

**isc Silicon NPN Power Transistor**

**2SC3150**

**DESCRIPTION**

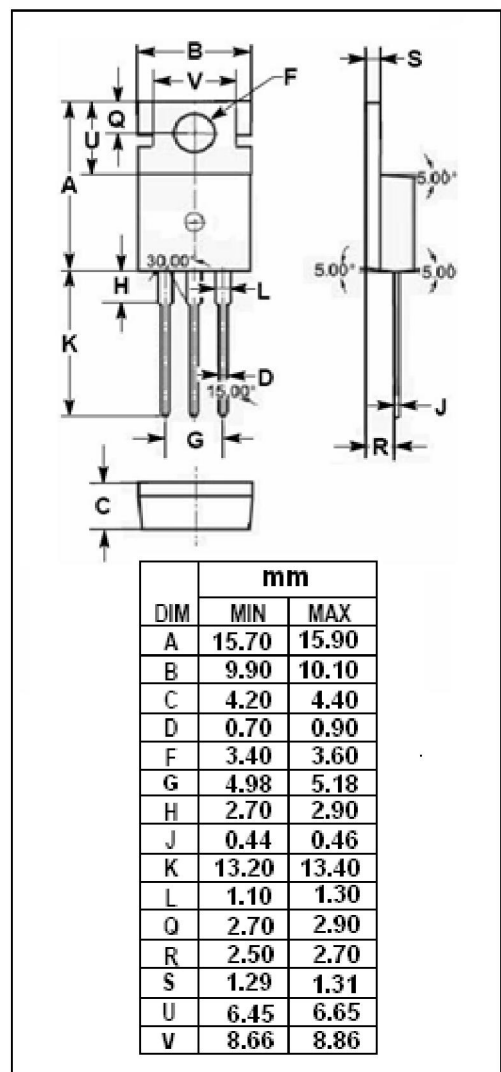
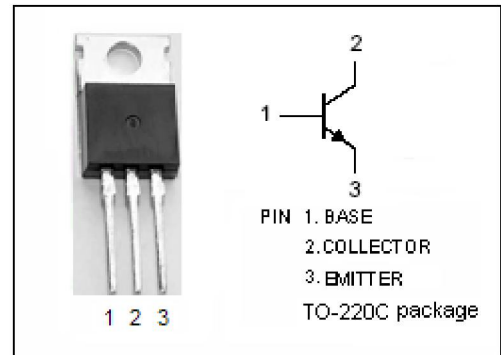
- High Breakdown Voltage-  
:  $V_{(BR)CBO} = 900V(\text{Min})$
- Fast Switching Speed
- Wide Area of Safe Operation

**APPLICATIONS**

- Designed for switching regulator Applications

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

| SYMBOL    | PARAMETER   | VALUE   | UNIT             |
|-----------|---|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                  | 900     | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                               | 800     | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                    | 7       | V                |
| $I_C$     | Collector Current-Continuous                            | 3       | A                |
| $I_{CM}$  | Collector Current-Peak                                  | 10      | A                |
| $I_B$     | Base Current-Continuous                                 | 1.5     | A                |
| $P_C$     | Collector Power Dissipation<br>@ $T_C=25^\circ\text{C}$ | 50      | W                |
| $T_J$     | Junction Temperature                                    | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                               | -55~150 | $^\circ\text{C}$ |



## isc Silicon NPN Power Transistor

## 2SC3150

## ELECTRICAL CHARACTERISTICS

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

| SYMBOL         | PARAMETER                            | CONDITIONS  | MIN | TYP. | MAX | UNIT          |
|----------------|--------------------------------------|---|-----|------|-----|---------------|
| $V_{(BR)CEO}$  | Collector-Emitter Breakdown Voltage  | $I_C=5\text{mA}; R_{BE}=\infty$                           | 800 |      |     | V             |
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=3\text{A}; L=500\mu\text{H}; I_B=1\text{A}$          | 800 |      |     | V             |
| $V_{(BR)CBO}$  | Collector-Base Breakdown Voltage     | $I_C=1\text{mA}; I_E=0$                                   | 900 |      |     | V             |
| $V_{(BR)EBO}$  | Emitter-Base Breakdown Voltage       | $I_E=1\text{mA}; I_C=0$                                   | 7   |      |     | V             |
| $V_{CE(sat)}$  | Collector-Emitter Saturation Voltage | $I_C=1.5\text{A}; I_B=0.3\text{A}$                        |     |      | 2.0 | V             |
| $V_{BE(sat)}$  | Base-Emitter Saturation Voltage      | $I_C=1.5\text{A}; I_B=0.3\text{A}$                        |     |      | 1.5 | V             |
| $I_{CBO}$      | Collector Cutoff Current             | $V_{CB}=800\text{V}; I_E=0$                               |     |      | 10  | $\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cutoff Current               | $V_{EB}=5\text{V}; I_C=0$                                 |     |      | 10  | $\mu\text{A}$ |
| $h_{FE-1}$     | DC Current Gain                      | $I_C=0.2\text{A}; V_{CE}=5\text{V}$                       | 10  |      | 40  |               |
| $h_{FE-2}$     | DC Current Gain                      | $I_C=1\text{A}; V_{CE}=5\text{V}$                         | 8   |      |     |               |
| $C_{OB}$       | Output Capacitance                   | $I_E=0; V_{CB}=10\text{V}; f_{\text{test}}=1.0\text{MHz}$ |     | 60   |     | pF            |
| $f_T$          | Current-Gain—Bandwidth Product       | $I_C=0.2\text{A}; V_{CE}=10\text{V}$                      |     | 15   |     | MHz           |

## Switching times

|           |              |   |  |  |     |               |
|-----------|--------------|---|--|--|-----|---------------|
| $t_{on}$  | Turn-on Time | $I_C=2\text{A}; I_{B1}=0.4\text{A}; I_{B2}=-0.8\text{A}$<br>$R_L=200\Omega; V_{CC}=400\text{V}$ |  |  | 1.0 | $\mu\text{s}$ |
| $t_{stg}$ | Storage Time |   |  |  | 3.0 | $\mu\text{s}$ |
| $t_f$     | Fall Time    |   |  |  | 0.7 | $\mu\text{s}$ |

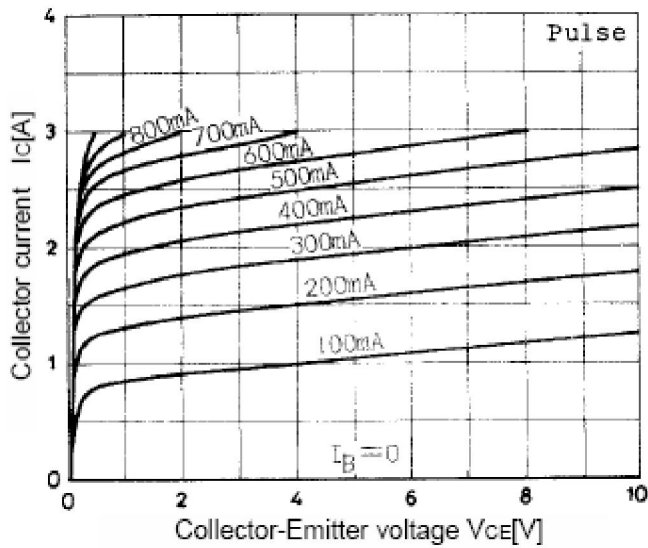
◆  $h_{FE-1}$  Classifications

| K     | L     | M     |
|-------|-------|-------|
| 10-20 | 15-30 | 20-40 |

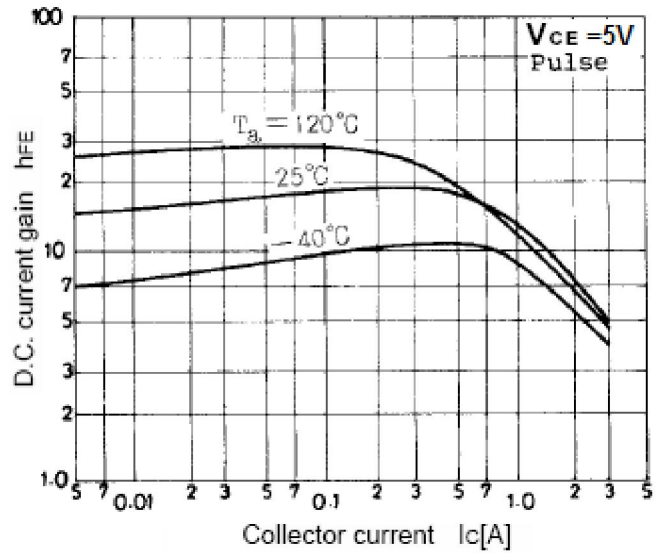
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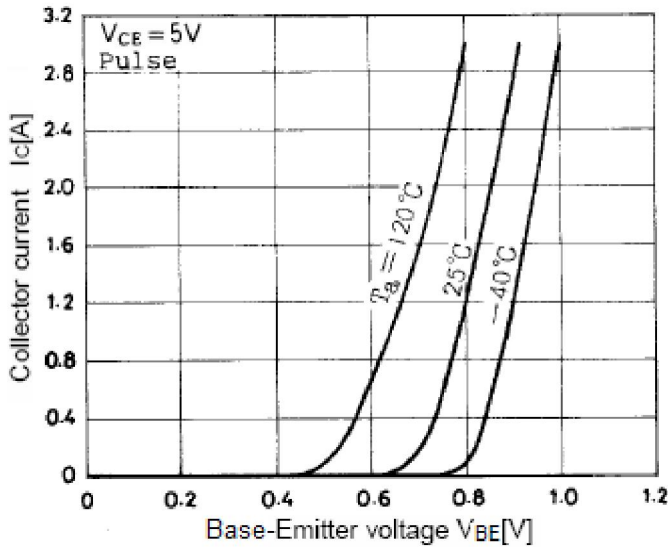
**$I_C$ - $V_{CE}$  Characteristics**



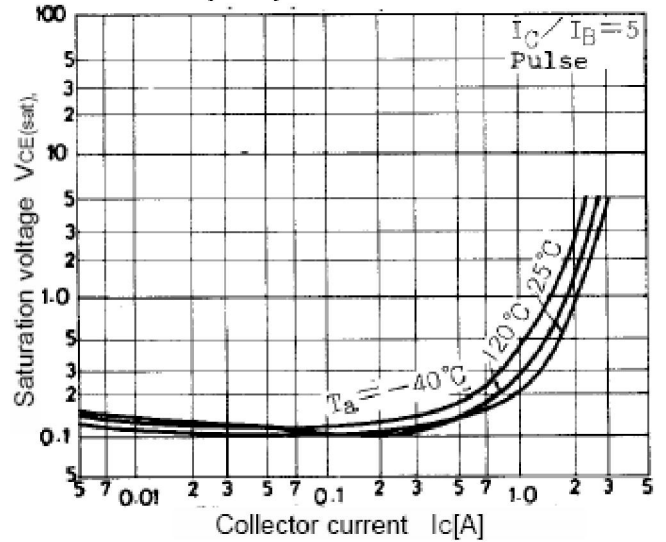
**$h_{FE}$ - $I_C$  Characteristics**



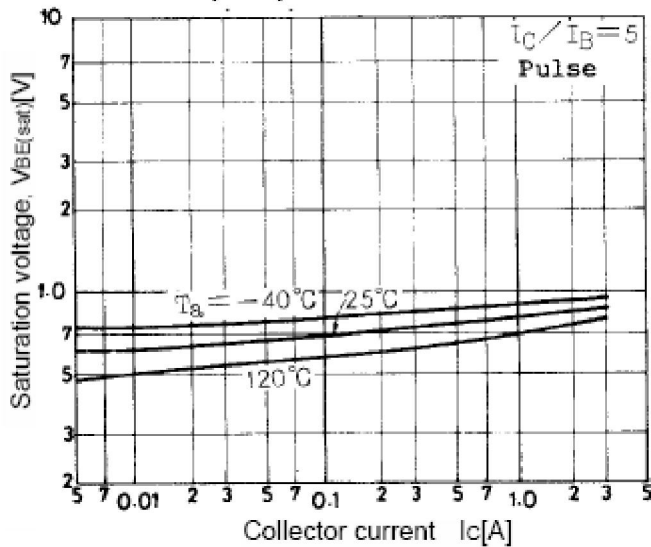
**$I_C$ - $V_{BE}$  Characteristics**



**$V_{CE(sat)}$ - $I_C$  Characteristics**



**$V_{BE(sat)}$ - $I_C$  Characteristics**



**Safe Operating Area**

