

isc Silicon NPN Power Transistor
BDY45
DESCRIPTION

- Collector-Emitter Breakdown Voltage-
: $V_{(BR)CEO} = 250V(\text{Min.})$
- DC Current Gain-
: $h_{FE} = 20(\text{Min.}) @ I_C = 2A$
- Collector-Emitter Saturation Voltage-
: $V_{CE(sat)} = 1.5V(\text{Max}) @ I_C = 15A$
- High Switching Speed
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

APPLICATIONS

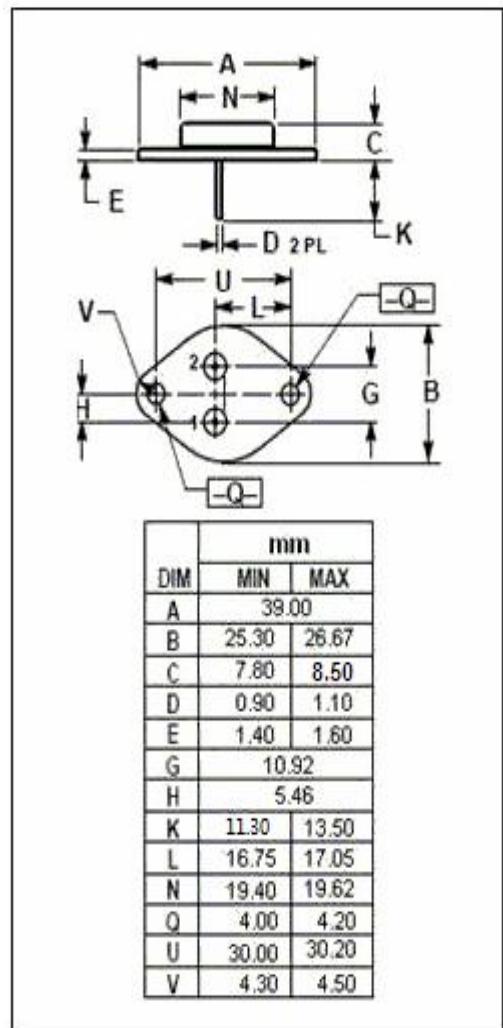
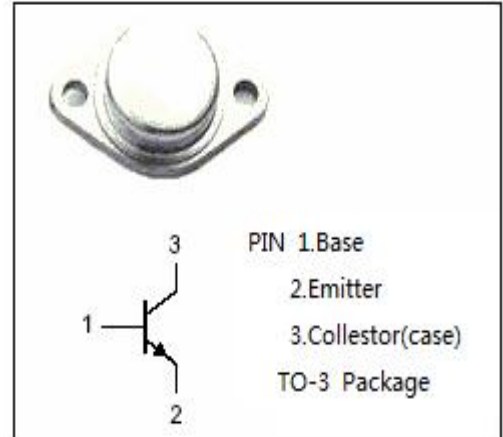
- Voltage regulator
- Inverter
- Switching mode power supply

ABSOLUTE MAXIMUM RATINGS($T_a = 25^\circ\text{C}$)

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|---|---------|------------------|
| V_{CBO} | Collector-Base Voltage | 400 | V |
| V_{CES} | Collector-Emitter Voltage | 400 | V |
| V_{CEO} | Collector-Emitter Voltage | 250 | V |
| V_{EBO} | Emitter-Base Voltage | 7 | V |
| I_C | Collector Current-Continuous | 15 | A |
| I_{CM} | Collector Current-Peak | 17 | A |
| I_B | Base Current | 5 | A |
| P_C | Collector Power Dissipation @ $T_c \leq 45^\circ\text{C}$ | 95 | W |
| T_J | Junction Temperature | 175 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature | -65~175 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---------------|--------------------------------------|------|--------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 1.37 | $^\circ\text{C/W}$ |



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ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|----------------------|--------------------------------------|---|-----|------------|------|
| V _{(BR)CEO} | Collector-Emitter Breakdown Voltage | I _C = 30mA; I _B = 0 | 250 | | V |
| V _{(BR)CBO} | Collector-Base Breakdown Voltage | I _C = 1mA; I _E = 0 | 400 | | V |
| V _{(BR)EBO} | Emitter-Base Breakdown Voltage | I _E = 1mA; I _C = 0 | 7 | | V |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage | I _C = 15A; I _B = 5A | | 1.5 | V |
| V _{BE(sat)} | Base-Emitter Saturation Voltage | I _C = 15A; I _B = 5A | | 2.0 | V |
| I _{CBO} | Collector Cutoff Current | V _{CB} = 400V; I _E = 0 V _{CB} = 400V; I _E = 0, T _C =150°C | | 0.2 2.5 | mA |
| h _{FE-1} | DC Current Gain | I _C = 2A; V _{CE} = 2V | 20 | | |
| h _{FE-2} | DC Current Gain | I _C = 10A; V _{CE} = 2V | 5 | | |
| f _T | Current Gain-Bandwidth Product | I _C = 0.5A; V _{CE} = 10V | 10 | | MHz |
| Switching times | | | | | |
| t _{on} | Turn-on Time | I _C = 5A; I _{B1} = -I _{B2} = 1A | | 0.5 | μs |
| t _f | Fall Time | | | 1.0 | μs |
| t _{off} | Turn-off Time | | | 3.5 | μs |

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