Elektronische Bauelemente

MMBT3904-C

200mA, 40V

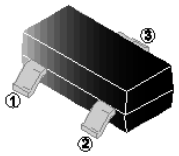
NPN Plastic Encapsulated Transistor

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

FEATURES

- Collector Current Capability I_C=200mA
- Collector-Emitter Voltage V_{CEO}=40V

SOT-23



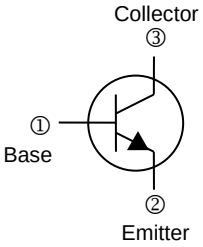
APPLICATION

- 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	P_C	200	mW
Thermal Resistance, Junction-Ambient	$R_{\theta JA}$	625	°C/W
Operation Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	°C

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	-	-	V	I_C=10μA, I_E=0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	-	-		I_C=1mA, I_B=0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	-	-		I_E =10μA, I_C=0
Collector Cut-off Current	I_{CEX}	-	-	50	nA	V_{CE}=30V, $V_{EB(off)}$=3V
Collector cut-off current	I_{CBO}	-	-	100		V_{CB}=60V, I_E=0
Emitter cut-off current	I_{EBO}	-	-	100		V_{EB}=5V, I_C=0
DC Current Gain	h_{FE}	100	-	300		V_{CE}=1V, I_C=10mA
		60	-	-		V_{CE}=1V, I_C=50mA
		30	-	-		V_{CE}=1V, I_C=100mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.3	V	I_C=50mA, I_B=5mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	0.95		
Transition Frequency	f_T	-	300	-	MHz	I_C=10mA, V_{CE}=20V, f=100MHz
Delay Time	t_d	-	35	-	nS	V_{CC}=3V, $V_{BE(off)}$= -0.5V I_C=10mA, I_{B1}=1mA
Rise Time	t_r	-	35	-		
Storage Time	t_s	-	200	-		V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA
Fall Time	t_f	-	50	-		

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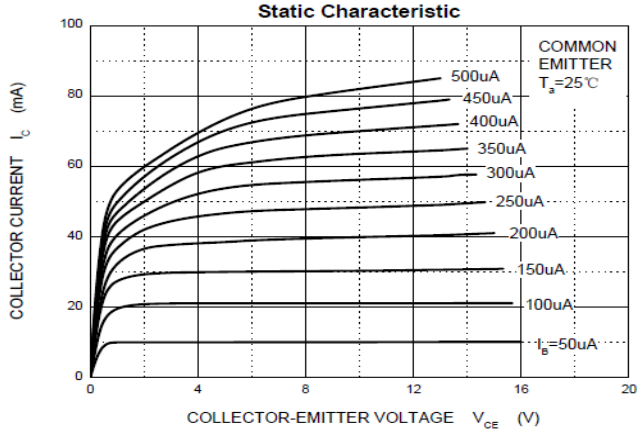
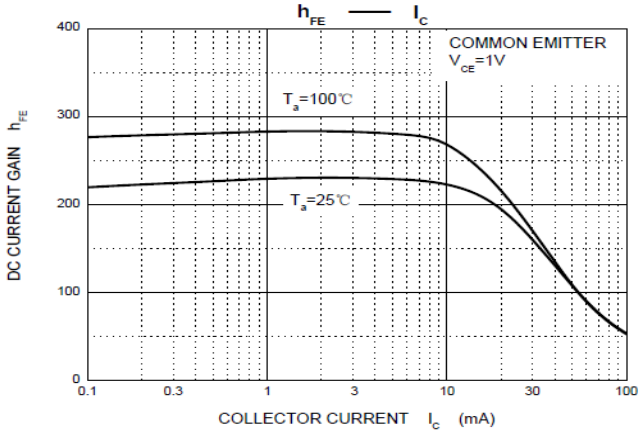
TYPICAL CHARACTERISTIC

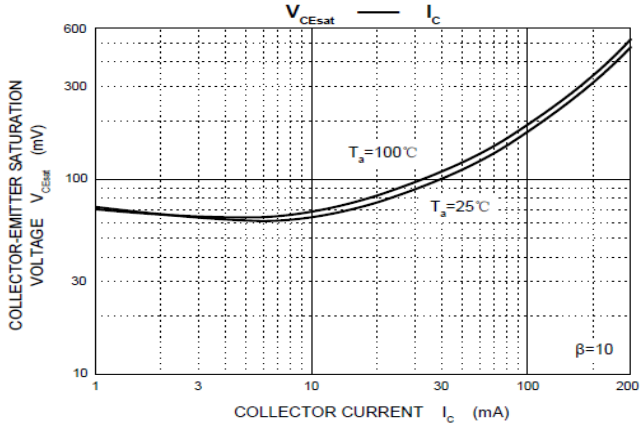
Static Characteristic



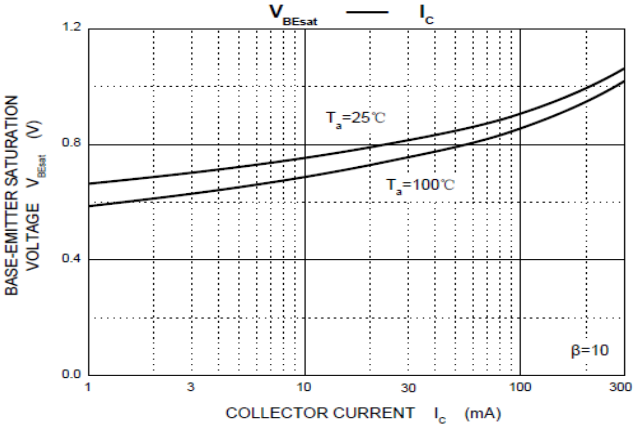
h_{FE} — I_C



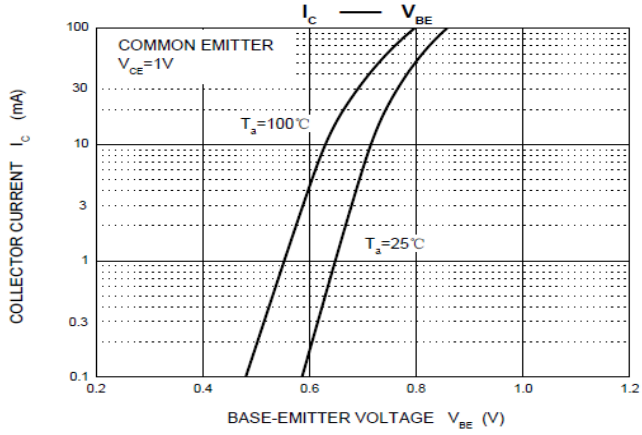
V_{CEsat} — I_C



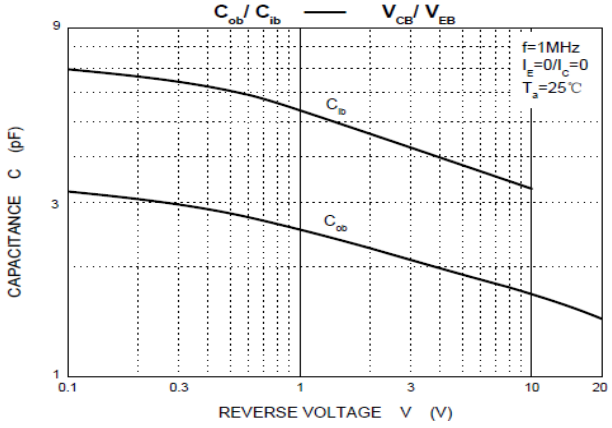
V_{BEsat} — I_C



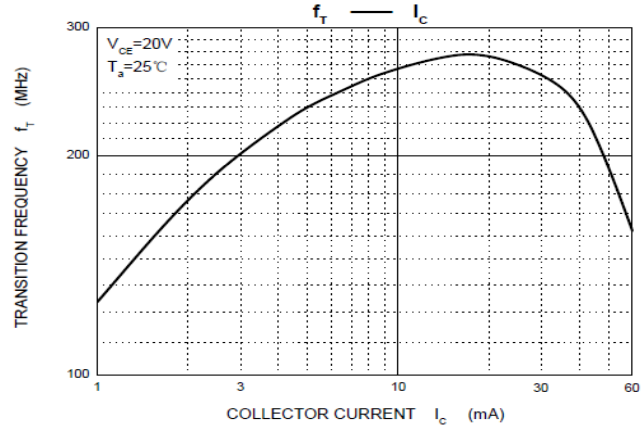
I_C — V_{BE}



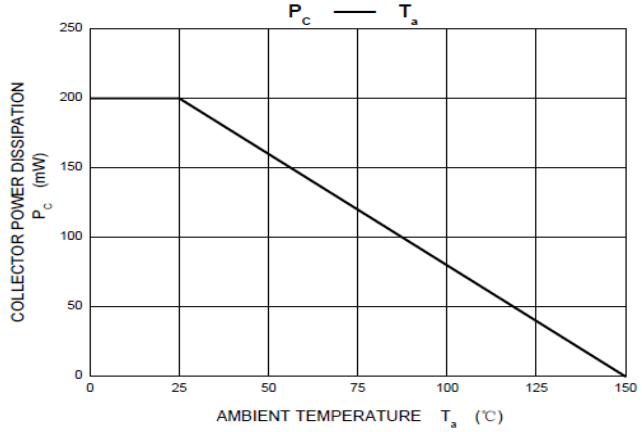
C_{ob} / C_{ib} — V_{CB} / V_{EB}



f_T — I_C

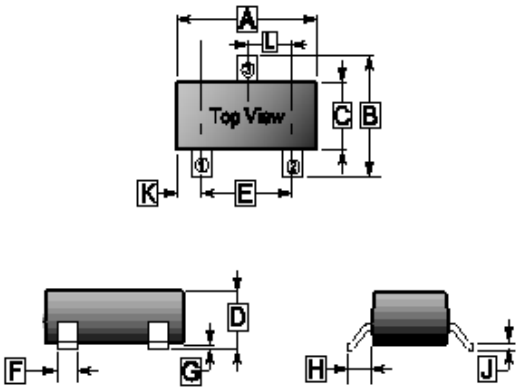


P_C — T_a



PACKAGE OUTLINE DIMENSIONS

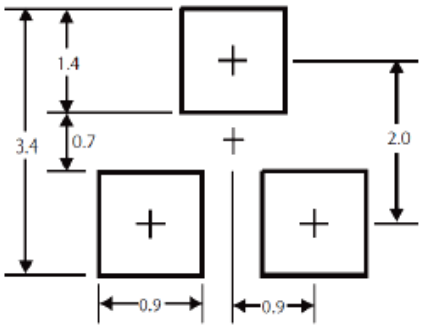
SOT-23



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