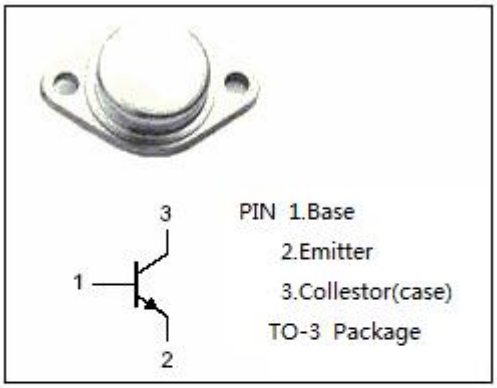
# SPTECH Silicon NPN Power Transistors 2N6678

## DESCRIPTION

- High Voltage Capability
- Fast Switching Speed
- Low Saturation Voltage



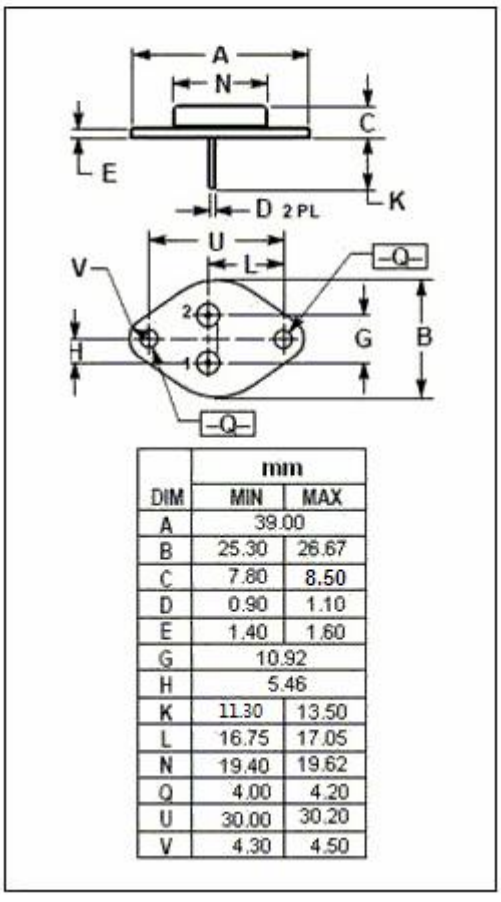

## APPLICATIONS

Designed for high voltage switching applications such as:

- Off-line power supplies
- Converter circuits
- PWM regulators

## ABSOLUTE MAXIMUM RATINGS($T_a$=25℃)

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CEV}$ | Collector-Emitter Voltage | 650 | V |
| $V_{CEX}$ | Collector-Emitter Voltage | 450 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 400 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 8.0 | V |
| $I_C$ | Collector Current-Continuous | 15 | A |
| $I_{CM}$ | Collector Current-Peak | 20 | A |
| $I_B$ | Base Current-Continuous | 5.0 | A |
| $P_C$ | Collector Power Dissipation@$T_C$=25℃ | 175 | W |
| $T_J$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature | -65~150 | ℃ |




| DIM | mm MIN | MAX |
|---|---|---|
| A | 39.00 | |
| B | 25.30 | 26.67 |
| C | 7.80 | 8.50 |
| D | 0.90 | 1.10 |
| E | 1.40 | 1.60 |
| G | 10.92 | |
| H | 5.46 | |
| K | 11.30 | 13.50 |
| L | 16.75 | 17.05 |
| N | 19.40 | 19.62 |
| Q | 4.00 | 4.20 |
| U | 30.00 | 30.20 |
| V | 4.30 | 4.50 |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}c}$ | Thermal Resistance,Junction to Case | 1.0 | ℃/W |

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## ELECTRICAL CHARACTERISTICS

**$T_C$=25℃ unless otherwise specified**

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|---|---|---|---|---|---|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C$=50mA ; $I_B$=0 | 400 | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$= 15A; $I_B$= 3.0A | | 1.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$= 15A; $I_B$= 3.0A | | 1.5 | V |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 8.0V; $I_C$=0 | | 2.0 | mA |
| $h_{FE}$ | DC Current Gain | $I_C$= 15A ; $V_{CE}$= 3V | 8.0 | | |
| $f_T$ | Current Gain-Bandwidth Product | $I_C$= 1.0A ; $V_{CE}$= 10V; $f_{test}$=5.0MHz | 3.0 | | MHz |
| $C_{OB}$ | Output Capacitance | $I_E$= 0; $V_{CB}$= 10V; $f_{test}$=0.1MHz | | 500 | pF |

Switching times

| | | | | | |
|---|---|---|---|---|---|
| $t_d$ | Delay Time | $I_C$= 15A , $V_{CC}$= 200V,$I_{B1}$= -$I_{B2}$= 3A, $t_p$=20 μ s, Duty Cycle≤2.0% $V_{BB}$=6V, $R_L$=13.5Ω | | 0.2 | μ s |
| $t_r$ | Rise Time | | | 0.6 | μ s |
| $t_s$ | Storage Time | | | 2.5 | μ s |
| $t_f$ | Fall Time | | | 0.6 | μ s |