

# isc Silicon PNP Darlington Power Transistor

TIP115

## DESCRIPTION

- High DC Current Gain-  
:  $h_{FE} = 1000(\text{Min}) @ I_C = -1\text{A}$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CE(SUS)} = -60\text{V}(\text{Min})$
- Low Collector-Emitter Saturation Voltage-  
:  $V_{CE(sat)} = -2.5\text{V}(\text{Max}) @ I_C = -2\text{A}$
- Complement to Type TIP110
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## APPLICATIONS

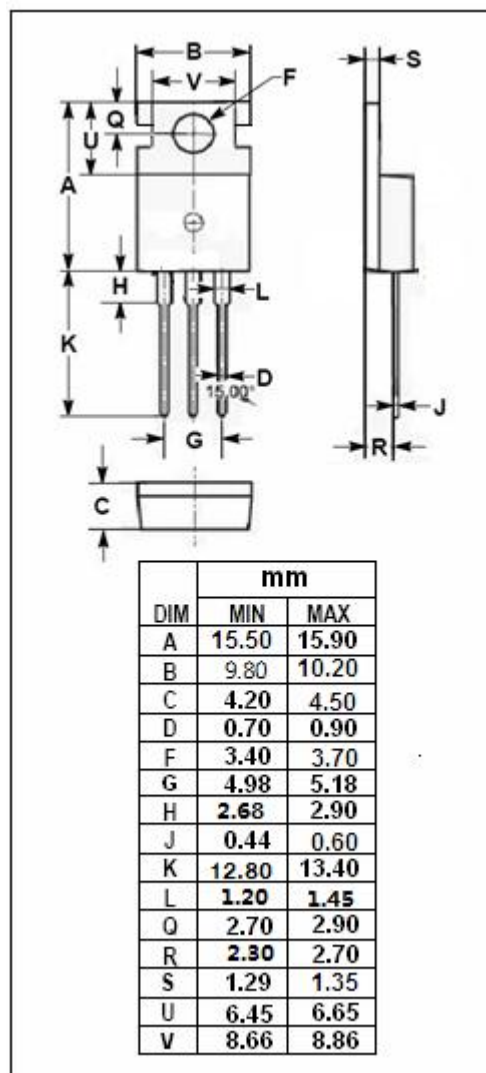
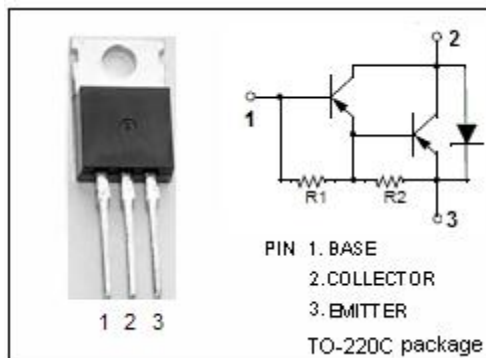
- Designed for general purpose amplifier and low speed switching applications.

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

| 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                            | -2      | A                |
| $I_{CM}$  | Collector Current-Peak                                  | -4      | A                |
| $I_B$     | Base Current                                            | -50     | mA               |
| $P_C$     | Collector Power Dissipation<br>$T_c = 25^\circ\text{C}$ | 50      | W                |
|           | Collector Power Dissipation<br>$T_a = 25^\circ\text{C}$ | 2       |                  |
| $T_j$     | Junction Temperature                                    | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                               | -65~150 | $^\circ\text{C}$ |

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                               | MAX  | UNIT                      |
|---------------|-----------------------------------------|------|---------------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case    | 2.5  | $^\circ\text{C}/\text{W}$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 62.5 | $^\circ\text{C}/\text{W}$ |



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## ELECTRICAL CHARACTERISTICS

T<sub>C</sub>=25°C unless otherwise specified

| SYMBOL                | PARAMETER                            | CONDITIONS                                            | MIN  | TYP. | MAX  | UNIT |
|-----------------------|--------------------------------------|-------------------------------------------------------|------|------|------|------|
| V <sub>CEO(SUS)</sub> | Collector-Emitter Sustaining Voltage | I <sub>C</sub> = -30mA, I <sub>B</sub> = 0            | -60  |      |      | V    |
| V <sub>CE(sat)</sub>  | Collector-Emitter Saturation Voltage | I <sub>C</sub> = -2A, I <sub>B</sub> = -8mA           |      |      | -2.5 | V    |
| V <sub>BE(on)</sub>   | Base-Emitter On Voltage              | I <sub>C</sub> = -2A; V <sub>CE</sub> = -4V           |      |      | -2.8 | V    |
| I <sub>CBO</sub>      | Collector Cutoff Current             | V <sub>CB</sub> = -60V, I <sub>E</sub> = 0            |      |      | -1.0 | mA   |
| I <sub>CEO</sub>      | Collector Cutoff Current             | V <sub>CE</sub> = -30V, I <sub>B</sub> = 0            |      |      | -2.0 | mA   |
| I <sub>EBO</sub>      | Emitter Cutoff Current               | V <sub>EB</sub> = -5V; I <sub>C</sub> = 0             |      |      | -2.0 | mA   |
| h <sub>FE-1</sub>     | DC Current Gain                      | I <sub>C</sub> = -1A; V <sub>CE</sub> = -4V           | 1000 |      |      |      |
| h <sub>FE-2</sub>     | DC Current Gain                      | I <sub>C</sub> = -2A; V <sub>CE</sub> = -4V           | 500  |      |      |      |
| C <sub>OB</sub>       | Output Capacitance                   | I <sub>E</sub> = 0; V <sub>CB</sub> = -10V, f= 0.1MHz |      |      | 200  | pF   |

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