

## SPTECH Silicon NPN Power Transistor

BD533

## DESCRIPTION

- DC Current Gain -  
:  $h_{FE} = 40 @ I_C = 0.5A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 45V(\text{Min})$
- Complement to Type BD534

## APPLICATIONS

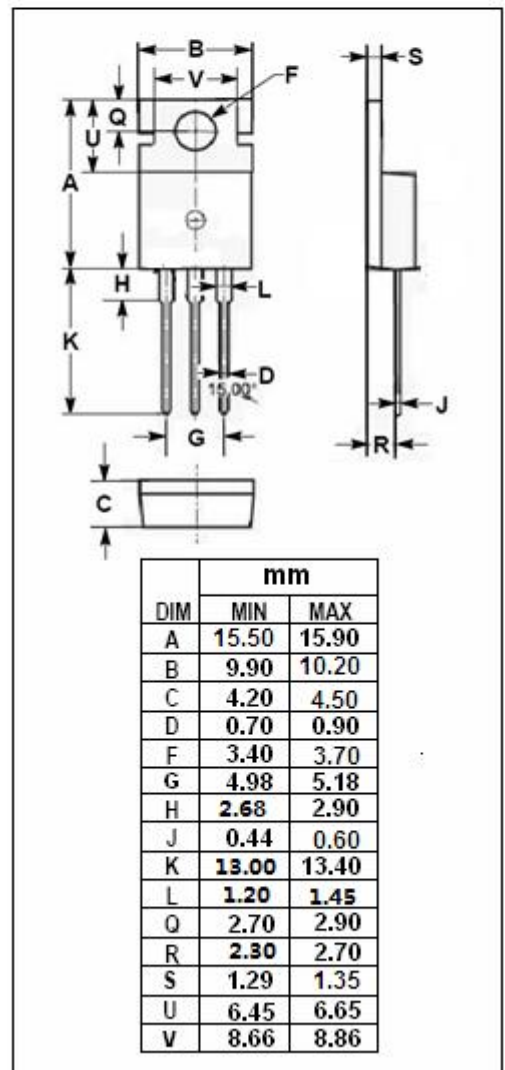
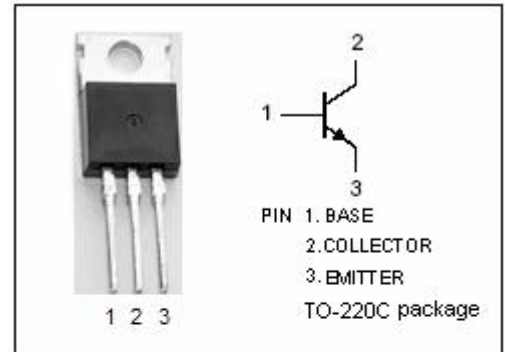
- Designed for use in medium power linear and switching applications.

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

| SYMBOL    | PARAMETER                                                 | VALUE   | UNIT             |
|-----------|-----------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                    | 45      | V                |
| $V_{CES}$ | Collector-Emitter Voltage                                 | 45      | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                                 | 45      | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                      | 5       | V                |
| $I_C$     | Collector Current-Continuous                              | 8       | A                |
| $I_B$     | Base Current                                              | 1       | 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                                 | -65~150 | $^\circ\text{C}$ |

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                               | MAX | UNIT               |
|---------------|-----------------------------------------|-----|--------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case    | 2.5 | $^\circ\text{C/W}$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 70  | $^\circ\text{C/W}$ |



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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL          | PARAMETER                            | CONDITIONS                          | MIN | TYP | MAX | UNIT |
|-----------------|--------------------------------------|-------------------------------------|-----|-----|-----|------|
| $V_{CEQ(SUS)}$  | Collector-Emitter Sustaining Voltage | $I_C=30\text{mA}; I_B=0$            | 45  |     |     | V    |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C=2\text{A}; I_B=0.2\text{A}$    |     |     | 0.8 | V    |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C=6\text{A}; I_B=0.6\text{A}$    |     | 0.8 |     | V    |
| $V_{BE(on)}$    | Base-Emitter On Voltage              | $I_C=2\text{A}; V_{CE}=2\text{V}$   |     |     | 1.5 | V    |
| $I_{CBO}$       | Collector Cutoff Current             | $V_{CB}=45\text{V}; I_E=0$          |     |     | 0.1 | mA   |
| $I_{CES}$       | Collector Cutoff Current             | $V_{CE}=45\text{V}; V_{BE}=0$       |     |     | 0.1 | mA   |
| $I_{EBO}$       | Emitter Cutoff Current               | $V_{EB}=5\text{V}; I_C=0$           |     |     | 1.0 | mA   |
| $h_{FE-1}$      | DC Current Gain                      | $I_C=10\text{mA}; V_{CE}=5\text{V}$ | 20  |     |     |      |
| $h_{FE-2}$      | DC Current Gain                      | $I_C=0.5\text{A}; V_{CE}=2\text{V}$ | 40  |     |     |      |
| $h_{FE-3}$      | DC Current Gain                      | $I_C=2\text{A}; V_{CE}=2\text{V}$   | 25  |     |     |      |
| $f_T$           | Current-Gain—Bandwidth Product       | $I_C=0.5\text{A}; V_{CE}=1\text{V}$ | 3.0 | 12  |     | MHz  |