

## isc Silicon NPN Power Transistor

## 2SD1650

## DESCRIPTION

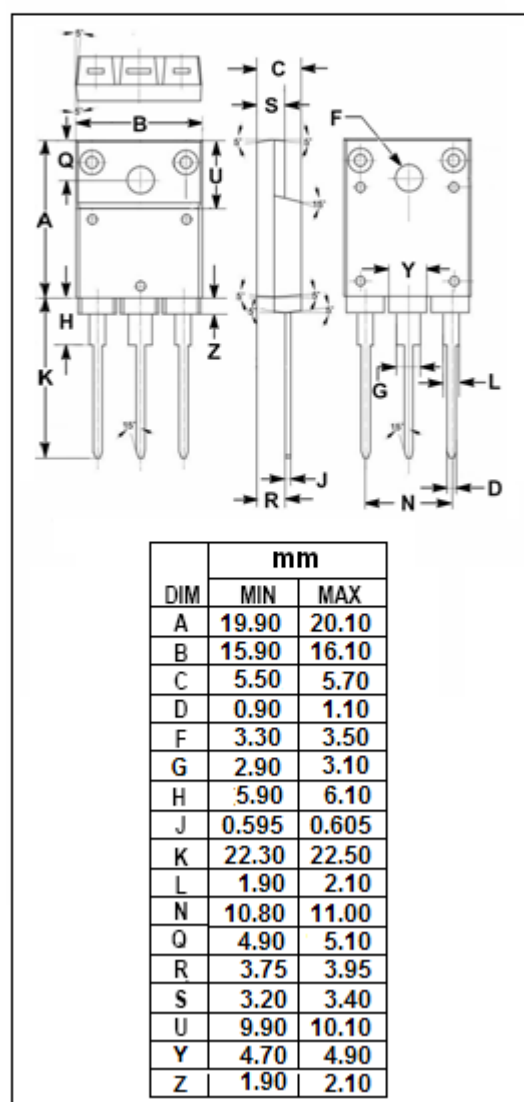
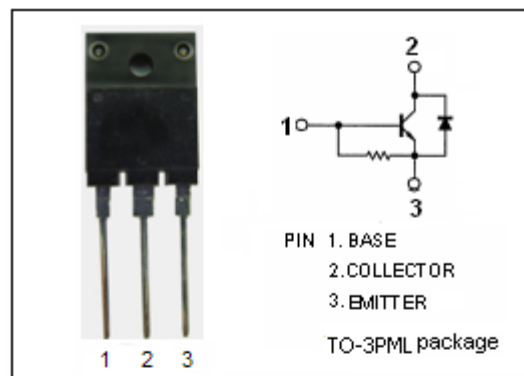
- High Breakdown Voltage-  
:  $V_{CBO} = 1500V$  (Min)
- High Switching Speed
- High Reliability
- Built-in Damper Diode

## APPLICATIONS

- Designed for horizontal output applications

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

| SYMBOL    | PARAMETER                                           | VALUE   | UNIT       |
|-----------|-----------------------------------------------------|---------|------------|
| $V_{CBO}$ | Collector-Base Voltage                              | 1500    | V          |
| $V_{CEO}$ | Collector-Emitter Voltage                           | 800     | V          |
| $V_{EBO}$ | Emitter-Base Voltage                                | 6       | V          |
| $I_C$     | Collector Current- Continuous                       | 3.5     | A          |
| $I_{CP}$  | Collector Current-Peak                              | 10      | A          |
| $P_C$     | Collector Power Dissipation<br>@ $T_C = 25^\circ C$ | 50      | W          |
| $T_J$     | Junction Temperature                                | 150     | $^\circ C$ |
| $T_{stg}$ | Storage Temperature Range                           | -55~150 | $^\circ C$ |

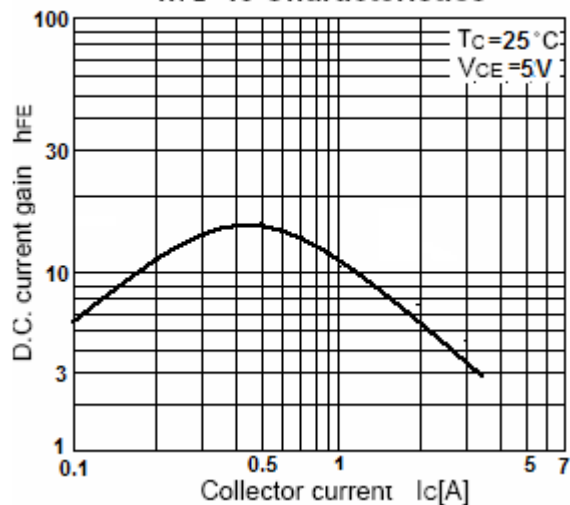


**isc Silicon NPN Power Transistor****2SD1650****ELECTRICAL CHARACTERISTICS****T<sub>C</sub>=25°C unless otherwise specified**

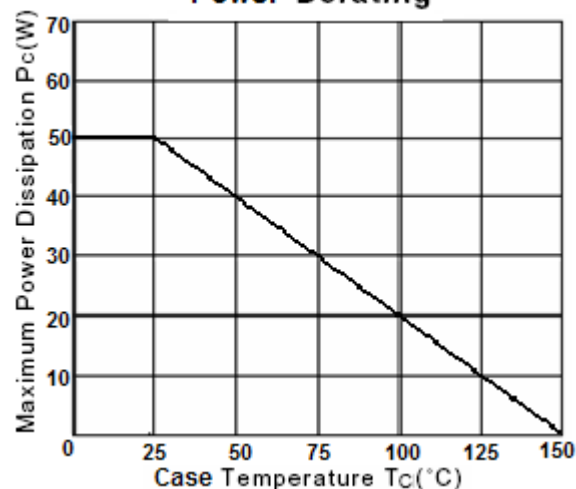
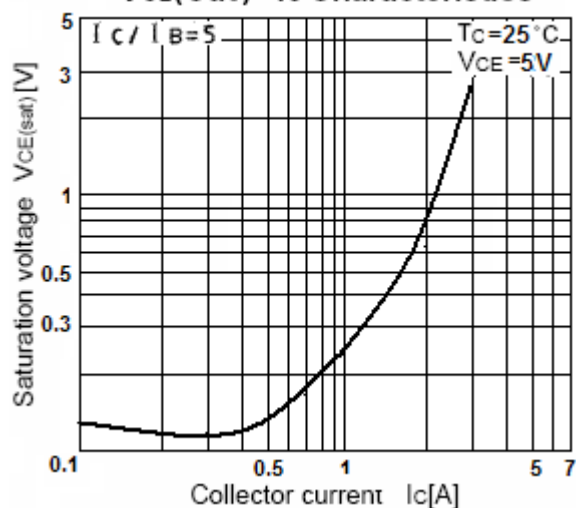
| SYMBOL               | PARAMETER                            | CONDITIONS                                                                                                                 | MIN  | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-Emitter Breakdown Voltage  | I <sub>C</sub> = 100mA; R <sub>BE</sub> = ∞                                                                                | 800  |      |     | V    |
| V <sub>(BR)CBO</sub> | Collector-Base Breakdown Voltage     | I <sub>C</sub> = 5mA; I <sub>E</sub> = 0                                                                                   | 1500 |      |     | V    |
| V <sub>(BR)EBO</sub> | Emitter-Base Breakdown Voltage       | I <sub>E</sub> = 200mA; I <sub>C</sub> = 0                                                                                 | 7    |      |     | V    |
| V <sub>CE(sat)</sub> | Collector-Emitter Saturation Voltage | I <sub>C</sub> = 2.5A; I <sub>B</sub> = 0.8A                                                                               |      |      | 8.0 | V    |
| V <sub>BE(sat)</sub> | Base-Emitter Saturation Voltage      | I <sub>C</sub> = 2.5A; I <sub>B</sub> = 0.8A                                                                               |      |      | 1.5 | V    |
| I <sub>CBO</sub>     | Collector Cutoff Current             | V <sub>CB</sub> = 800V ; I <sub>E</sub> = 0                                                                                |      |      | 10  | μ A  |
| I <sub>EBO</sub>     | Emitter Cutoff Current               | V <sub>EB</sub> = 4V ; I <sub>C</sub> = 0                                                                                  | 40   |      | 130 | mA   |
| h <sub>FE</sub>      | DC Current Gain                      | I <sub>C</sub> = 0.5A ; V <sub>CE</sub> = 5V                                                                               | 8    |      |     |      |
| V <sub>ECF</sub>     | C-E Diode Forward Voltage            | I <sub>F</sub> = 3.5A                                                                                                      |      |      | 2.0 | V    |
| t <sub>f</sub>       | Fall Time                            | I <sub>C</sub> = 3A , I <sub>B1</sub> = 0.8A ; I <sub>B2</sub> = -1.6A<br>R <sub>L</sub> = 66.7 Ω ; V <sub>CC</sub> = 200V |      |      | 0.7 | μ s  |

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 $h_{FE}$ – $I_C$  Characteristics

Power Derating

 $V_{CE(sat)}$ – $I_C$  Characteristics

Safe Operating Area

