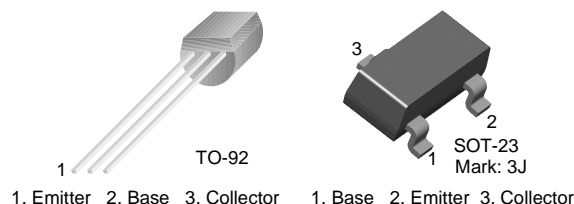




MPS6515/MMBT6515

NPN General Purpose Amplifier

- This device is designed as a general purpose amplifier and switch.
- The useful dynamic range extends to 100mA as a switch and to 100MHz as an amplifier.



Absolute Maximum Ratings* $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|----------------------------------|------------|------------------|
| V_{CEO} | Collector-Emitter Voltage | 25 | V |
| V_{CBO} | Collector-Base Voltage | 40 | V |
| V_{EBO} | Emitter-Base Voltage | 4.0 | V |
| I_C | Collector current - Continuous | 200 | mA |
| T_J, T_{stg} | Junction and Storage Temperature | -55 ~ +150 | $^\circ\text{C}$ |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|-------------------------------------|--------------------------------------|--|------------|------|---------------|
| Off Characteristics | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C = 0.5\text{mA}, I_B = 0$ | 25 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 10\mu\text{A}, I_E = 0$ | 40 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_C = 10\mu\text{A}, I_C = 0$ | 4.0 | | V |
| I_{CBO} | Collector Cutoff Current | $V_{CE} = 30\text{V}, I_E = 0$ | | 50 | nA |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 30\text{V}, I_E = 0, T = 60^\circ\text{C}$ | | 1.0 | μA |
| On Characteristics * | | | | | |
| h_{FE} | DC Current Gain | $I_C = 2.0\text{mA}, V_{CE} = 10\text{V}$ $I_C = 100\text{mA}, V_{CE} = 10\text{V}$ | 250 150 | 500 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 50\text{mA}, I_B = 5.0\text{mA}$ | | 0.5 | V |
| Small Signal Characteristics | | | | | |
| C_{obo} | Output Capacitance | $V_{CB} = 10\text{V}, I_E = 0, f = 100\text{kHz}$ | | 3.5 | pF |

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

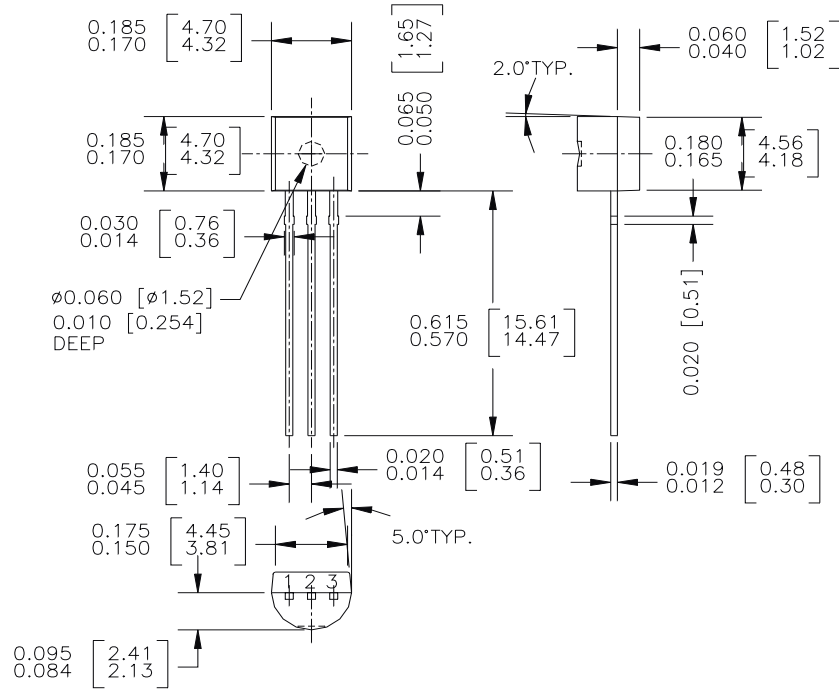
Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Max. | | Units |
|-----------------|---|------------|------------|----------------------------|
| | | MPS6515 | *MMBT6515 | |
| P_D | Total Device Dissipation Derate above 25°C | 625 5.0 | 350 2.8 | mW mW/ $^\circ\text{C}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 83.3 | | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 200 | 357 | $^\circ\text{C/W}$ |

* Device mounted on FR-4 PCB $1.6" \times 0.06"$

Package Dimensions

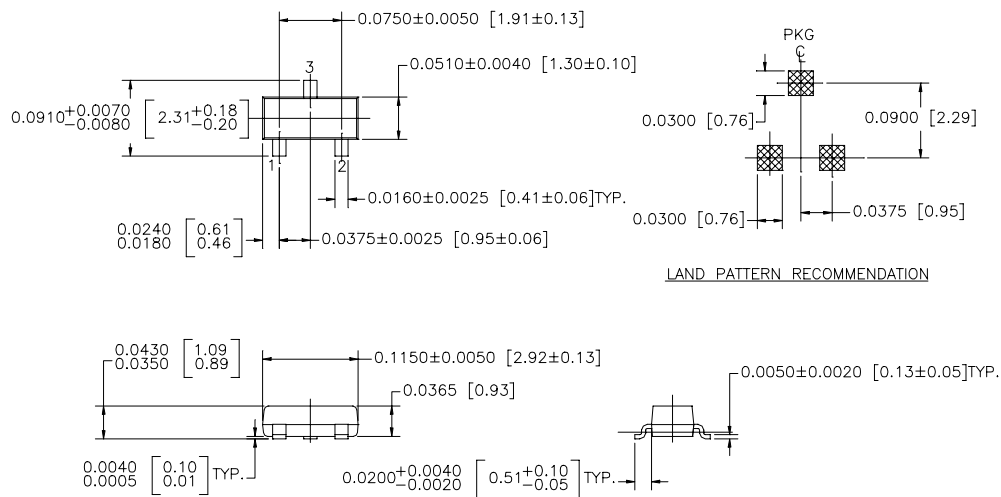
TO-92



Dimensions in Millimeters

Package Dimensions (Continued)

SOT-23



CONTROLLING DIMENSION IS INCH
VALUES IN [] ARE MILLIMETERS

SOT 23, 3 LEADS LOW PROFILE

NOTE : UNLESS OTHERWISE SPECIFIED

1. STANDARD LEAD FINISH 150 MICROINCHES / 3.81 MICROMETERS
MINIMUM TIN / LEAD (SOLDER) ON ALLOY 42
2. REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE G, DATED JUL 1993

Dimensions in Millimeters

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PRODUCT STATUS DEFINITIONS

Definition of Terms

| Datasheet Identification | Product Status | Definition |
|--------------------------|------------------------|---|
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