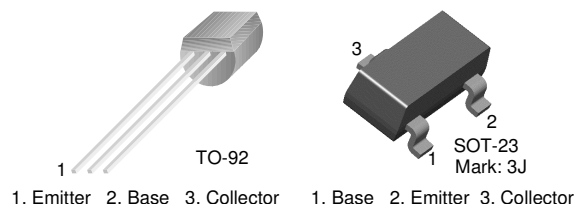


MPS6515/MMBT6515

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:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) 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 $1.6" \times 0.06"$

MPS6515/MMBT6515

Technical drawing of a mechanical part, showing dimensions in inches and millimeters. The drawing includes a side view and a cross-sectional view.

Dimensions (Inches / Millimeters):

- Top horizontal dimensions: 0.185 [4.70] / 0.170 [4.32], 1.65 [1.27]
- Vertical dimensions on the left: 0.185 [4.70] / 0.170 [4.32], 0.030 [0.76] / 0.014 [0.36]
- Vertical dimensions on the right: 0.065 [1.65] / 0.050 [1.27], 0.060 [1.52] / 0.040 [1.02], 0.180 [4.56] / 0.165 [4.18]
- Horizontal dimensions on the right: 2.0" TYP., 0.020 [0.51]
- Vertical dimensions in the center: 0.615 [15.61] / 0.570 [14.47]
- Horizontal dimensions at the bottom: 0.055 [1.40] / 0.045 [1.14], 0.020 [0.51] / 0.014 [0.36], 0.019 [0.48] / 0.012 [0.30]
- Vertical dimensions at the bottom: 0.175 [4.45] / 0.150 [3.81], 5.0" TYP., 0.095 [2.41] / 0.084 [2.13]
- Bottom horizontal dimensions: 0.055 [1.40] / 0.045 [1.14], 0.020 [0.51] / 0.014 [0.36], 0.019 [0.48] / 0.012 [0.30]
- Bottom vertical dimensions: 0.095 [2.41] / 0.084 [2.13]
- Bottom horizontal dimensions: 0.055 [1.40] / 0.045 [1.14], 0.020 [0.51] / 0.014 [0.36], 0.019 [0.48] / 0.012 [0.30]
- Bottom vertical dimensions: 0.095 [2.41] / 0.084 [2.13]
- Bottom horizontal dimensions: 0.055 [1.40] / 0.045 [1.14], 0.020 [0.51] / 0.014 [0.36], 0.019 [0.48] / 0.012 [0.30]
- Bottom vertical dimensions: 0.095 [2.41] / 0.084 [2.13]

Notes:

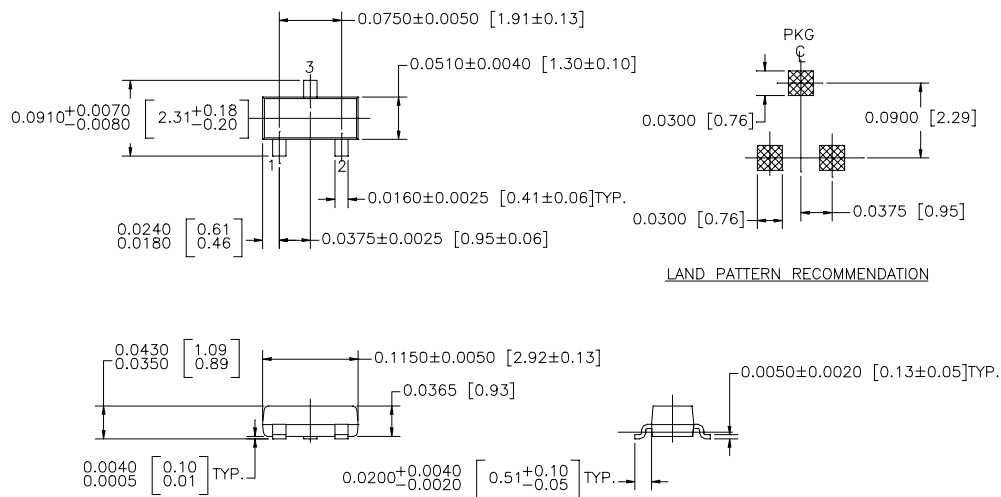
- Ø0.060 [Ø1.52] 0.010 [0.254] DEEP
- 2.0" TYP.
- 5.0" TYP.

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Rev. A. February 2003

Package Dimensions (Continued)

SOT-23



CONTROLLING DIMENSION IS INCH
VALUES IN [] ARE MILLIMETERS

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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