

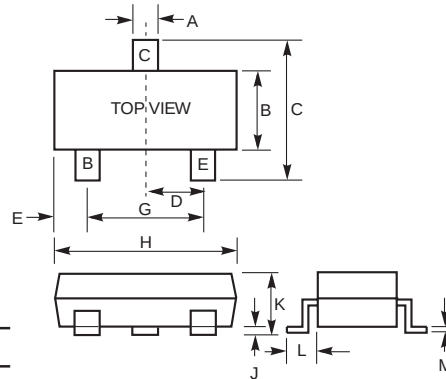
Features

- High Current Gains
- Monolithic Construction
- Available in Both Through-Hole and Surface Mount Packages

Mechanical Data

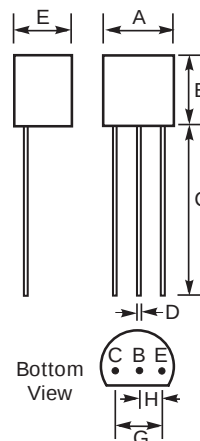
- Case: TO-92/SOT-23, Molded Plastic
- Leads/Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: TO-92 Type Number
SOT-23 MMBTA13 1M, R1M
MMBTA14 1N, R1N
- Approx. Weight: TO-92 0.18 grams
SOT-23 0.008 grams

MMBTA13 / MMBTA14



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.19	1.40
C	2.10	2.50
D	0.89	1.05
E	0.45	0.61
G	1.78	2.05
H	2.65	3.05
J	0.013	0.15
K	0.89	1.10
L	0.45	0.61
M	0.076	0.178
All Dimensions in mm		

MPSA13 / MPSA14



TO-92		
Dim	Min	Max
A	4.32	4.83
B	4.32	4.78
C	12.50	15.62
D	0.36	0.56
E	3.15	3.94
G	2.29	2.79
H	1.14	1.40
All Dimensions in mm		

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector - Emitter Voltage	V _{CES}	30	V
Collector - Base Voltage	V _{CBO}	30	V
Emitter - Base Voltage	V _{EBO}	10	V
Collector Current (continuous) MPSA MMBTA	I _C	500 300	mA
Total Power Dissipation TO-92 (Note 1) SOT-23 (Note 2)	P _d	625 350	mW
Thermal Resistance, Junction to Ambient TO-92 (Note 1) SOT-23 (Note 2)	R _{θJA}	200 357	K/W
Thermal Resistance, Junction to Case	R _{θJC}	83.3	K/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics Continued @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min A13	Max A13	Min A14	Max A14	Unit	Test Condition
Collector to Emitter Breakdown Voltage	$V_{(BR)CES}$	30	—	30	—	V	$I_C = 100\mu\text{A}$, $I_B = 0$
Collector Cutoff Current	I_{CBO}	—	100	—	100	nA	$V_{CB} = 30\text{V}$, $I_E = 0$
Emitter Cutoff Current	I_{EBO}	—	100	—	100	nA	$VEB = 10\text{V}$, $I_C = 0$
DC Current Gain	h_{FE}	5,000 10,000	—	10,000 20,000	—	—	$I_C = 10\text{mA}$, $V_{CE} = 5.0\text{V}$ $I_C = 100\text{mA}$, $V_{CE} = 5.0\text{V}$
Collector-Emitter Saturation Voltage (Note 3)	$V_{CE(SAT)}$	—	1.5	—	1.5	V	$I_C = 100\text{mA}$, $I_B = 0.1\text{mA}$
Base-Emitter "ON" Voltage (Note 3)	$V_{BE(ON)}$	—	2.0	—	2.0	V	$I_C = 100\text{mA}$, $V_{CE} = 5.0\text{V}$
Current Gain Bandwidth Product	f_T	125	—	125	—	MHz	$I_C = 10\text{mA}$, $V_{CE} = 5.0\text{V}$ $f = 100\text{MHz}$

Notes: 1. Leads maintained at a distance of 2.0 mm from body at specified ambient temperature (TO-92).
2. Device mounted on FR-4 PCB 40 x 40 x 1.5 mm.
3. Pulse test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.