

RoHS Compliant Product
A suffix of "-C" specifies halogen and lead free

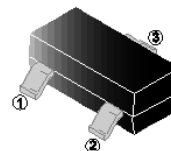
FEATURES

- Complementary PNP Type Available (MMBT3906-C)
- Epoxy Meets UL 94 V-0 Flammability Rating

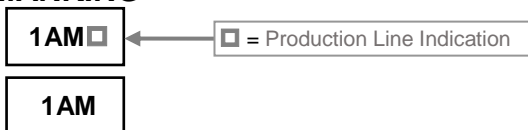
SOT-23

APPLICATION

- General Switching and Amplification



MARKING

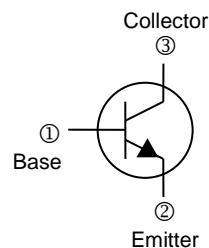


PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
MMBT3904-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Collector-Base Voltage	V _{CBO}	60	V
Collector-Emitter Voltage	V _{CEO}	40	
Emitter-Base Voltage	V _{EBO}	6	
Collector Current	I _C	200	mA
Collector Power Dissipation ¹	P _C	225	mW
Thermal Resistance, Junction-Ambient	R _{θJA}	556	°C/W
Operation Junction & Storage Temperature Range	T _J , T _{STG}	150, -55~150	°C

Note:

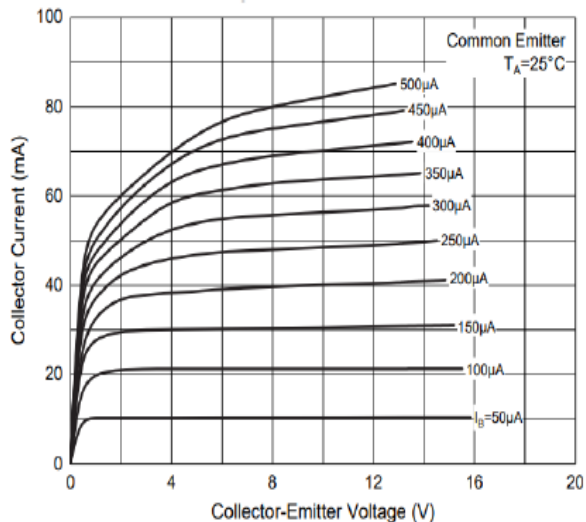
1. Device mounted on an FR-4 PCB, single-sided copper, tin-plated and standard footprint.

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

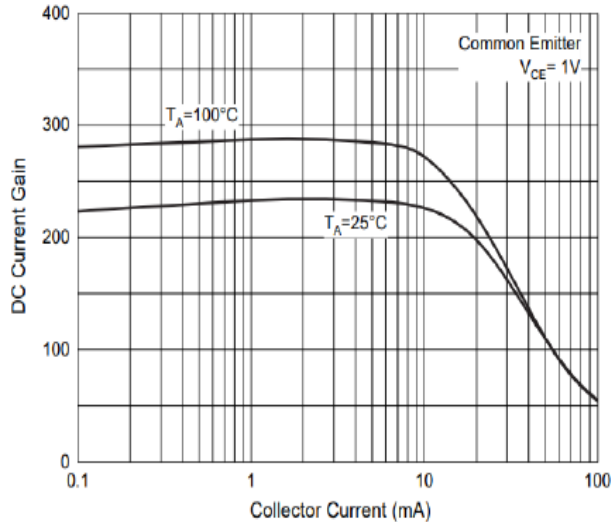
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	-	-	V	$I_C=10\mu\text{A}, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	-	-		$I_C=1\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	-	-		$I_E=10\mu\text{A}, I_C=0$
Collector Cut-off Current	I_{CEX}	-	-	50	nA	$V_{CE}=30\text{V}, V_{BE}=3\text{V}$
Collector cut-off current	I_{CBO}	-	-	50		$V_{CB}=30\text{V}, I_E=0$
DC Current Gain	h_{FE}	40	-	-		$V_{CE}=1\text{V}, I_C=0.1\text{mA}$
		70	-	-		$V_{CE}=1\text{V}, I_C=1\text{mA}$
		100	-	300		$V_{CE}=1\text{V}, I_C=10\text{mA}$
		60	-	-		$V_{CE}=1\text{V}, I_C=50\text{mA}$
		30	-	-		$V_{CE}=1\text{V}, I_C=100\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.2	V	$I_C=10\text{mA}, I_B=1\text{mA}$
		-	-	0.3		$I_C=50\text{mA}, I_B=5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.65	-	0.85	V	$I_C=10\text{mA}, I_B=1\text{mA}$
		-	-	0.95		$I_C=50\text{mA}, I_B=5\text{mA}$
Transition Frequency	f_T	-	300	-	MHz	$I_C=10\text{mA}, V_{CE}=20\text{V}, f=100\text{MHz}$
Output Capacitance	C_{obo}	-	4	-	pF	$V_{CB}=5\text{V}, I_E=0, f=1\text{MHz}$
Input Capacitance	C_{ibo}	-	8	-		$V_{BE}=0.5\text{V}, I_C=0, f=1\text{MHz}$
Noise Figure	NF	-	5	-	dB	$I_C=100\mu\text{A}, V_{CE}=5\text{V}, R_S=1\text{k}\Omega, f=10\text{Hz}\sim 15.7\text{kHz}$
Delay Time	t_d	-	35	-	nS	$V_{CC}=3\text{V}, V_{BE}=0.5\text{V}, I_C=10\text{mA}, I_{B1}=1\text{mA}$
Rise Time	t_r	-	35	-		
Storage Time	t_s	-	200	-		
Fall Time	t_f	-	50	-		

TYPICAL CHARACTERISTIC

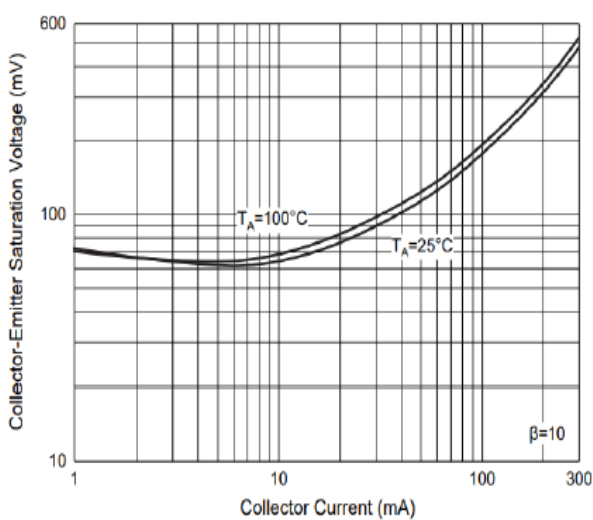
Static Characteristics



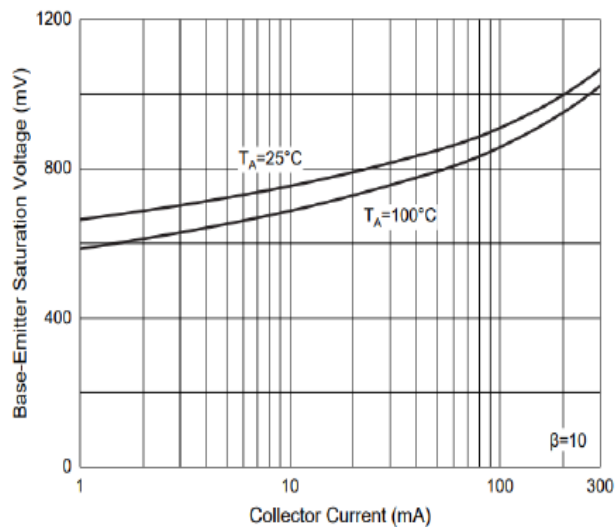
DC Current Gain Characteristics



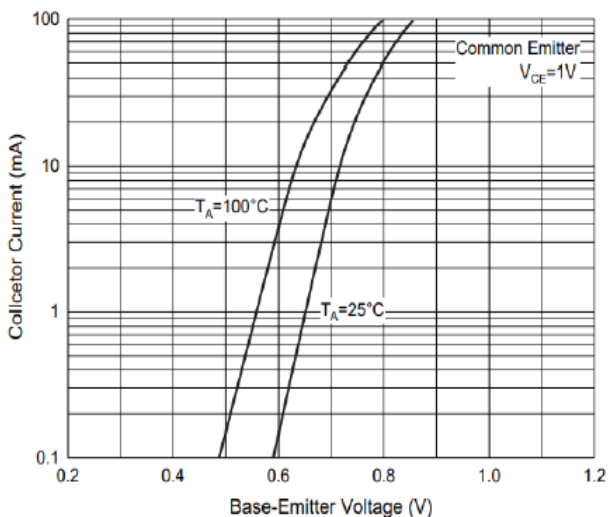
Collector-Emitter Saturation Voltage Characteristics



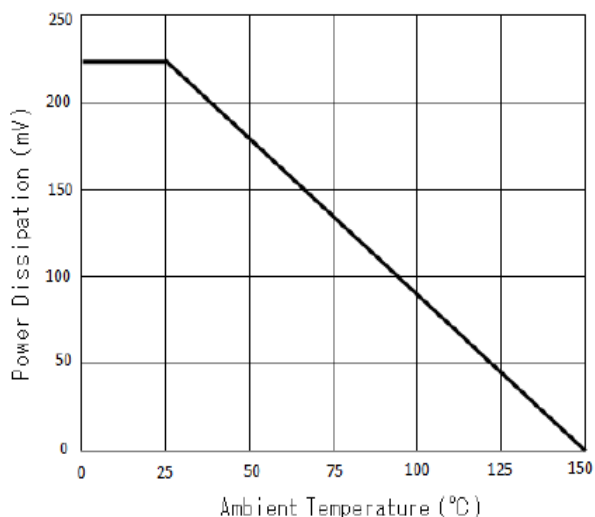
Base-Emitter Saturation Voltage Characteristics



Base-Emitter Voltage Characteristics

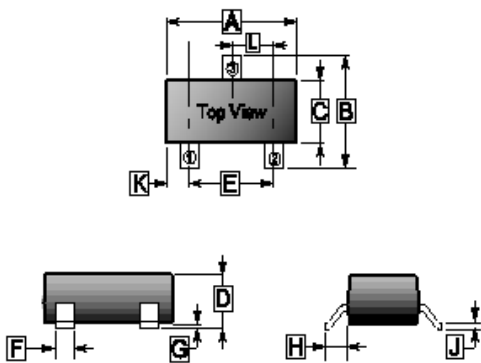


Collector Power Derating Curve



PACKAGE OUTLINE DIMENSIONS

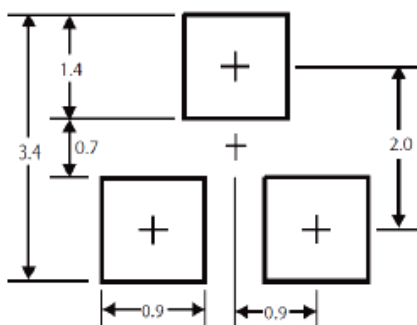
SOT-23



REF.	Millimeter	
	Min.	Max.
A	2.65	3.10
B	2.10	3.00
C	1.10	1.80
D	0.89	1.40
E	1.70	2.30
F	0.28	0.55
G	-	0.18
H	0.55 REF.	
J	0.05	0.26
K	0.60 REF.	
L	0.95 TYP.	

MOUNTING PAD LAYOUT

SOT-23



*Dimensions in millimeters