# MOSPEC

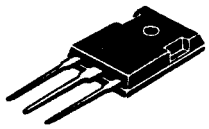
## NPN SILICON POWER TRANSISTORS

... designed for use in general purpose power amplifier application

FEATURES:
* Very Low Saturation Voltage and High Gain for reduced load Operation.
* Faster Switchingent Times
* Lower Switching Losses
* Lower On State Voltage Drop

**NPN**
**BUW50**

25 AMPERE
POWER
TRANASISTORS
125 VOLTS
150 WATTS



**TO-247(3P)**

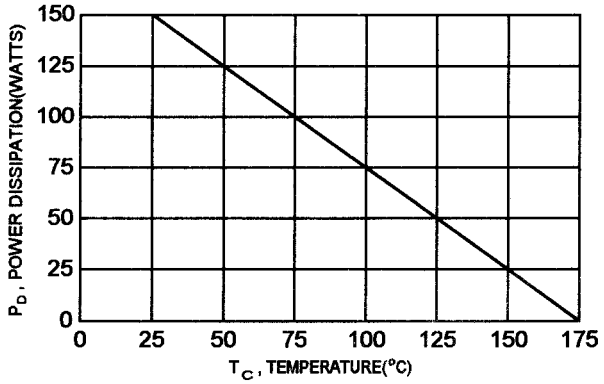
### MAXIMUM RATINGS

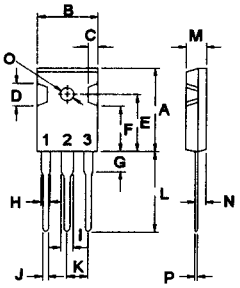
| Characteristic | Symbol | BUW50 | Unit |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 125 | V |
| Collector-Emitter Voltage $V_{BE}$=-1.5V | $V_{CEV}$ | 250 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 7.0 | V |
| Collector Current - Continuous<br>- Peak | $I_C$<br>$I_{CM}$ | 25<br>50 | A |
| Total Power Dissipation @$T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 150<br>1.0 | W<br>W/°C |
| Operating and Storage Junction Temperature Range | $T_J$ , $T_{STG}$ | -65 to +175 | °C |

### THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance Junction to Case | Rθjc | 1.0 | °C/W |

FIGURE -1 POWER DERATING




PIN 1.BASE
2.COLLECTOR
3.EMITTER

| DIM | MILLIMETERS | |
|---|---|---|
| | MIN | MAX |
| A | 20.63 | 22.38 |
| B | 15.38 | 16.20 |
| C | 1.90 | 2.70 |
| D | 5.10 | 6.10 |
| E | 14.81 | 15.22 |
| F | 11.72 | 12.84 |
| G | 4.20 | 4.50 |
| H | 1.82 | 2.46 |
| I | 2.92 | 3.23 |
| J | 0.89 | 1.53 |
| K | 5.26 | 5.66 |
| L | 18.50 | 21.50 |
| M | 4.68 | 5.36 |
| N | 2.40 | 2.80 |
| O | 3.25 | 3.65 |
| P | 0.55 | 0.70 |

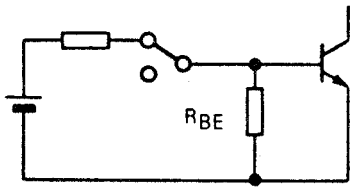
## ELECTRICAL CHARACTERISTICS ( $T_C$ = 25°C unless otherwise noted )

| Characteristic | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | |
| Collector-Emitter Sustaining Voltage (1) ( $I_C$= 0.2 A, $I_B$= 0 , L= 25 mH ) | $V_{CEO(SUS)}$ | 125 | | V |
| Emitter-Base Voltage ( $I_E$= 20mA, $I_C$= 0 ) | $V_{EBO}$ | 7.0 | | V |
| Collector Cutoff Current ( $V_{CE}$= 250 V, $V_{BE}$= -1.5 V ) | $I_{CEV}$ | | 100 | uA |
| Emitter Cutoff Current ( $V_{EB}$= 5.0 V, $I_C$= 0 ) | $I_{EBO}$ | | 1.0 | mA |
| **ON CHARACTERISTICS (1)** | | | | |
| Collector-Emitter Saturation Voltage ( $I_C$= 10 A, $I_B$= 0.5 A ) ( $I_C$= 20 A, $I_B$= 2.0 A ) | $V_{CE(sat)}$ | | 0.9<br>1.0 | V |
| Base-Emitter Saturation Voltage ( $I_C$= 20 A, $I_B$= 2.0 A ) | $V_{BE(sat)}$ | | 1.6 | V |

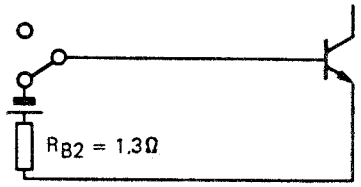
## SWITCHING CHARATERISTICS

| | | | | | |
|---|---|---|---|---|---|
| Turn-on Time | $V_{CC}$= 60V, $I_C$= 10A | $t_{on}$ | | 1.9 | us |
| Storage Time | $I_{B1}$= 1.0A PW= 20 us | $t_s$ | | 1.5 | us |
| Fall Time | | $t_f$ | | 0.5 | us |

(1) Pulse Test: Pulse Width =300 us, Duty Cycle ≦ 2.0%

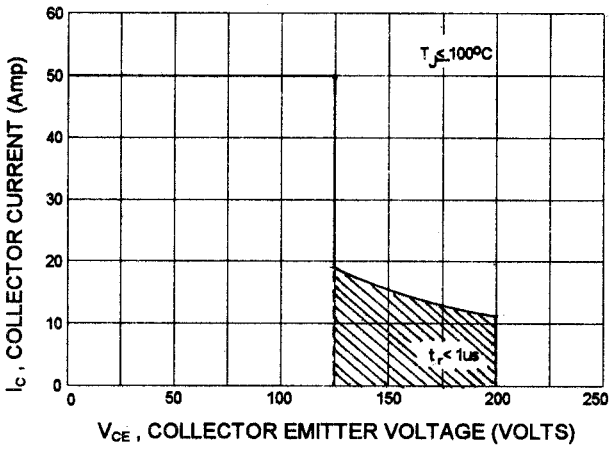



TRANSISTOR FORWARD BIASED
-During the turn-on
-During the turn-off without negative base-emitter voltage
and $4.7\Omega \leq R_{BE} \leq 50\,\Omega$




TRANSISTOR FORWARD BIASED
-During the turn-off without negative base-emitter voltage

FORWARD BIASED SAFE OPERATING AREA




REVERSE BIASED SAFE OPERATING AREA