

isc Silicon NPN Darlington Power Transistor

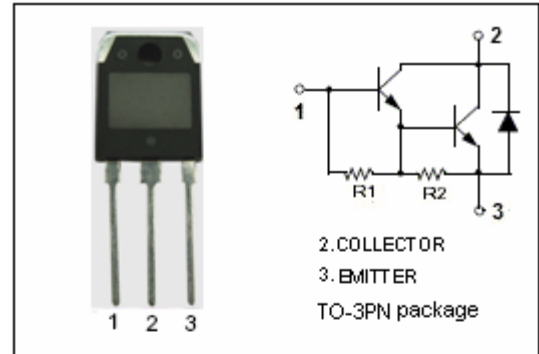
TIP141

DESCRIPTION

- High DC Current Gain-
: $h_{FE} = 1000(\text{Min}) @ I_C = 5A$
- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 80V(\text{Min})$
- Complement to Type TIP146

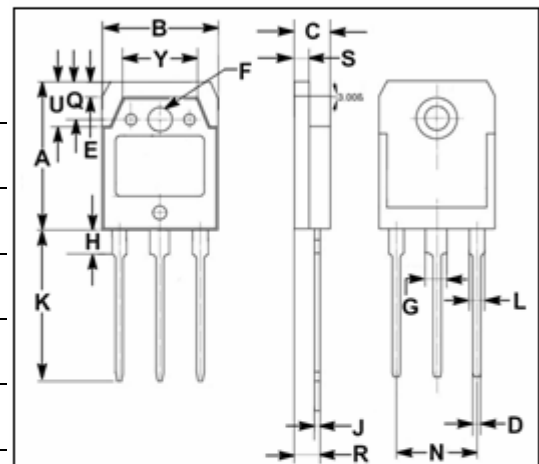
APPLICATIONS

- Designed for general purpose amplifier and low frequency switching applications.



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

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|--|---------|------------------|
| V_{CBO} | Collector-Base Voltage | 80 | V |
| V_{CEO} | Collector-Emitter Voltage | 80 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current-Continuous | 10 | A |
| I_{CM} | Collector Current-Peak | 15 | A |
| I_B | Base Current- Continuous | 0.5 | A |
| P_C | Collector Power Dissipation @ $T_C=25^\circ\text{C}$ | 125 | W |
| T_j | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | -65~150 | $^\circ\text{C}$ |



| DIM | mm | |
|-----|-------|-------|
| | MIN | MAX |
| A | 19.90 | 20.10 |
| B | 15.50 | 15.70 |
| C | 4.70 | 4.90 |
| D | 0.90 | 1.10 |
| E | 1.90 | 2.10 |
| F | 3.40 | 3.60 |
| G | 2.90 | 3.10 |
| H | 3.20 | 3.40 |
| J | 0.595 | 0.605 |
| K | 20.50 | 20.70 |
| L | 1.90 | 2.10 |
| N | 10.89 | 10.91 |
| Q | 4.90 | 5.10 |
| R | 3.35 | 3.45 |
| S | 1.995 | 2.005 |
| U | 5.90 | 6.10 |
| Y | 9.90 | 10.10 |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---------------|---|------|--------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 1.0 | $^\circ\text{C/W}$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 35.7 | $^\circ\text{C/W}$ |

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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 | $I_C=30\text{mA}, I_B=0$ | 80 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C=5\text{A}, I_B=10\text{mA}$ | | | 2.0 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C=10\text{A}, I_B=40\text{mA}$ | | | 3.0 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C=10\text{A}, I_B=40\text{mA}$ | | | 3.5 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C=10\text{A}; V_{CE}=4\text{V}$ | | | 3.0 | V |
| I_{CBO} | Collector Cutoff current | $V_{CB}=80\text{V}, I_E=0$ | | | 1 | mA |
| I_{CEO} | Collector Cutoff current | $V_{CE}=40\text{V}, I_B=0$ | | | 2 | mA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=5\text{V}; I_C=0$ | | | 2 | mA |
| h_{FE-1} | DC Current Gain | $I_C=5\text{A}; V_{CE}=4\text{V}$ | 1000 | | | |
| h_{FE-2} | DC Current Gain | $I_C=10\text{A}; V_{CE}=4\text{V}$ | 500 | | | |

Switching Times

| | | | | | | |
|-----------|--------------|---|--|------|--|---------------|
| t_d | Delay Time | $V_{CC}=30\text{V}, I_C=5.0\text{A},$ $I_B=20\text{mA};$ Duty Cycle $\leq 20\%$ $I_{B1}=I_{B2},$ $R_C \& R_B \text{ Varied},$ $T_J=25^\circ\text{C}$ | | 0.15 | | μs |
| t_r | Rise Time | | | 0.55 | | μs |
| t_{stg} | Storage Time | | | 2.5 | | μs |
| t_f | Fall Time | | | 2.5 | | μs |