

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

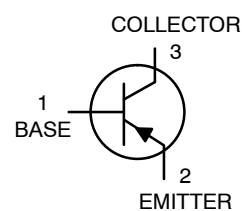
■ FEATURES

*High total Power Dissipation. (450mW)

*Excellent h_{FE} linearity.

*Complementary to MMBT9014

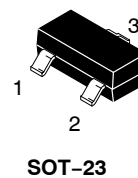
*ESD Rating – Human Body Model: >4000 V
– Machine Model: >400 V



■ ORDERING INFORMATION

Device	Package	Shipping [†]
MMBT9015	SOT-23 (Pb-Free)	3000 / Tape & Reel

[†]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** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	V_{CEO}	-45	V
Collector-Base Voltage	V_{CBO}	-50	V
Emitter Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-100	mA
Collector dissipation	P_C	450	mW
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Emitter Voltage	V_{CBO}	$I_C=-50\ \mu\text{A}$, $I_E=0$	-50			V
Collector-Base Voltage	V_{CEO}	$I_C=-1\text{mA}$, $I_B=0$	-45			V
Emitter Base Voltage	V_{EBO}	$I_E=-100\ \mu\text{A}$, $I_C=0$	-5			V
Collector cutoff current	I_{CBO}	$V_{CB}=-50\text{V}$, $I_E=0$			-50	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-5\text{V}$, $I_C=0$			-100	nA
DC Current Gain	h_{FE}	$V_{CE}=-5\text{V}$, $I_C=-1\text{mA}$	60	200	600	
Collector-Emitter Saturation Voltage	$V_{CE\ SAT}$	$I_C=-100\text{mA}$, $I_B=-5\text{mA}$			-0.3	V
Base-Emitter Saturation Voltage	$V_{BE\ SAT}$	$I_C=-100\text{mA}$, $I_B=-5\text{mA}$		-0.82	-1.0	V
Base-emitter on voltage	$V_{BE\ ON}$	$V_{CE}=-5\text{V}$, $I_C=-2\text{mA}$	-0.6	-0.65	-0.75	V
Current-Gain-Bandwidth Product	f_T	$V_{CE}=-5\text{V}$, $I_C=-10\text{mA}$	100	190		MHz
Output Capacitance	C_{OB}	$V_{CB}=-10\text{V}$, $I_E=0$, $f=1\text{MHz}$		4.5	7.0	pF
Noise Figure	NF	$V_{CE}=-5\text{V}$, $I_C=-0.2\text{mA}$, $f=1\text{KHz}$, $R_S=-1\text{K}\Omega$		0.7	10	dB

■ **CLASSIFICATION OF h_{FE}**

RANK	A	B	C
RANGE	60-150	100-300	200-600

■ TYPICAL CHARACTERISTICS

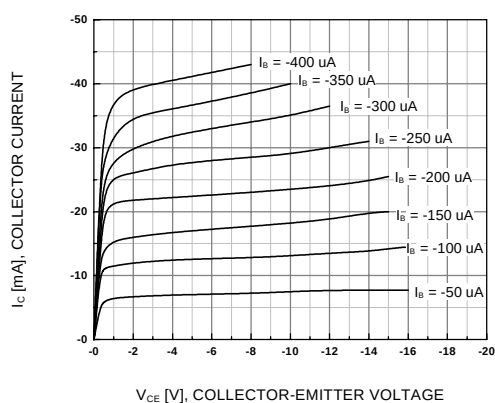


Figure 1. Static Characteristic

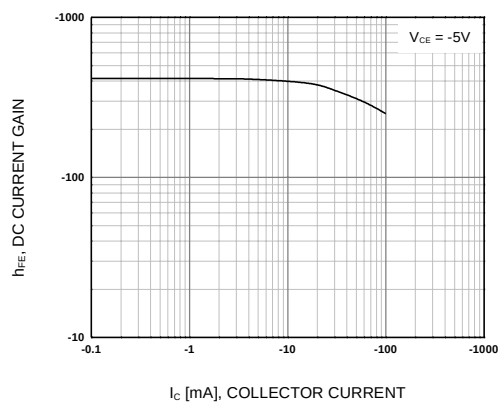


Figure 2. DC current Gain

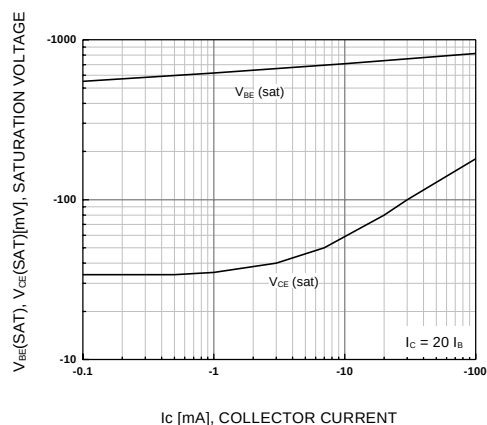


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

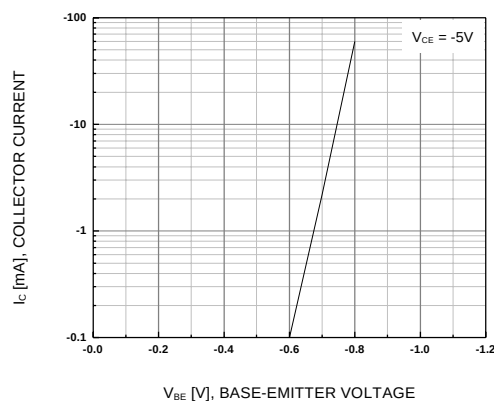


Figure 4. Base-Emitter On Voltage

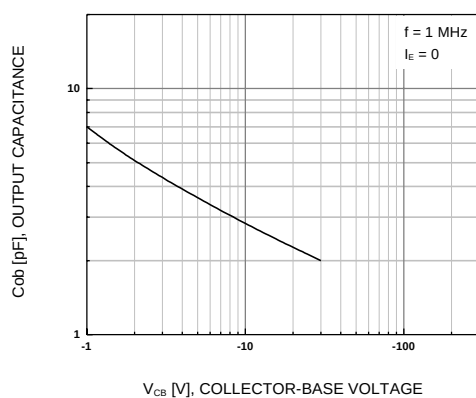


Figure 5. Collector Output Capacitance

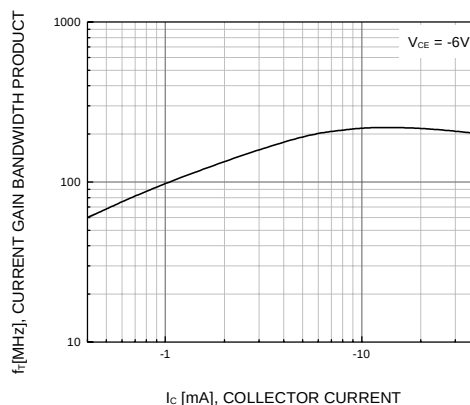
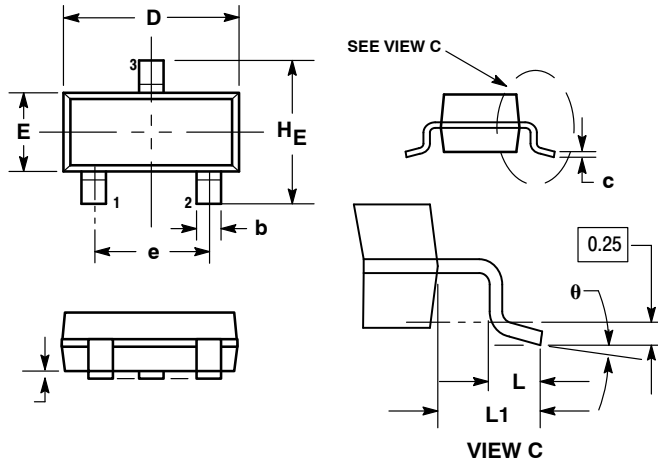


Figure 6. Current Gain Bandwidth Product

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

