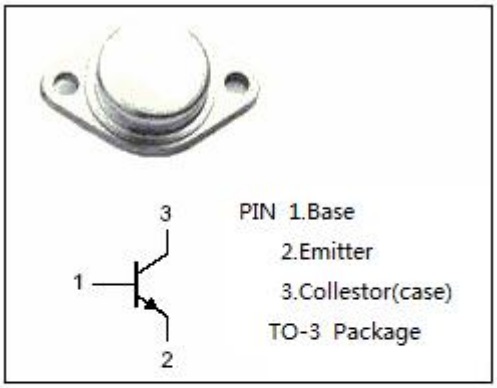
# SPTECH Silicon NPN Power Transistors

## DESCRIPTION

- Low Collector Saturation Voltage-
  : $V_{CE(sat)}$= 0.75V(Max.)@ $I_C$= 10A
- Wide Area of Safe Operation
- Complement to Type 2N4399




## APPLICATIONS

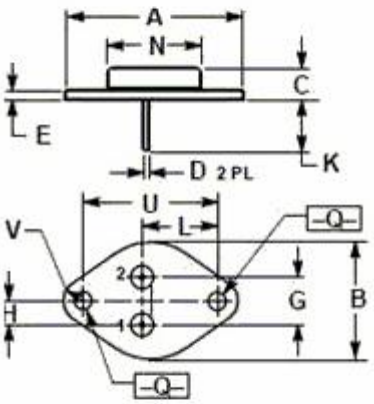
- Designed for use in power amplifier and switching circuits applications.

## ABSOLUTE MAXIMUM RATINGS($T_a$=25℃)

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 60 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5 | V |
| $I_C$ | Collector Current-Continuous | 30 | A |
| $I_B$ | Base Current-Continuous | 7.5 | A |
| $P_C$ | Collector Power Dissipation@$T_C$=25℃ | 200 | W |
| $T_J$ | Junction Temperature | 200 | ℃ |
| $T_{stg}$ | Storage Temperature | -65~200 | ℃ |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}a}$ | Thermal Resistance,Junction to Ambient | 34 | ℃/W |
| $R_{th\ j\text{-}c}$ | Thermal Resistance,Junction to Case | 0.875 | ℃/W |




| DIM | mm MIN | MAX |
|---|---|---|
| A | 39.00 | |
| B | 25.30 | 26.67 |
| C | 7.80 | 8.50 |
| D | 0.90 | 1.10 |
| E | 1.40 | 1.60 |
| G | 10.92 | |
| H | 5.46 | |
| K | 11.30 | 13.50 |
| L | 16.75 | 17.05 |
| N | 19.40 | 19.62 |
| Q | 4.00 | 4.20 |
| U | 30.00 | 30.20 |
| V | 4.30 | 4.50 |

# SPTECH Silicon NPN Power Transistors

## ELECTRICAL CHARACTERISTICS

**$T_C$=25℃ unless otherwise specified**

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|---|---|---|---|---|---|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C$= 50mA ; $I_B$= 0 | 60 | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C$= 10A; $I_B$= 1A | | 0.75 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C$= 20A; $I_B$= 2A | | 2.0 | V |
| $V_{CE(sat)-3}$ | Collector-Emitter Saturation Voltage | $I_C$= 30A; $I_B$= 6A | | 3.0 | V |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage | $I_C$= 10A; $I_B$= 1A | | 1.7 | V |
| $V_{BE(sat)-2}$ | Base-Emitter Saturation Voltage | $I_C$= 15A; $I_B$= 1.5A | | 1.8 | V |
| $V_{BE(sat)-3}$ | Base-Emitter Saturation Voltage | $I_C$= 20A; $I_B$= 2A | | 2.5 | V |
| $V_{BE(on)-1}$ | Base-Emitter On Voltage | $I_C$= 15A; $V_{CE}$= 2V | | 1.7 | V |
| $V_{BE(on)-2}$ | Base-Emitter On Voltage | $I_C$= 30A; $V_{CE}$= 4V | | 3.0 | V |
| $I_{CEO}$ | Collector Cutoff Current | $V_{CE}$= 60V; $I_B$= 0 | | 5.0 | mA |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= 60V; $I_E$= 0 | | 1.0 | mA |
| $I_{CEX}$ | Collector Cutoff Current | $V_{CE}$= 60V; $V_{BE(off)}$= 1.5V<br>$V_{CE}$= 60V; $V_{BE(off)}$= 1.5V,$T_C$=150℃ | | 1.0<br>10 | mA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 5V; $I_C$= 0 | | 5.0 | mA |
| $h_{FE-1}$ | DC Current Gain | $I_C$= 1A; $V_{CE}$= 2V | 40 | | |
| $h_{FE-2}$ | DC Current Gain | $I_C$= 15A; $V_{CE}$= 2V | 15 | 60 | |
| $h_{FE-3}$ | DC Current Gain | $I_C$= 30A; $V_{CE}$= 4V | 5 | | |
| $f_T$ | Current-Gain—Bandwidth Product | $I_C$= 1A; $V_{CE}$= 10V ;$f_{test}$= 1.0MHz | 2 | | MHz |
| Switching Times | | | | | |
| $t_r$ | Rise Time | $V_{CC}$= 30V; $I_C$= 10A; $I_{B1}$= -$I_{B2}$= 1A | | 1.0 | μs |
| $t_s$ | Storage Time | | | 2.0 | μs |
| $t_f$ | Fall Time | | | 1.0 | μs |