

isc Silicon NPN Power Transistor

BDY92

DESCRIPTION

- High DC Current Gain-
: $h_{FE} = 30-120 @ I_C = 5A$
- Excellent Safe Operating Area
- High Current Capability

APPLICATIONS

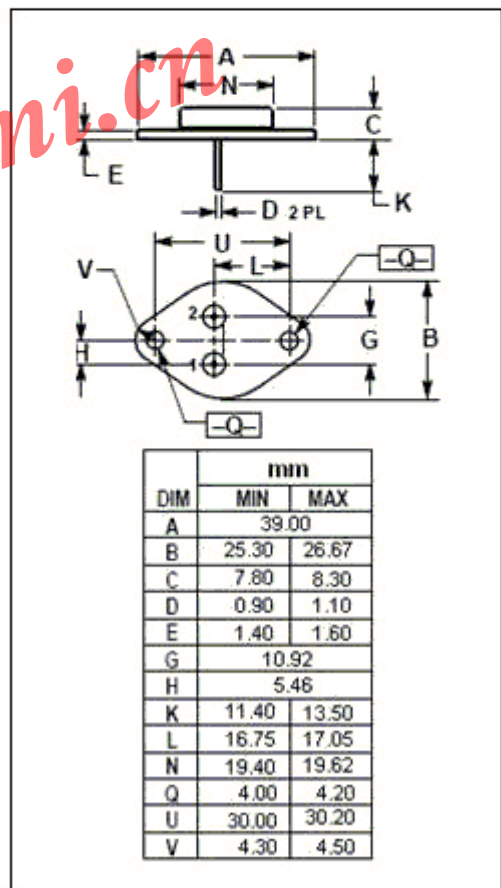
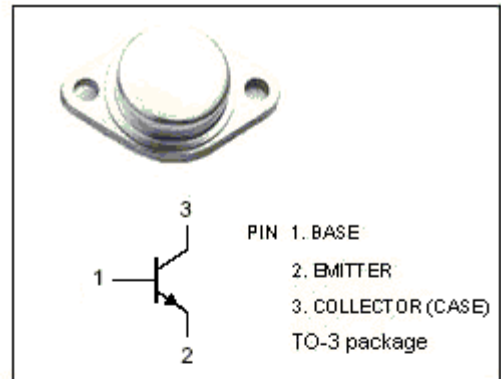
- Designed for use in switching-control amplifiers, power gates, switching regulators, converters, and inverters.

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|---|---------|-------------|
| V_{CBO} | Collector-Base Voltage | 80 | V |
| V_{CEV} | Collector-Emitter Voltage $V_{BE} = -1.5V$ | 80 | V |
| V_{CEO} | Collector-Emitter Voltage | 60 | V |
| V_{EBO} | Emitter-Base Voltage | 6 | V |
| I_C | Collector Current-Continuous | 10 | A |
| I_{CM} | Collector Current-Peak | 15 | A |
| I_B | Base Current-Continuous | 2 | A |
| P_C | Collector Power Dissipation @ $T_C \leq 25^{\circ}C$ | 60 | W |
| T_J | Junction Temperature | 175 | $^{\circ}C$ |
| T_{stg} | Storage Temperature Range | -65~175 | $^{\circ}C$ |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---------------|--------------------------------------|-----|---------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 2.5 | $^{\circ}C/W$ |



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ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------|--------------------------------------|---|-----|-----|------------|------|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=100\text{mA}; I_B=0$ | 80 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C=5\text{A}; I_B=0.5\text{A}$ | | | 0.5 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C=10\text{A}; I_B=1\text{A}$ | | | 1.0 | V |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage | $I_C=5\text{A}; I_B=0.5\text{A}$ | | | 1.2 | V |
| $V_{BE(sat)-2}$ | Base-Emitter Saturation Voltage | $I_C=10\text{A}; I_B=1\text{A}$ | | | 1.5 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB}=80\text{V}; I_E=0$ | | | 1.0 | mA |
| I_{CEV} | Collector Cutoff Current | $V_{CE}=80\text{V}; V_{BE}=-1.5\text{V}$ $V_{CE}=80\text{V}; V_{BE}=-1.5\text{V}; T_C=150^{\circ}\text{C}$ | | | 1.0 3.0 | mA |
| I_{EBO} | Emitter Cutoff current | $V_{EB}=6\text{V}; I_C=0$ | | | 1.0 | mA |
| h_{FE-1} | DC Current Gain | $I_C=1\text{A}; V_{CE}=2\text{V}$ | 30 | | | |
| h_{FE-2} | DC Current Gain | $I_C=5\text{A}; V_{CE}=5\text{V}$ | 30 | | 120 | |
| h_{FE-3} | DC Current Gain | $I_C=10\text{A}; V_{CE}=5\text{V}$ | 20 | | | |
| f_T | Current-Gain—Bandwidth Product | $I_C=0.5\text{A}; V_{CE}=5\text{V}; f_{\text{test}}=5\text{MHz}$ | | 70 | | MHz |

Switching Times

| | | | | | | |
|-----------|--------------|---|--|--|------|---------------|
| t_{on} | Turn-On Time | $I_C=5\text{A}; I_{B1}=-I_{B2}=0.5\text{A},$ $V_{CC}=30\text{V}$ | | | 0.35 | μs |
| t_{stg} | Storage Time | | | | 1.3 | μs |
| t_f | Fall Time | | | | 0.2 | μs |