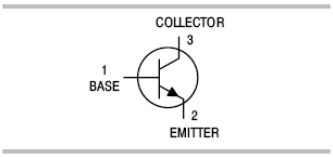
NPN Silicon Epitaxial Planar Transistor

MMBT1616A

Features

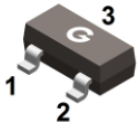
HF

- Audio frequency power amplifier
- Medium speed switching
- RoHS compliant with Halogen-free



Mechanical Data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-23

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
MMBT1616A	SOT-23	3000 pcs / Tape & Reel	16A

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Breakdown Voltage	V_{CEO}	60	V
Emitter-Base Breakdown Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	1	A
Peak Collector Current (t_p ≤1ms)	I_{CM}	2	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	0.35	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	289	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	128	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	104	°C/W
Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note 1: The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	120	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	60	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	6	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 60V, I_E = 0	-	-	100	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 6V, I_C = 0	-	-	100	nA
DC Current Gain	h_{FE}	V_{CE} = 2V, I_C = 100mA	135	-	400	-
		V_{CE} = 2V, I_C = 1A	81	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1A, I_B = 50mA	-	-	0.3	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 1A, I_B = 50mA	-	-	1.2	V
Collector-base Output Capacitance	C_{cbo}	V_{CB} = 10V, I_E = 0, f = 1MHz	-	-	19	pF
Current-Gain— Bandwidth Product	f_T	I_C = 100mA, V_{CE} = 2V	100	-	-	MHz
Delay time	t_{on}	V_{CE} = 10V, I_C = 100mA	-	0.07	-	μs
Rise time	t_f	$V_{BE(off)}$ = 2-3V	-	0.07	-	μs
Storage time	t_s	I_{B1} = I_{B2} = 10mA	-	0.95	-	μs

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

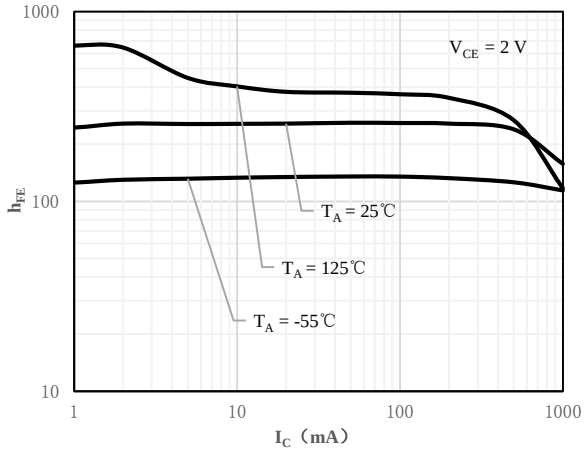


Fig 1 h_{FE} vs. I_C

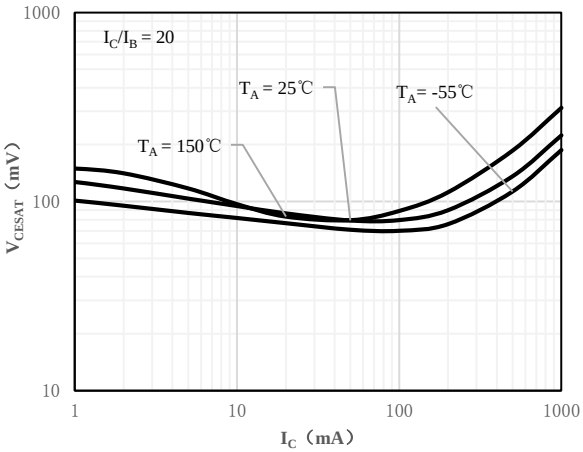


Fig 2 $V_{CE(sat)}$ vs. I_C

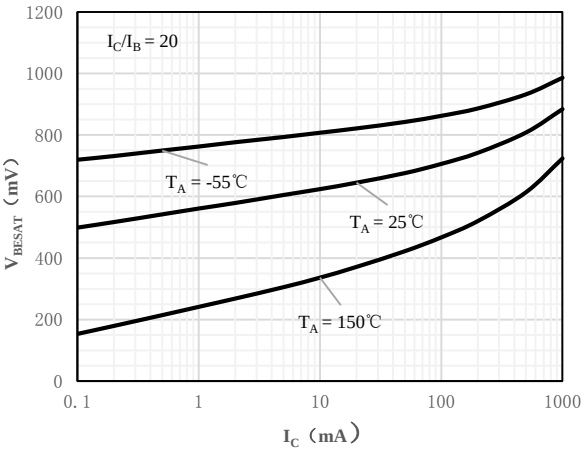


Fig 3 $V_{BE(sat)}$ vs. I_C

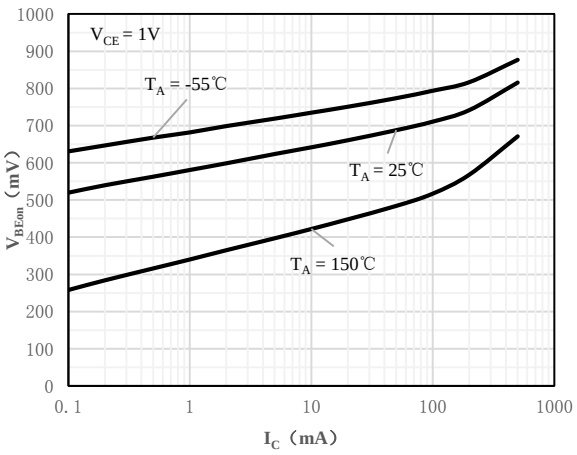


Fig 4 $V_{BE(ON)}$ vs. I_C

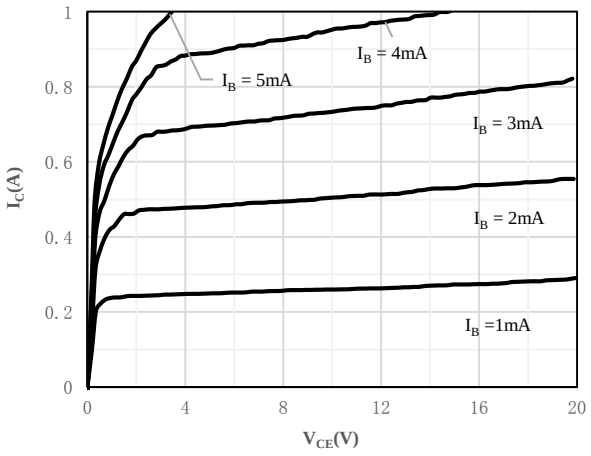


Fig 5 I_C vs. V_{CE}

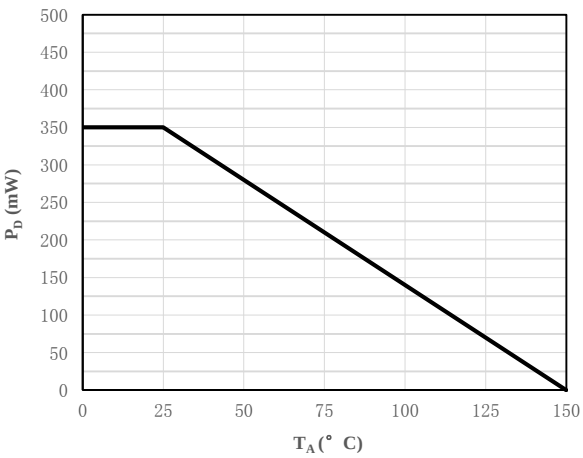


Fig 6 P_D vs. T_A

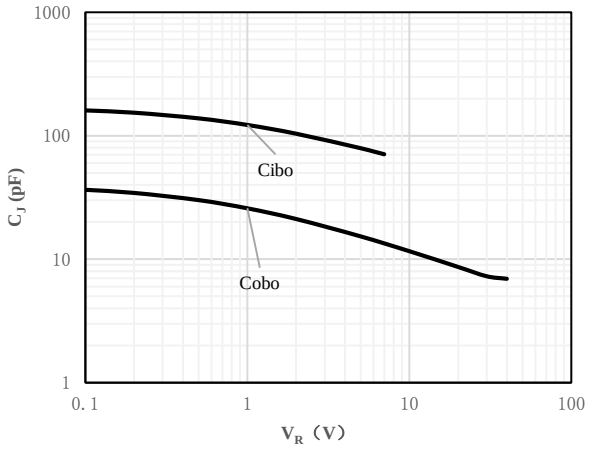
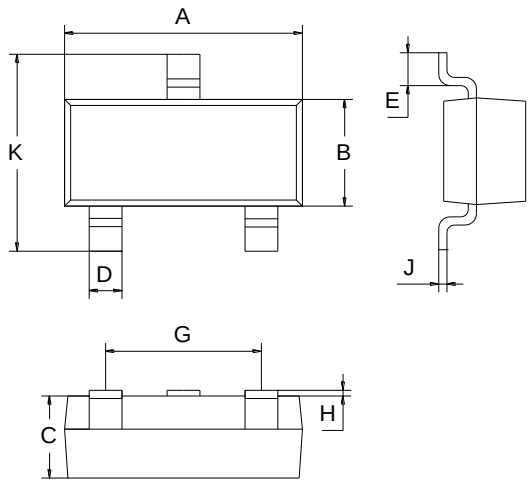


Fig 7 C_J vs. V_R

Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-23

