

isc Silicon NPN Power Transistor

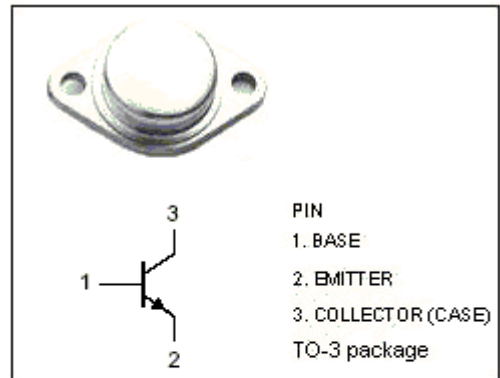
BDY42

DESCRIPTION

- Collector-Emitter Breakdown Voltage-
: $V_{(BR)CEO} = 250V(\text{Min.})$
- DC Current Gain-
: $h_{FE} = 20(\text{Min.}) @ I_C = 1A$
- Collector-Emitter Saturation Voltage-
: $V_{CE(sat)} = 1.5V(\text{Max}) @ I_C = 5A$
- High Switching Speed

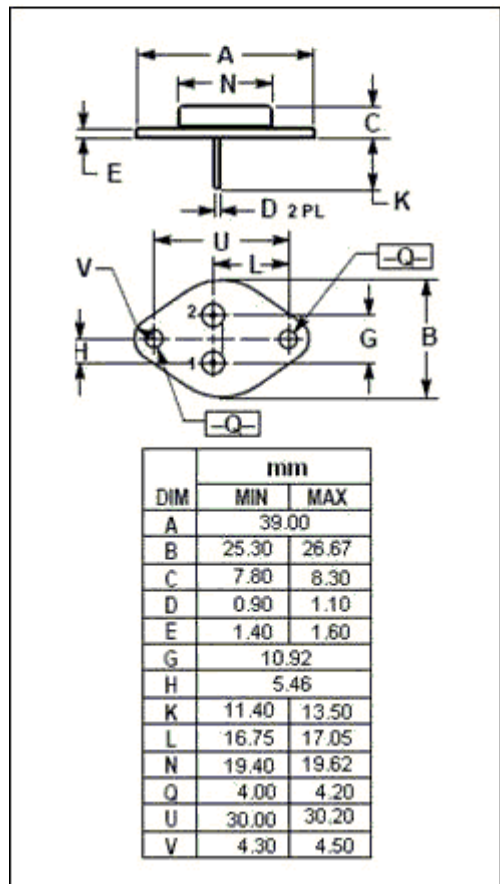
APPLICATIONS

- Voltage regulator
- Inverter
- Switching mode power supply



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

| 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 | 5 | A |
| I_{CM} | Collector Current-Peak | 10 | A |
| I_B | Base Current | 3 | A |
| P_C | Collector Power Dissipation @ $T_C = 25^\circ C$ | 60 | W |
| T_J | Junction Temperature | 175 | $^\circ C$ |
| T_{stg} | Storage Temperature | -65~175 | $^\circ C$ |



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ELECTRICAL CHARACTERISTICS

 $T_C=25^\circ\text{C}$ unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|---------------|--------------------------------------|-----------------------------------------------------------------------------------|-----|------------|------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C=200\text{mA}; I_B=0$ | 250 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C=1\text{mA}; I_E=0$ | 400 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E=2\text{mA}; I_C=0$ | 7 | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=5\text{A}; I_B=1.5\text{A}$ | | 1.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C=5\text{A}; I_B=1.5\text{A}$ | | 2.0 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB}=400\text{V}; I_E=0$ $V_{CB}=400\text{V}; I_E=0, T_C=150^\circ\text{C}$ | | 0.2 2.0 | mA |
| h_{FE-1} | DC Current Gain | $I_C=1\text{A}; V_{CE}=2\text{V}$ | 20 | | |
| h_{FE-2} | DC Current Gain | $I_C=5\text{A}; V_{CE}=2\text{V}$ | 5 | | |
| f_T | Current Gain-Bandwidth Product | $I_C=0.5\text{A}; V_{CE}=10\text{V}$ | 10 | | MHz |

Switching times

| | | | | | |
|-----------|---------------|-----------------------------------------------|--|-----|---------------|
| t_{on} | Turn-on Time | $I_C=2.5\text{A}; I_{B1}=-I_{B2}=0.5\text{A}$ | | 0.5 | μs |
| t_f | Fall Time | | | 1.0 | μs |
| t_{off} | Turn-off Time | | | 4.0 | μs |