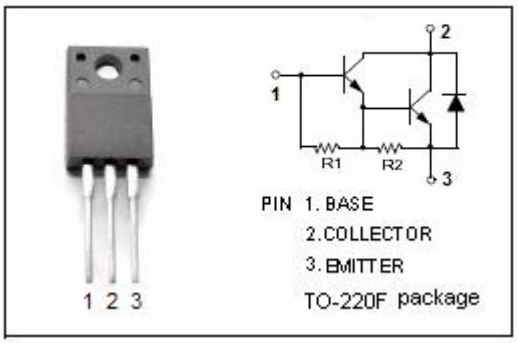
# isc Silicon NPN Darlington Power Transistor — TIP122F

## DESCRIPTION

- High DC Current Gain-
  : $h_{FE}$ = 1000(Min)@ $I_C$= 3A
- Collector-Emitter Sustaining Voltage-
  : $V_{CEO(SUS)}$ = 100V(Min)
- Low Collector-Emitter Saturation Voltage-
  : $V_{CE(sat)}$ = 2.0V(Max)@ $I_C$= 3A
  = 4.0V(Max)@ $I_C$= 5A
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

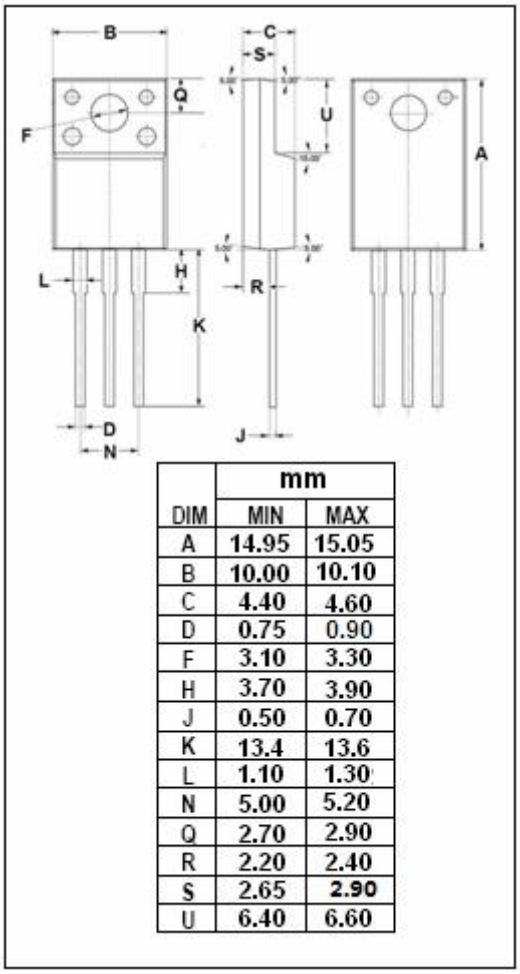



## APPLICATIONS

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

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 100 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 100 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5 | V |
| $I_C$ | Collector Current-Continuous | 5 | A |
| $I_{CM}$ | Collector Current-Peak | 8 | A |
| $I_B$ | Base Current | 120 | mA |
| $P_C$ | Collector Power Dissipation $T_C$=25℃ | 65 | W |
| | Collector Power Dissipation $T_a$=25℃ | 2 | |
| $T_j$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -65~150 | ℃ |




| DIM | mm MIN | MAX |
|---|---|---|
| A | 14.95 | 15.05 |
| B | 10.00 | 10.10 |
| C | 4.40 | 4.60 |
| D | 0.75 | 0.90 |
| F | 3.10 | 3.30 |
| H | 3.70 | 3.90 |
| J | 0.50 | 0.70 |
| K | 13.4 | 13.6 |
| L | 1.10 | 1.30 |
| N | 5.00 | 5.20 |
| Q | 2.70 | 2.90 |
| R | 2.20 | 2.40 |
| S | 2.65 | 2.90 |
| U | 6.40 | 6.60 |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}c}$ | Thermal Resistance,Junction to Case | 1.92 | ℃/W |
| $R_{th\ j\text{-}a}$ | Thermal Resistance,Junction to Ambient | 62.5 | ℃/W |

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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C$= 100mA, $I_B$= 0 | 100 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C$= 3A ,$I_B$= 12mA | | | 2.0 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation voltage | $I_C$= 5A ,$I_B$= 20mA | | | 4.0 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C$= 3A ; $V_{CE}$= 3V | | | 2.5 | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= 100V, $I_E$= 0 | | | 0.2 | mA |
| $I_{CEO}$ | Collector Cutoff Current | $V_{CE}$= 50V, $I_B$= 0 | | | 0.5 | mA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 5V; $I_C$= 0 | | | 2 | mA |
| $h_{FE-1}$ | DC Current Gain | $I_C$= 0.5A ; $V_{CE}$= 3V | 1000 | | | |
| $h_{FE-2}$ | DC Current Gain | $I_C$= 3A ; $V_{CE}$= 3V | 1000 | | | |