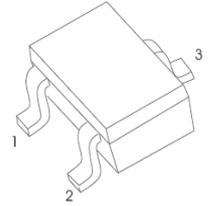


Features

- Epitaxial planar die construction
- Complementary NPN type available MMBT3904AT
- Also available in lead free version



SOT-523

1. BASE
2. EMITTER
3. COLLECTOR

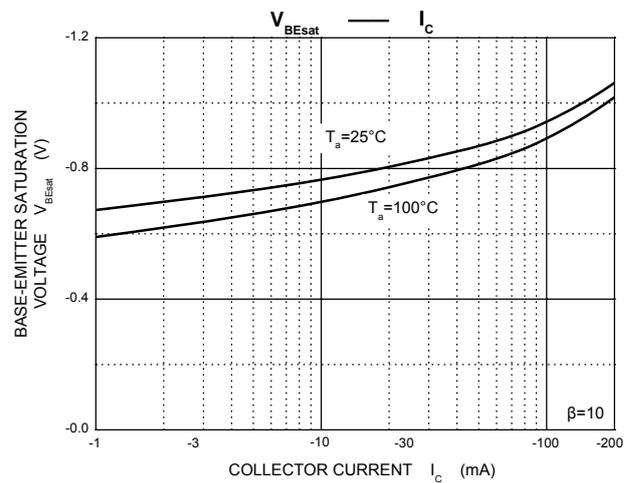
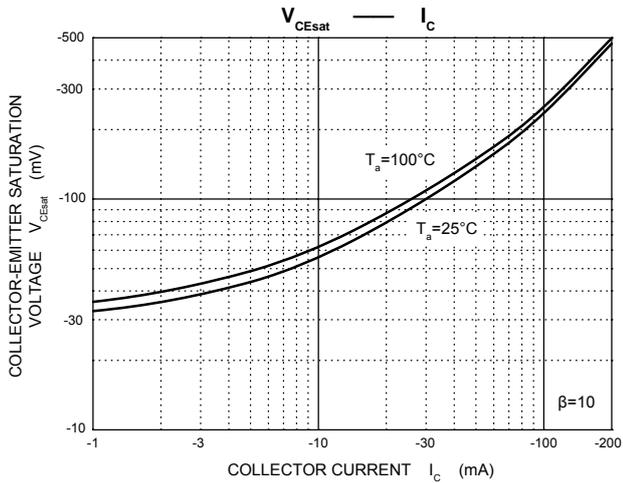
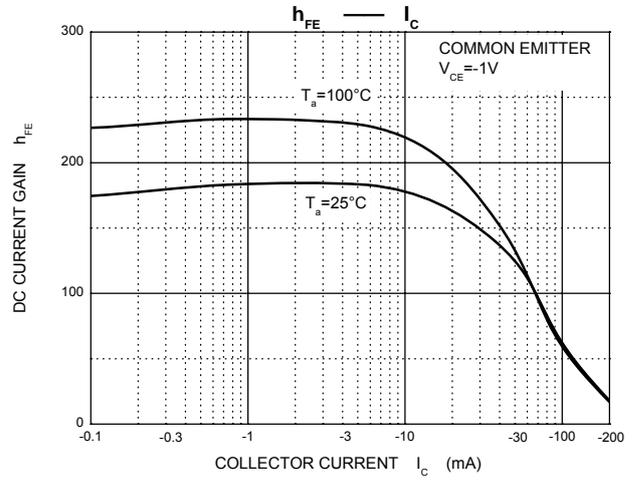
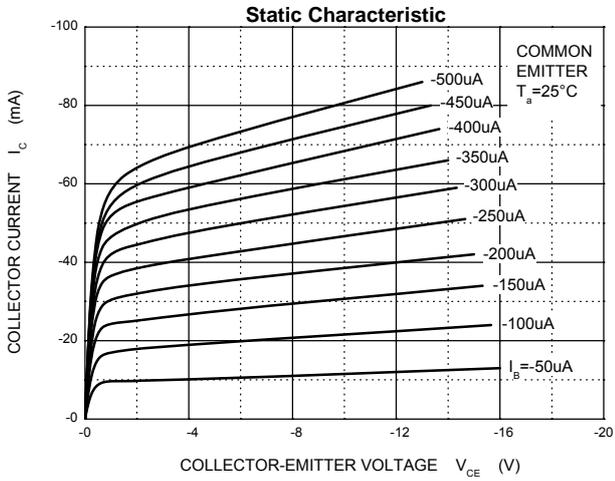
Absolute Maximum Ratings (T_A = 25 °C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-40	V
Collector-Emitter Voltage	V _{CEO}	-40	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Current - Continuous	I _C	-200	mA
Collector Power Dissipation	P _C	150	mW
Thermal Resistance from Junction to Ambient	R _{θJA}	833	°C/W
Junction Temperature	T _J	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C

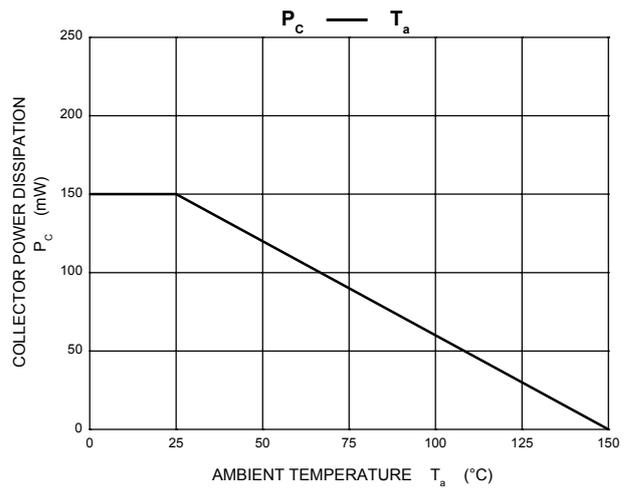
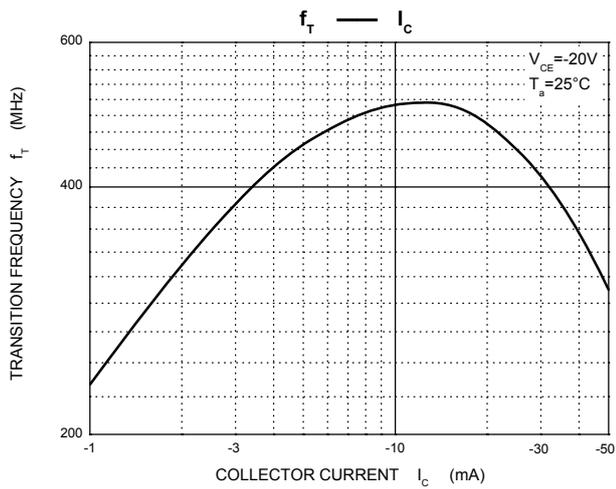
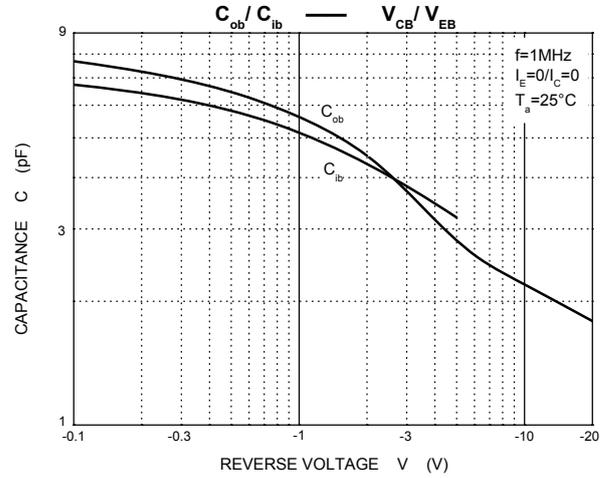
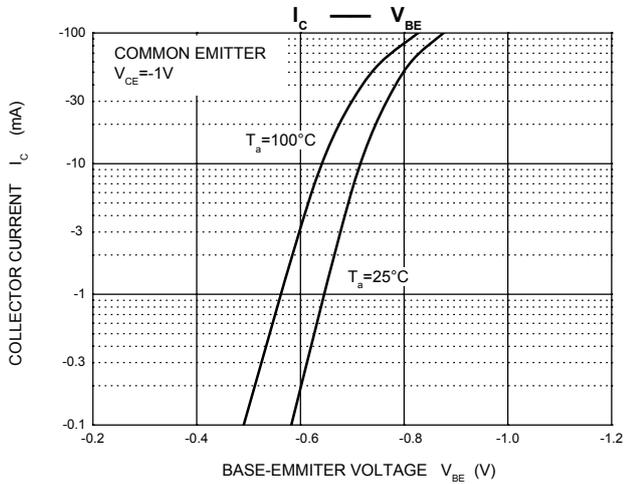
Electrical Characteristics (T_A = 25 °C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C =-10μA, I _E =0	-40	-	V
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =-1mA, I _B =0	-40	-	V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E =-10μA, I _C =0	-5	-	V
Collector Cut-Off Current	I _{CB0}	V _{CB} =-30V, I _E =0	-	-0.1	μA
Emitter Cut-Off Current	I _{EBO}	V _{EB} =-5V, I _C =0	-	-0.1	μA
Collector Cut-Off Current	I _{CEX}	V _{CB} =-30V, V _{BE(off)} =-3V	-	-0.05	μA
DC Current Gain	h _{FE(1)}	V _{CE} =-1V, I _C =-0.1mA	60	-	-
	h _{FE(2)}	V _{CE} =-1V, I _C =-1mA	80	-	-
	h _{FE(3)}	V _{CE} =-1V, I _C =-10mA	100	300	-
	h _{FE(4)}	V _{CE} =-1V, I _C =-50mA	60	-	-
	h _{FE(5)}	V _{CE} =-1V, I _C =-100mA	30	-	-
Collector-Emitter Saturation Voltage	V _{CE(sat)1}	I _C =-10mA, I _B =-1mA	-	-0.25	V
	V _{CE(sat)2}	I _C =-50mA, I _B =-5mA	-	-0.4	V
Base-Emitter Saturation Voltage	V _{BE(sat)1}	I _C =-10mA, I _B =-1mA	-0.65	-0.85	V
	V _{BE(sat)2}	I _C =-50mA, I _B =-5mA	-	-0.95	V
Transition Frequency	f _T	V _{CE} =-20V, I _C =-10mA, f=100MHz	250	-	MHz
Collector Output Capacitance	C _{obo}	V _{CB} =-5V, I _E =0, f=1MHz	-	4.5	pF
Input Capacitance	C _{iob}	V _{EB} =-0.5V, I _E =0, f=1MHz	-	10	pF
Noise Figure	NF	V _{CE} =-5V, I _C =0.1mA,	-	4	dB
Delay Time	t _d	V _{CC} =-3V, V _{BE(OFF)} =-0.5V	-	35	nS
Rise Time	t _r	I _C =-10mA, I _{B1} =-1mA	-	35	nS
Storage Time	t _s	V _{CC} =-3V, I _C =-10mA	-	225	nS
Fall Time	t _f	I _{B1} = I _{B2} =-1mA	-	75	nS

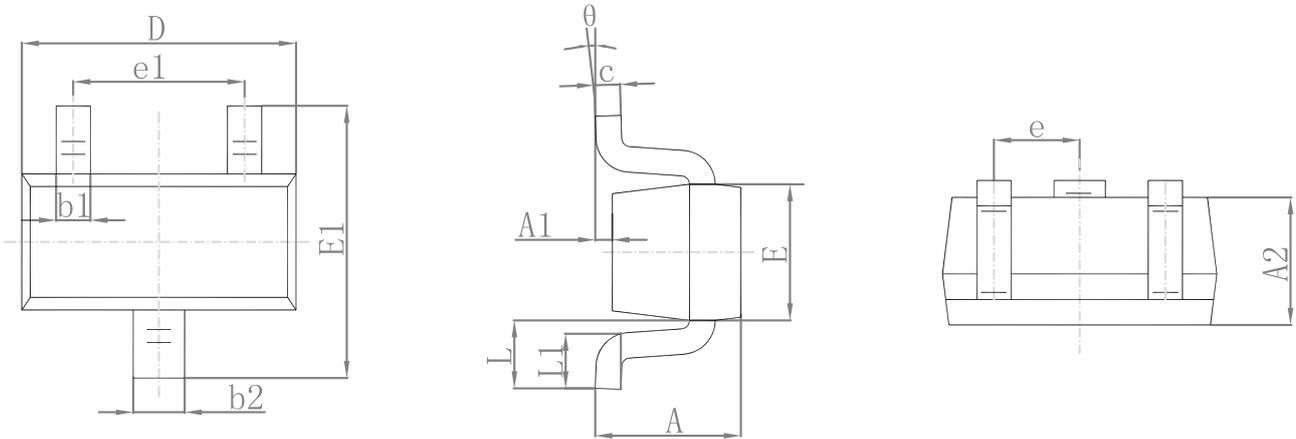
Typical Characteristic Curves



Typical Characteristic Curves

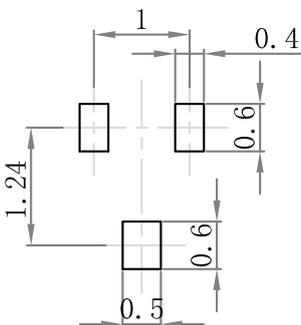


Package Outline Dimensions SOT-523



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

Ordering Information

Device	Package	Marking	Quantity	HSF Status
MMBT3906AT	SOT-523	3N	3000pcs / Reel	RoHS Compliant