

isc Silicon NPN Darlington Power Transistor

2SD1025

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 200V(\text{Min})$
- High DC Current Gain
: $h_{FE} = 1500(\text{Min}) @ I_C = 5A$
- Low Saturation Voltage
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

APPLICATIONS

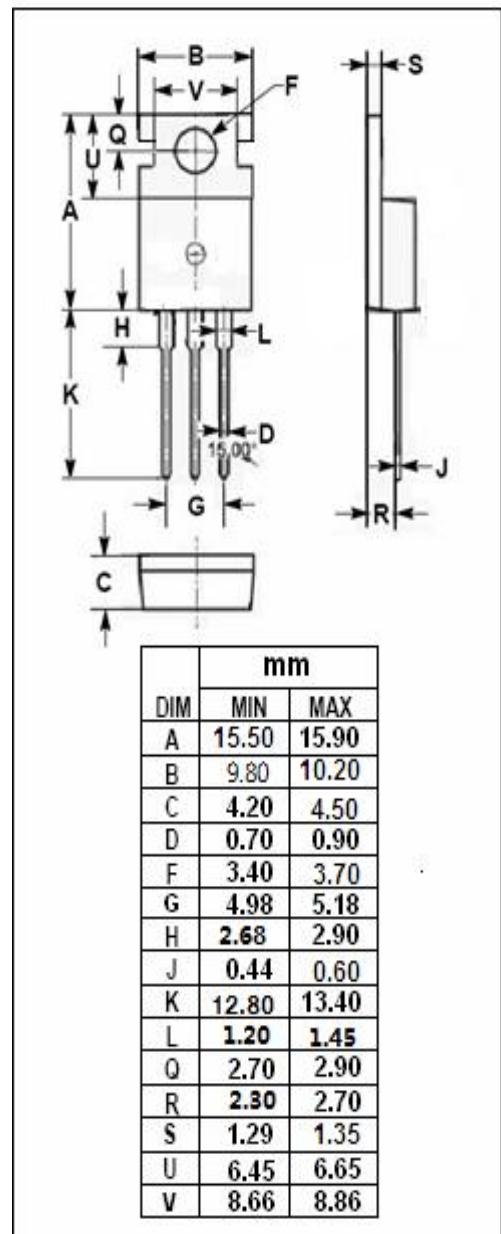
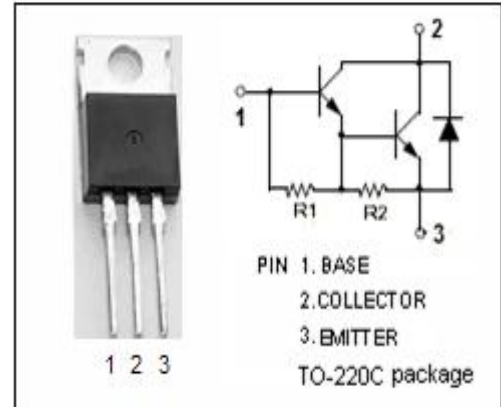
- Designed for general purpose amplifier applications.

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|-----------------------------------------------------------|---------|------------------|
| V_{CBO} | Collector-Base Voltage | 200 | V |
| V_{CEO} | Collector-Emitter Voltage | 200 | V |
| V_{EBO} | Emitter-Base Voltage | 7 | V |
| I_C | Collector Current-Continuous | 8 | A |
| I_{CP} | Collector Current-Peak | 12 | A |
| I_B | Base Current-Continuous | 0.5 | A |
| I_{BM} | Base Current-Peak | 1 | A |
| P_C | Collector Power Dissipation @ $T_C = 25^\circ\text{C}$ | 50 | W |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | -55~150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

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



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ELECTRICAL CHARACTERISTICS

 $T_C=25^\circ\text{C}$ unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---------------|--------------------------------------|--------------------------|------|------|-------|------|
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C= 5A; I_B= 10mA$ | | | 1.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C= 5A; I_B= 10mA$ | | | 2.0 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB}= 200V; I_E= 0$ | | | 0.1 | mA |
| I_{CEO} | Collector Cutoff Current | $V_{CE}= 200V; I_B= 0$ | | | 0.1 | mA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}= 7V; I_C=0$ | | | 5 | mA |
| h_{FE} | DC Current Gain | $I_C= 5A; V_{CE}= 3V$ | 1500 | | 30000 | |
| f_T | Current-Gain—Bandwidth Product | $I_C= 0.8A; V_{CE}= 10V$ | | 20 | | MHz |

Switching times

| | | | | | | |
|-----------|--------------|------------------------------------------------------------------|--|--|-----|---------------|
| t_{on} | Turn-on Time | $I_C= 5A, I_{B1}= I_{B2}= 10mA$ $R_L= 5\ \Omega; V_{BB2}= 4V$ | | | 2.0 | μs |
| t_{stg} | Storage Time | | | | 8.0 | μs |
| t_f | Fall Time | | | | 5.0 | μs |

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