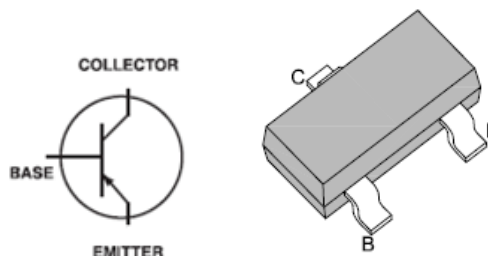


SMD General Purpose Transistor (PNP)

Features

- PNP Silicon Epitaxial Planar Transistor for Switching and Amplifier Applications



Mechanical Data

Case:	SOT-23, Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.008 gram

SOT-23



Maximum Ratings ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	MMBT9012	Unit	Conditions
V_{CEO}	Collector-Emitter Voltage	-20	V	
V_{CBO}	Collector-Base Voltage	-40	V	
V_{EBO}	Emitter-Base Voltage	-5.0	V	
I_C	Collector Current	-0.5	A	
P_D	Total Device Power Dissipation (Note 1)	225	mW	T _A =25 °C
		1.8	mW/°C	Derate above 25 °C
R_{θJA}	Thermal Resistance, Junction to Ambient	556	°C /W	
P_D	Total Device Power Dissipation, Alumina Substrate (Note 2)	300	mW	T _A =25 °C
		2.4	mW/°C	Derate above 25 °C
R_{θJA}	Thermal Resistance, Junction to Ambient	417	°C /W	
T_J	Junction Temperature	-55 to +150	°C	
T_{STG}	Storage Temperature Range	-55 to +150	°C	

Note: 1. FR-5 Board=25.4 x 19.05 x 1.58 mm (1.0 x 0.75 x 0.062 inches.)

2. Alumina Substrate=10.16 x 7.62 x 0.61 mm (0.4 x 0.3 x 0.024 inches.) 99.5% alumina.

SMD General Purpose Transistor (PNP)

MMBT9012

Electrical Characteristics ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Off Characteristics

Symbol	Description	Min.	Max.	Unit	Conditions
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	-20	-	V	$I_C=-0.1mA_{dc}$, $I_B=0$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	-40	-	V	$I_C=-0.1mA_{dc}$, $I_E=0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	-5.0	-	V	$I_E=-0.1mA_{dc}$, $I_C=0$
I_{CBO}	Collector Cut-off Current	-	-0.15	μA	$V_{CB}=-35V$, $I_E=0$
I_{EBO}	Emitter Cut-off Current	-	-0.15	μA	$V_{EB}=-4.0V$, $I_C=0$

On Characteristics

-Symbol	Description	Min.	Max.	Unit	Conditions
h_{FE}	D.C. Current Gain	100	600	-	$V_{CE}=-1.0V_{dc}$, $I_C=-50mA_{dc}$
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	-	-0.6	Vdc	$I_C=-500mA_{dc}$, $I_B=-50mA_{dc}$

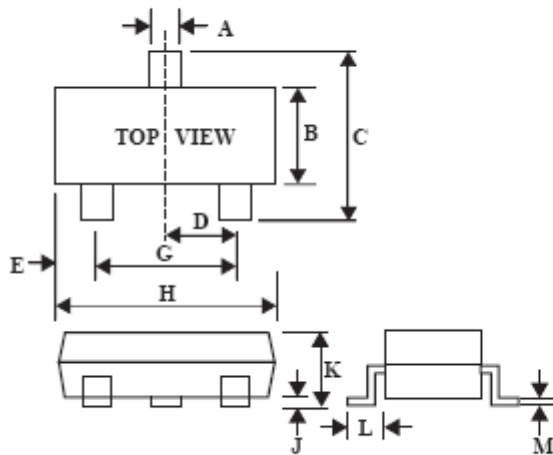
Classification Of h_{FE}

Rank	P	Q	R	S
Range	100-200	150-300	200-400	300-600
Marking	12P	12Q	12R	12S

SMD General Purpose Transistor (PNP)

MMBT9012

Dimensions in mm



SOT-23		
Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25

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