

**SPTECH Silicon NPN Power Transistor**

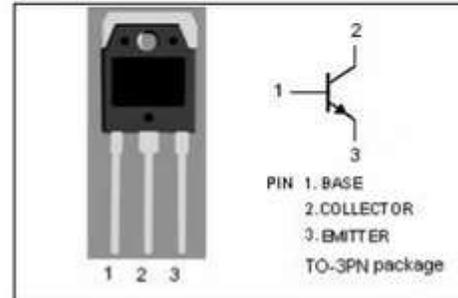
**TIP33C**

**DESCRIPTION**

- DC Current Gain-  
:  $h_{FE} = 40(\text{Min}) @ I_C = 1\text{A}$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEQ(\text{SUS})} = 100\text{V}(\text{Min})$
- Complement to Type TIP34C

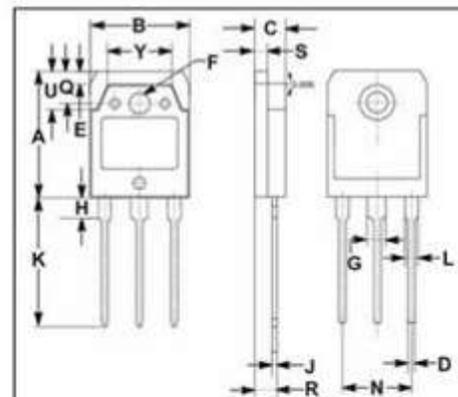
**APPLICATIONS**

- Designed for use in general purpose power amplifier and switching applications.



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

| SYMBOL    | PARAMETER                                             | VALUE   | UNIT             |
|-----------|-------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                | 100     | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                             | 100     | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                  | 5       | V                |
| $I_C$     | Collector Current -Continuous                         | 10      | A                |
| $I_{CM}$  | Collector Current-peak                                | 15      | A                |
| $I_B$     | Base Current                                          | 3       | A                |
| $P_C$     | Collector Power Dissipation@ $T_C = 25^\circ\text{C}$ | 80      | W                |
| $T_J$     | Junction Temperature                                  | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature                                   | -65~150 | $^\circ\text{C}$ |



| DIM | mm    |       |
|-----|-------|-------|
|     | MIN   | MAX   |
| A   | 19.60 | 20.10 |
| B   | 15.50 | 15.70 |
| C   | 4.70  | 4.90  |
| D   | 0.90  | 1.10  |
| E   | 1.90  | 2.10  |
| F   | 3.40  | 3.60  |
| G   | 2.90  | 3.20  |
| H   | 3.20  | 3.40  |
| J   | 0.595 | 0.605 |
| K   | 20.00 | 20.70 |
| L   | 1.90  | 2.20  |
| N   | 10.89 | 10.91 |
| Q   | 4.90  | 5.10  |
| R   | 3.35  | 3.45  |
| S   | 1.995 | 2.100 |
| U   | 5.90  | 6.10  |
| Y   | 9.90  | 10.10 |

**THERMAL CHARACTERISTICS**

| SYMBOL      | PARAMETER                            | MAX  | UNIT               |
|-------------|--------------------------------------|------|--------------------|
| $R_{th-jc}$ | Thermal Resistance, Junction to Case | 1.56 | $^\circ\text{C/W}$ |

**SPTECH Silicon NPN Power Transistor****TIP33C****ELECTRICAL CHARACTERISTICS** $T_C=25^\circ\text{C}$  unless otherwise specified

| SYMBOL          | PARAMETER                            | CONDITIONS                                                      | MIN | MAX | UNIT |
|-----------------|--------------------------------------|-----------------------------------------------------------------|-----|-----|------|
| $V_{CE(sus)}$   | Collector-Emitter Sustaining Voltage | $I_C= 30\text{mA}; I_B= 0$                                      | 100 |     | V    |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C= 3\text{A}; I_B= 0.3\text{A}$                              |     | 1.0 | V    |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C= 10\text{A}; I_B= 2.5\text{A}$                             |     | 4.0 | V    |
| $V_{BE(on)-1}$  | Base-Emitter On Voltage              | $I_C= 3\text{A}; V_{CE}= 4\text{V}$                             |     | 1.6 | V    |
| $V_{BE(on)-2}$  | Base-Emitter On Voltage              | $I_C= 10\text{A}; V_{CE}= 4\text{V}$                            |     | 3.0 | V    |
| $I_{CEO}$       | Collector Cutoff Current             | $V_{CE}= 100\text{V}; I_B= 0$                                   |     | 0.7 | mA   |
| $I_{CES}$       | Collector Cutoff Current             | $V_{CE}= 100\text{V}; V_{EB}= 0$                                |     | 0.4 | mA   |
| $I_{EBO}$       | Emitter Cutoff Current               | $V_{EB}= 5\text{V}; I_C= 0$                                     |     | 1.0 | mA   |
| $h_{FE-1}$      | DC Current Gain                      | $I_C= 1\text{A}; V_{CE}= 4\text{V}$                             | 40  |     |      |
| $h_{FE-2}$      | DC Current Gain                      | $I_C= 3\text{A}; V_{CE}= 4\text{V}$                             | 20  | 100 |      |
| $f_T$           | Current-Gain—Bandwidth Product       | $I_C= 0.5\text{A}; V_{CE}= 10\text{V}; f_{test}= 1.0\text{MHz}$ | 3   |     | MHz  |