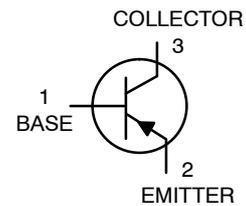


## 1W OUTPUT AMPLIFIER OF PORTABLE RADIOS IN CLASS B PUSH-PULL OPERATION

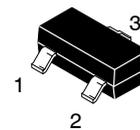
### ■ FEATURES

- \*High total Power Dissipation. (625mW)
- \*High Collector Current. (-500mA)
- \*Excellent  $h_{FE}$  linearity.
- \*Complementary to MMBT9013
- \*ESD Rating – Human Body Model: >4000 V  
– Machine Model: >400 V



### ■ ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MMBT9012	SOT-23 (Pb-Free)	3000 / Tape & Reel



SOT-23

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified )**

PARAMETER	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-20	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-500	mA
Collector Dissipation	$P_C$	625	mW
Junction Temperature	$T_J$	+150	°C
Storage Temperature	$T_{STG}$	-55 ~ +150	°C

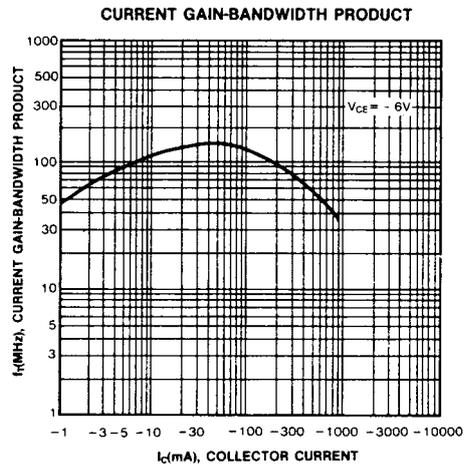
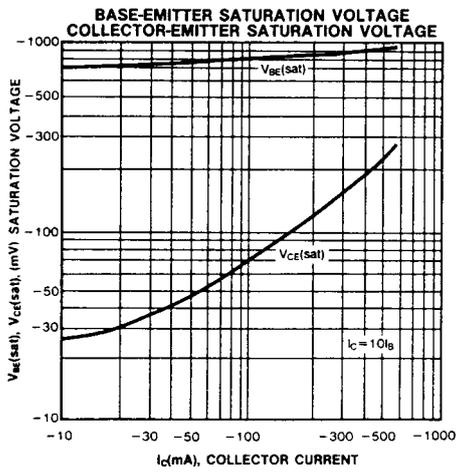
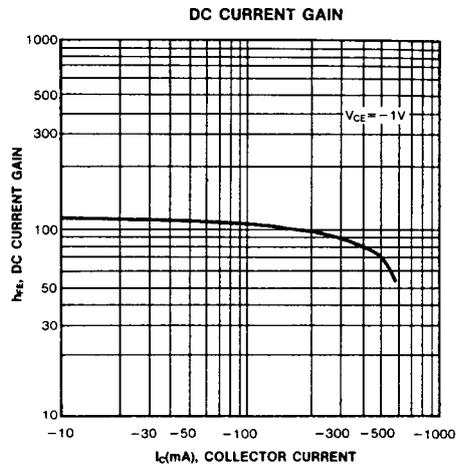
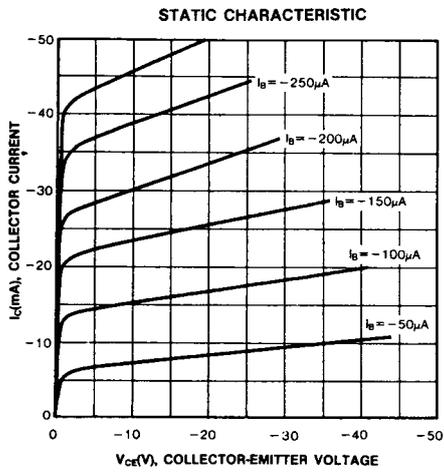
**■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-0.1mA, I_E=0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	-25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-0.1mA, I_C=0$	-5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-40V, I_E=0$			-0.1	uA
Collector cut-off current	$I_{CEO}$	$V_{CE}=-20V, I_B=0$			-0.1	uA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-5V, I_C=0$			-0.1	uA
DC current gain	$h_{FE}$	$V_{CE}=-1V, I_C=-50mA$	120		400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-500mA, I_B=-50mA$			-0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=-500mA, I_B=-50mA$			-1.2	V
Transition frequency	$f_T$	$V_{CE}=-6V, I_C=-20mA, f=30MHz$	150			MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=-10V, I_E=0, f=1MHz$			5	pF

**CLASSIFICATION OF  $h_{FE}$** 

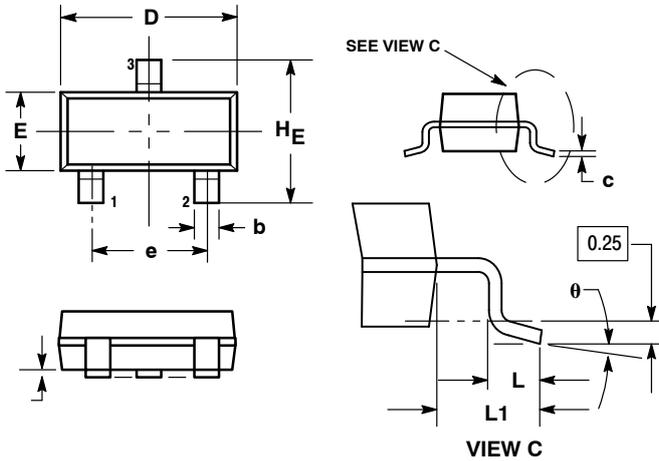
RANK	L	H	J
RANGE	120-200	200-350	300-400

■ TYPICAL CHARACTERISTICS



PACKAGE DIMENSIONS

SOT-23



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
  4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

- STYLE 6:  
 PIN 1. BASE  
 2. EMITTER  
 3. COLLECTOR

SOLDERING FOOTPRINT

