

## SPTECH Silicon NPN Power Transistor

BD142

## DESCRIPTION

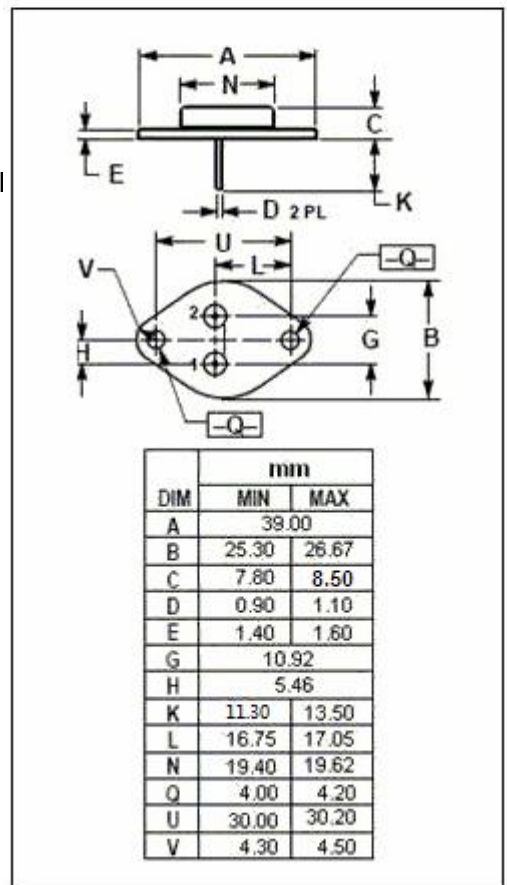
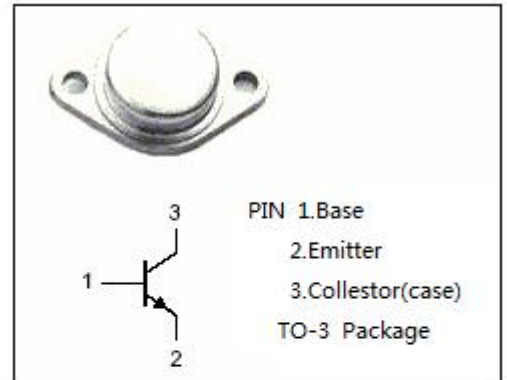
- Low Collector Saturation Voltage
- High Power Dissipation

## APPLICATIONS

- LF large signal power amplification.
- Intended for a wide variety of intermediate power applications.
- Suited for use in audio and inverter circuits at 12V.

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

| SYMBOL        | PARAMETER                                           | VALUE   | UNIT               |
|---------------|-----------------------------------------------------|---------|--------------------|
| $V_{CBO}$     | Collector-Base Voltage                              | 50      | V                  |
| $V_{CEO}$     | Collector-Emitter Voltage                           | 45      | V                  |
| $V_{EBO}$     | Emitter-Base Voltage                                | 7       | V                  |
| $I_C$         | Collector Current-Continuous                        | 15      | A                  |
| $I_B$         | Base Current                                        | 7       | A                  |
| $P_C$         | Collector Power Dissipation@ $T_C=25^\circ\text{C}$ | 117     | W                  |
| $T_J$         | Junction Temperature                                | 200     | $^\circ\text{C}$   |
| $T_{stg}$     | Storage Temperature                                 | -65~200 | $^\circ\text{C}$   |
| SYMBOL        | PARAMETER                                           | MAX     | UNIT               |
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case                | 1.5     | $^\circ\text{C/W}$ |



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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL        | PARAMETER                                                   | CONDITIONS                                               | MIN  | MAX | UNIT          |
|---------------|-------------------------------------------------------------|----------------------------------------------------------|------|-----|---------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage                         | $I_C=10\text{mA}; I_B=0$                                 | 45   |     | V             |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage                            | $I_C=0.1\text{mA}; I_E=0$                                | 50   |     | V             |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage                        | $I_C=4\text{A}; I_B=0.4\text{A}$                         |      | 1.1 | V             |
| $V_{BE(on)}$  | Base-Emitter On Voltage                                     | $I_C=4\text{A}; V_{CE}=4\text{V}$                        |      | 1.5 | V             |
| $I_{CBO}$     | Collector Cutoff Current                                    | $V_{CB}=50\text{V}; I_E=0$                               |      | 100 | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cutoff Current                                      | $V_{EB}=7\text{V}; I_C=0$                                |      | 1.0 | mA            |
| $h_{FE-1}$    | DC Current Gain                                             | $I_C=4\text{A}; V_{CE}=4\text{V}$                        | 12.5 | 160 |               |
| $h_{FE-2}$    | DC Current Gain                                             | $I_C=0.5\text{A}; V_{CE}=4\text{V}$                      | 20   |     |               |
| $I_{s/b}$     | Second Breakdown Collector Current with Base Forward Biased | $V_{CE}=39\text{V}, t=1.0\text{s}, \text{Nonrepetitive}$ | 3    |     | A             |