

**SPTECH Silicon NPN Power Transistor**

**2SD717**

**DESCRIPTION**

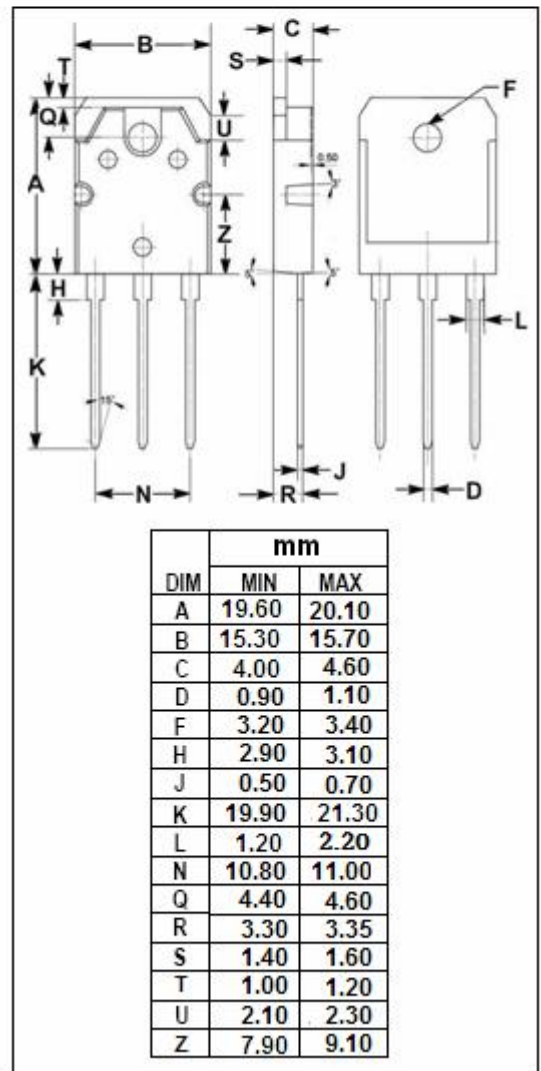
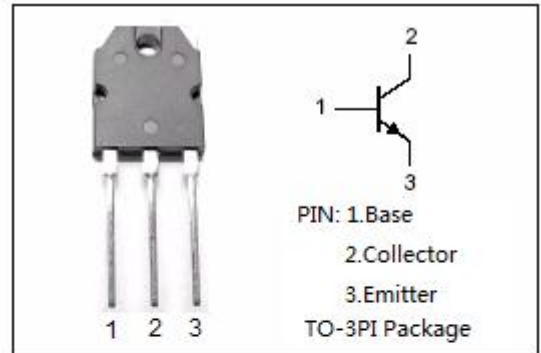
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 50V$  (Min)
- Low Collector-Emitter Saturation Voltage-  
:  $V_{CE(sat)} = 0.4V$  (Max)@ $I_C = 6.0A$
- High Collector Power Dissipation  
:  $P_C = 80W$  @ $T_C = 25^\circ C$

**APPLICATIONS**

- High power switching applications
- DC-DC converter and DC-AC inverter applications

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

| SYMBOL    | PARAMETER   | VALUE   | UNIT       |
|-----------|---|---------|------------|
| $V_{CBO}$ | Collector-Base Voltage                              | 70      | V          |
| $V_{CEO}$ | Collector-Emitter Voltage                           | 50      | V          |
| $V_{EBO}$ | Emitter-Base Voltage                                | 5       | V          |
| $I_C$     | Collector Current-Continuous                        | 10      | A          |
| $I_B$     | Base Current-Continuous                             | 2.5     | A          |
| $P_C$     | Collector Power Dissipation<br>@ $T_C = 25^\circ C$ | 80      | W          |
| $T_J$     | Junction Temperature                                | 150     | $^\circ C$ |
| $T_{stg}$ | Storage Temperature Range                           | -55~150 | $^\circ C$ |



**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  | $I_C=1\text{mA}; I_B=0$                            | 50  |      |     | V             |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=6\text{A}; I_B=0.3\text{A}$                   |     |      | 0.4 | V             |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage      | $I_C=6\text{A}; I_B=0.3\text{A}$                   |     |      | 1.2 | V             |
| $I_{CBO}$     | Collector Cutoff Current             | $V_{CB}=70\text{V}; I_E=0$                         |     |      | 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                      | $I_C=1\text{A}; V_{CE}=1\text{V}$                  | 70  |      | 240 |               |
| $h_{FE-2}$    | DC Current Gain                      | $I_C=6\text{A}; V_{CE}=1\text{V}$                  | 30  |      |     |               |
| $f_T$         | Current-Gain—Bandwidth Product       | $I_C=1\text{A}; V_{CE}=4\text{V}$                  |     | 10   |     | MHz           |
| $C_{OB}$      | Output Capacitance                   | $I_E=0; V_{CB}=10\text{V}; f_{test}=1.0\text{MHz}$ |     | 350  |     | pF            |

Switching times

|           |              |   |  |     |  |               |
|-----------|--------------|---|--|-----|--|---------------|
| $t_{on}$  | Turn-on Time | $I_C=6\text{A}, I_{B1}=I_{B2}=0.3\text{A};$<br>$R_L=5\Omega; V_{CC}=30\text{V};$<br>$P_W=20\mu\text{s}; \text{Duty Cycle} \leq 1\%$ |  | 0.3 |  | $\mu\text{s}$ |
| $t_{stg}$ | Storage Time |   |  | 2.5 |  | $\mu\text{s}$ |
| $t_f$     | Fall Time    |   |  | 0.4 |  | $\mu\text{s}$ |

◆  **$h_{FE-1}$  Classifications**

|        |         |
|--------|---------|
| O      | Y       |
| 70-140 | 120-240 |