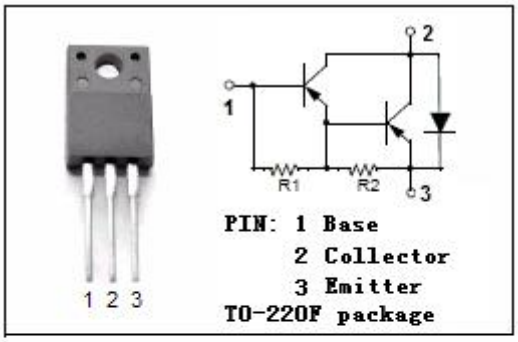
# *isc* Silic\on PNP Darlington Power Transistor — 2SB1431

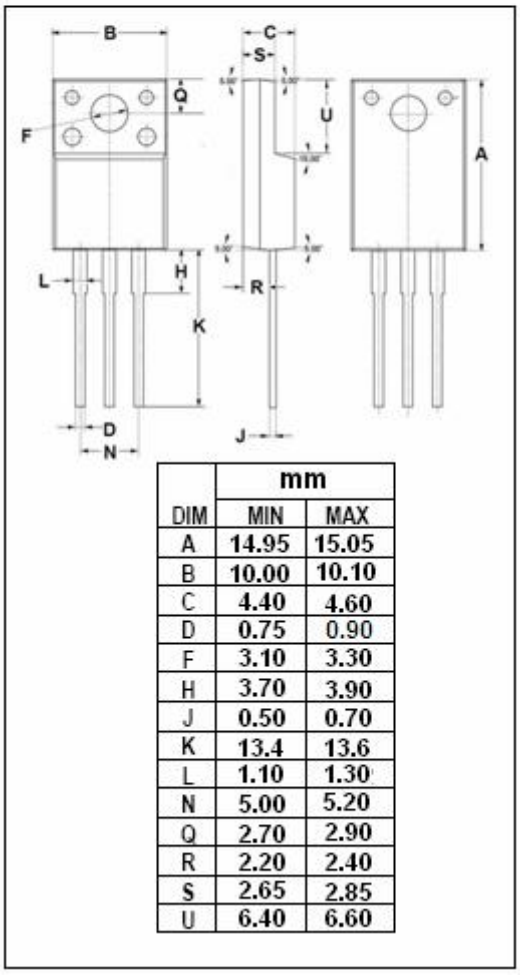
## DESCRIPTION

- Collector-Emitter Breakdown Voltage-
  : $V_{(BR)CEO}$= -100V(Min)
- High DC Current Gain-
  : $h_{FE}$= 2000(Min)@ ($V_{CE}$= -2V, $I_C$= -3A)
- Low Collector Saturation Voltage-
  : $V_{CE(sat)}$= −1.5V(Max)@ ($I_C$= -3A, $I_B$= -3mA)
- Minimum Lot-to-Lot variations for robust device performance and reliable operation




## APPLICATIONS

- Designed for low-frequency power amplifiers and low-speed switching applications.




| DIM | mm MIN | mm 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 | 2.85 |
| U | 6.40 | 6.60 |

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 | -7 | V |
| $I_C$ | Collector Current-Continuous | -8 | A |
| $I_{CM}$ | Collector Current-Peak | -12 | A |
| $I_B$ | Base Current-Continuous | -0.8 | A |
| $P_C$ | Collector Power Dissipation @$T_a$=25℃ | 2 | W |
| | Collector Power Dissipation @$T_C$=25℃ | 25 | |
| $T_J$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature | -55~150 | ℃ |

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## ELECTRICAL CHARACTERISTICS

**Tj=25℃ unless otherwise specified**

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$= -3A; $I_B$= -3mA | | | -1.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$= -3A; $I_B$= -3mA | | | -2.0 | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= -100V; $I_E$= 0 | | | -1.0 | μA |
| $h_{FE-1}$ | DC Current Gain | $I_C$= -3A; $V_{CE}$= -2V | 2000 | 6000 | 15000 | |
| $h_{FE-2}$ | DC Current Gain | $I_C$= -5A; $V_{CE}$= -2V | 500 | | | |
| $f_T$ | Current-Gain—Bandwidth Product | $I_C$= -0.8A; $V_{CE}$= -5V | | 80 | | MHz |
| $C_{OB}$ | Output Capacitance | $I_E$= 0; $V_{CB}$= -10V; $f_{test}$= 1MHz | | 80 | | pF |
| Switching Times | | | | | | |
| $t_{on}$ | Turn-on Time | $I_C$= -3A, $I_{B1}$= -$I_{B2}$= -3mA, $V_{CC}$≈ -50V; $R_L$= 16.7Ω | | 0.5 | | μs |
| $t_{stg}$ | Storage Time | | | 1.0 | | μs |
| $t_f$ | Fall Time | | | 1.0 | | μs |

◆ **$h_{FE-1}$ Classifications**

| M | L | K |
|---|---|---|
| 2000-5000 | 3000-7000 | 5000-15000 |