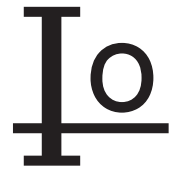


# MMBT222A

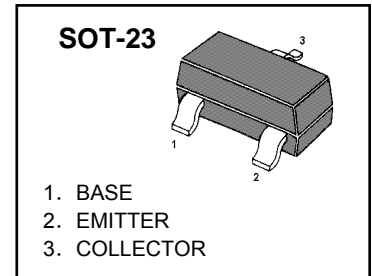
TRANSISTOR (NPN)



## FEATURES

Epitaxial planar die construction

Complementary PNP Type available(MMBT2907A)



## MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

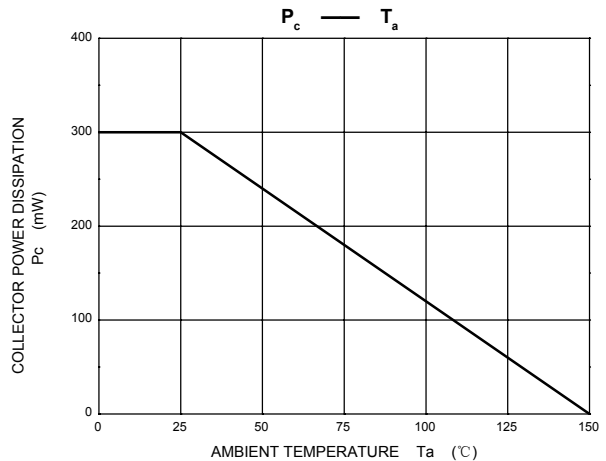
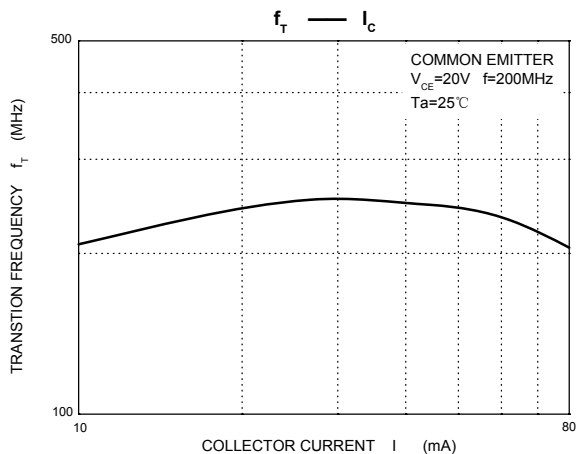
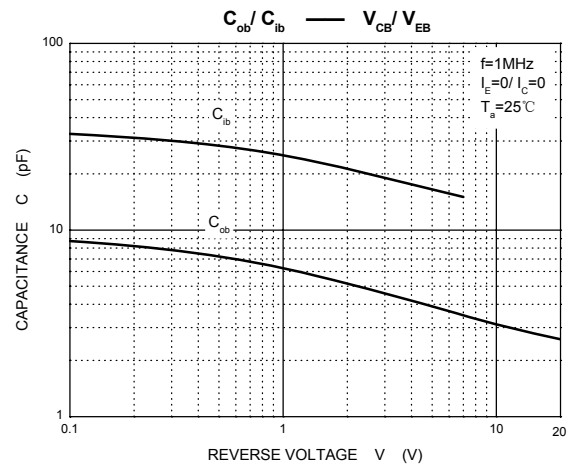
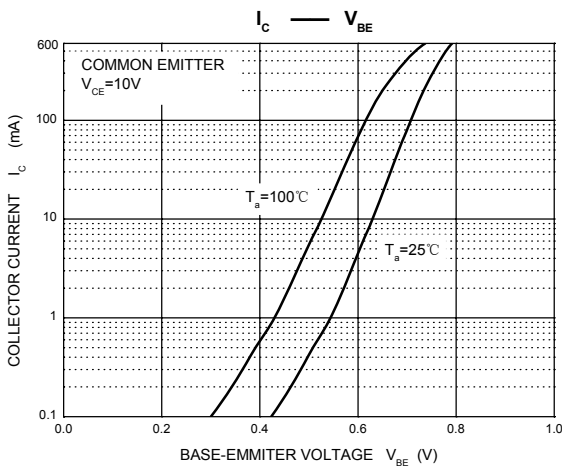
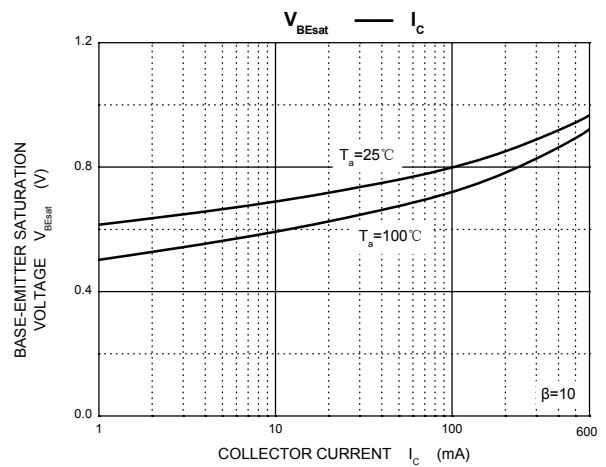
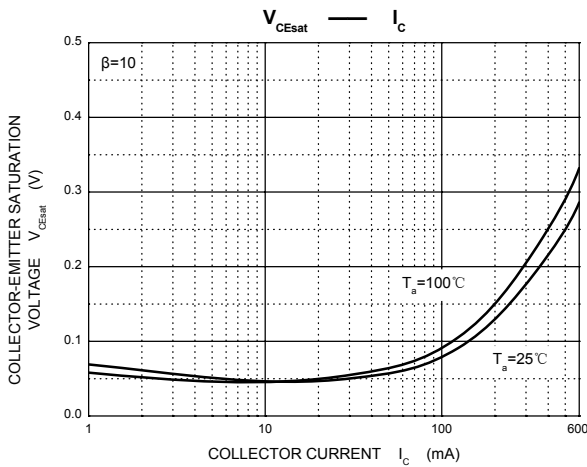
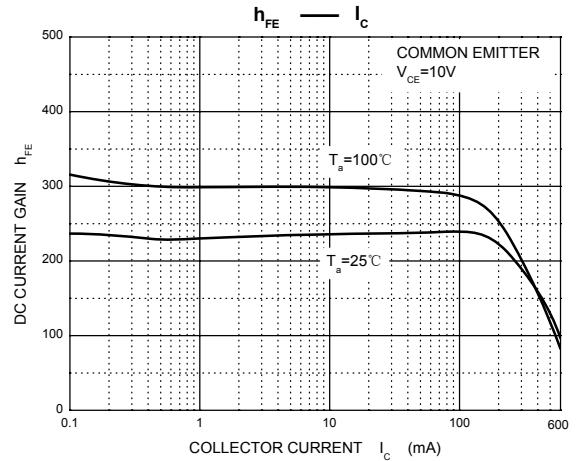
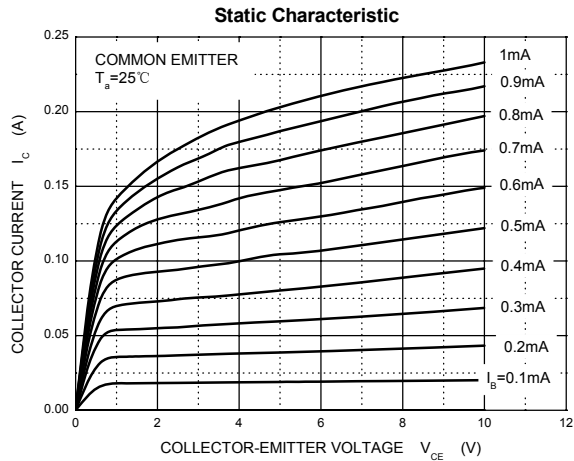
Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	75	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	600	mA
P <sub>C</sub>	Collector Dissipation	300	mW
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	417	°C/W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55to+150	°C

## ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> =0	75			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub> *	I <sub>C</sub> = 10mA, I <sub>B</sub> =0	40			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =60V, I <sub>E</sub> =0			0.01	μA
Collector cut-off current	I <sub>CEX</sub>	V <sub>CE</sub> =30V, V <sub>BE(off)</sub> =3V			0.01	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 3V, I <sub>C</sub> =0			0.1	μA
DC current gain	h <sub>FE(1)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 150mA	100		300	
	h <sub>FE(2)</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 0.1mA	40			
	h <sub>FE(3)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 500mA	42			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub> *	I <sub>C</sub> =500 mA, I <sub>B</sub> = 50mA I <sub>C</sub> =150 mA, I <sub>B</sub> =15mA			1 0.3	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub> *	I <sub>C</sub> =500 mA, I <sub>B</sub> = 50mA I <sub>C</sub> =150 mA, I <sub>B</sub> =15mA			2.0 1.2	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> = 20mA, f=100MHz	300			MHz
Delay time	t <sub>d</sub>	V <sub>CC</sub> =30V, V <sub>BE(off)</sub> =-0.5V I <sub>C</sub> =150mA, I <sub>B1</sub> = 15mA			10	nS
Rise time	t <sub>r</sub>				25	nS
Storage time	t <sub>s</sub>	V <sub>CC</sub> =30V, I <sub>C</sub> =150mA I <sub>B1</sub> =-I <sub>B2</sub> =15mA			225	nS
Fall time	t <sub>f</sub>				60	nS

\*pulse test: Pulse Width ≤300μs, Duty Cycles ≤ 2.0%.

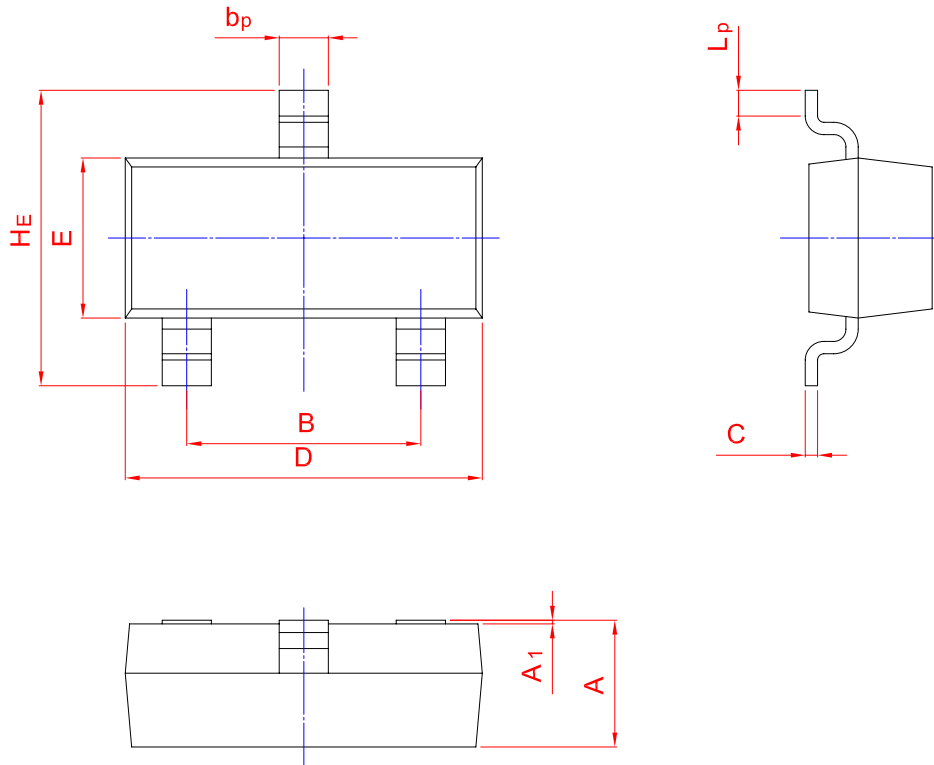
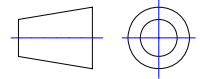
# Typical Characteristics



# PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b <sub>p</sub>	C	D	E	H <sub>E</sub>	A <sub>1</sub>	L <sub>p</sub>
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20