649 | | 0.677 |
| P | 25.00 | | 26.00 | 0.984 | | 1.023 |
| R | 4.00 | | 4.09 | 0.157 | | 0.161 |
| U | 38.50 | | 39.30 | 1.515 | | 1.547 |
| V | 30.00 | | 30.30 | 1.187 | | 1.193 |



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