

HIGH POWER NPN SILICON TRANSISTOR

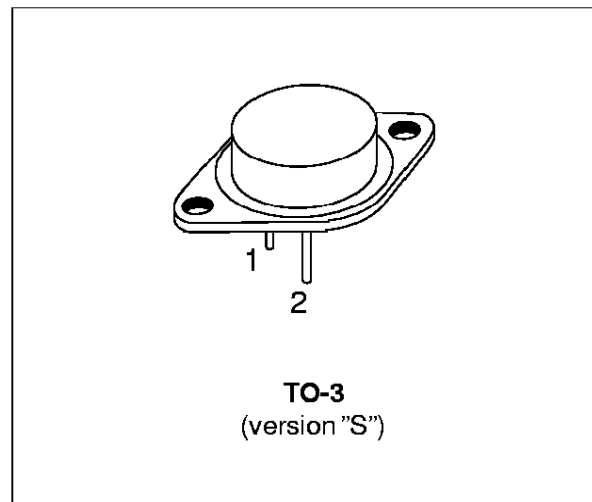
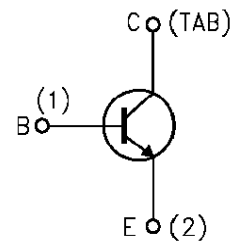
- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH RUGGEDNESS

APPLICATIONS

- SWITCHING REGULATOR
- MOTOR CONTROL
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The BUW38 is a Multiepitaxial Planar NPN Transistor in TO-3 package. It is intended for use in high frequency and efficiency converters, switching regulators and motor control.


INTERNAL SCHEMATIC DIAGRAM


SC08820

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------|--|------------|------|
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 120 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 60 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 7 | V |
| I_C | Collector Current | 30 | A |
| I_{CM} | Collector Peak Current ($t_p < 5$ ms) | 45 | A |
| I_B | Base Current | 8 | A |
| I_{BM} | Base Peak Current ($t_p < 5$ ms) | 20 | A |
| P_{tot} | Total Power Dissipation at $T_{case} \leq 25$ °C | 150 | W |
| T_{sig} | Storage Temperature | -65 to 200 | °C |
| T_j | Junction Temperature | 200 | °C |

THERMAL DATA

| | | | | |
|----------------|----------------------------------|-----|------|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 1.17 | $^{\circ}C/W$ |
|----------------|----------------------------------|-----|------|---------------|

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

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|--|------|------|------------|----------|
| I_{CEX} | Collector Cut-off Current ($V_{BE} = -1.5V$) | $V_{CE} = V_{CEX}$ $V_{CE} = V_{CEX}$ $V_{BE} = -1.5 V$ $T_c = 125^{\circ}C$ | | | 1 3 | mA mA |
| I_{EBO} | Emitter Cut-off Current ($I_C = 0$) | $V_{EB} = 5 V$ | | | 1 | mA |
| $V_{CEO(sus)*}$ | Collector-Emitter Sustaining Voltage | $I_C = 200 mA$ $L = 25 mH$ | 60 | | | V |
| V_{EB0} | Emitter-Base Voltage ($I_C = 0$) | $I_E = 500 mA$ | 7 | | | V |
| $V_{CE(sat)*}$ | Collector-Emitter Saturation Voltage | $I_C = 20 A$ $I_B = 2 A$ $I_C = 40 A$ $I_B = 4 A$ | | | 0.6 1.4 | V V |
| $V_{BE(sat)*}$ | Base-Emitter Saturation Voltage | $I_C = 40 A$ $I_B = 4 A$ | | | 2.1 2 | V V |
| f_T | Transition frequency | $f = 10 MHz$ $V_{CE} = 15 V$ $I_C = 1 A$ | 8 | | | MHz |

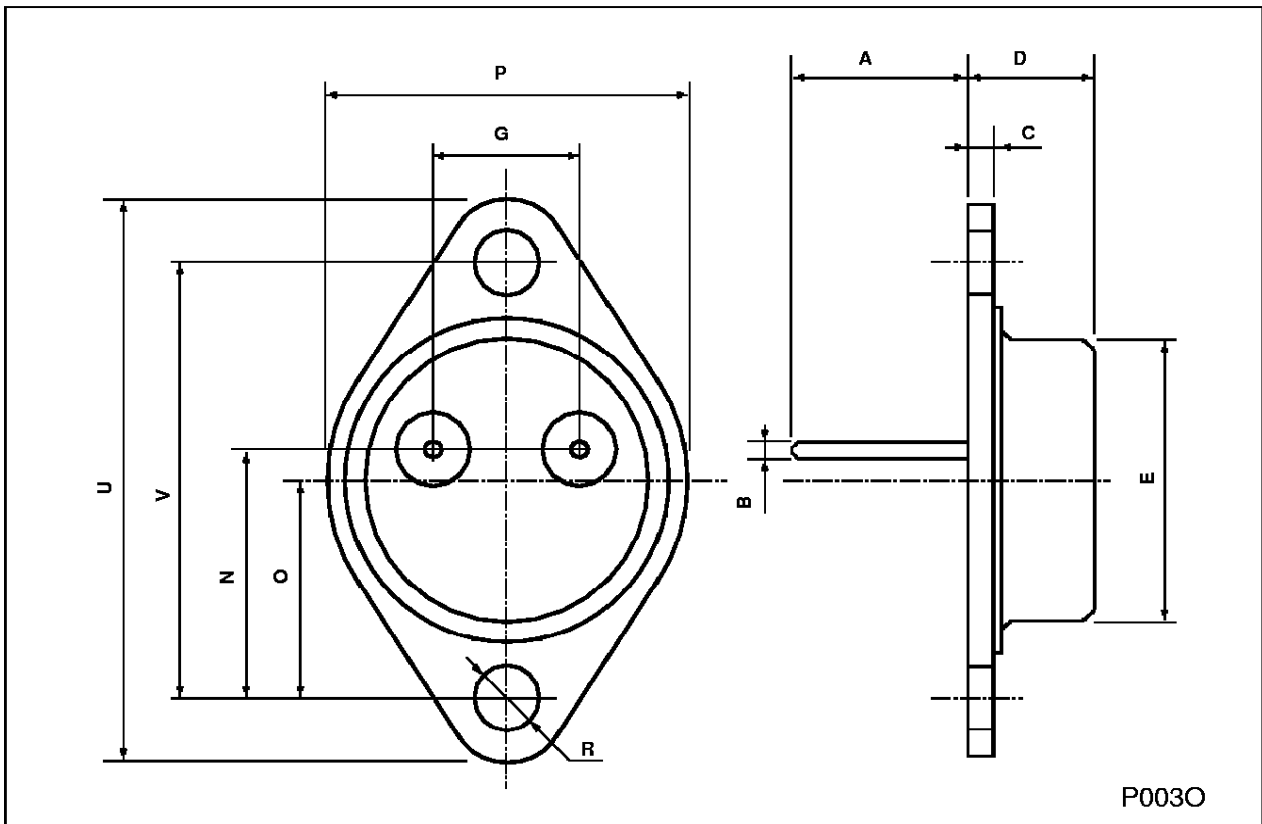
RESISTIVE LOAD

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|----------|--------------|--|------|------|------|---------|
| t_{on} | Turn-on Time | $V_{CC} = 60 V$ $I_C = 40 A$ | | 1.2 | 1.5 | μs |
| t_s | Storage Time | $I_{B1} = - I_{B2} = 4 A$ | | 0.6 | 1.1 | μs |
| t_f | Fall Time | | | 0.17 | 0.25 | μs |
| t_s | Storage Time | $V_{CC} = 60 V$ $I_C = 40 A$ | | | 1.65 | μs |
| t_f | Fall Time | $I_{B1} = - I_{B2} = 4 A$ $T_c = 125^{\circ}C$ | | | 0.5 | μs |

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

TO-3 (version S) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 11.00 | | 13.10 | 0.433 | | 0.516 |
| B | 1.47 | | 1.60 | 0.058 | | 0.063 |
| 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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