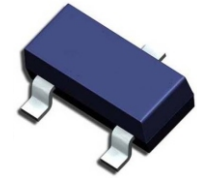
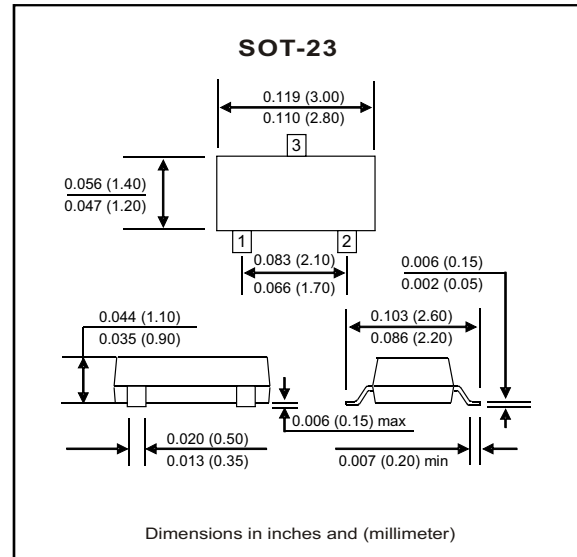
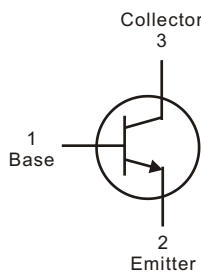


## MMBT3904-G (NPN) RoHS Device



### Features

- Epitaxial planar die construction
- As complementary type, the PNP transistor MMBT3906-G is recommended



### Maximum Ratings (at TA=25°C unless otherwise noted)

Parameter	Symbol	Min	Typ	Max	Unit
Collector-Base voltage	V <sub>CB0</sub>			60	V
Collector-Emitter voltage	V <sub>CEO</sub>			40	V
Emitter-Base voltage	V <sub>EB0</sub>			6	V
Collector current-Continuous	I <sub>c</sub>			0.2	A
Collector dissipation	P <sub>c</sub>			0.2	W
Storage temperature and junction temperature	T <sub>STG</sub> , T <sub>J</sub>	-55		+150	°C

### Electrical Characteristics (at TA=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-Base breakdown voltage	I <sub>c</sub> = 100μA, I <sub>E</sub> = 0	V <sub>(BR)CB0</sub>	60		V
Collector-Emitter breakdown voltage	I <sub>c</sub> = 1mA, I <sub>B</sub> = 0	V <sub>(BR)CEO</sub>	40		V
Emitter-Base breakdown voltage	I <sub>E</sub> = 100μA, I <sub>c</sub> = 0	V <sub>(BR)EBO</sub>	6		V
Collector cut-off current	V <sub>CB</sub> = 60V, I <sub>E</sub> = 0	I <sub>cBO</sub>		0.1	μA
Collector cut-off current	V <sub>CE</sub> = 40V, I <sub>B</sub> = 0	I <sub>CEO</sub>		0.1	μA
Emitter cut-off current	V <sub>EB</sub> = 5V, I <sub>c</sub> = 0	I <sub>EBO</sub>		0.1	μA
DC current gain	V <sub>CE</sub> = 1V, I <sub>c</sub> = 10mA	h <sub>FE(1)</sub>	100	300	
	V <sub>CE</sub> = 1V, I <sub>c</sub> = 50mA	h <sub>FE(2)</sub>	60		
Collector-Emitter saturation voltage	I <sub>c</sub> = 50mA, I <sub>B</sub> = 5mA	V <sub>CE(sat)</sub>		0.3	V
Base-Emitter saturation voltage	I <sub>c</sub> = 50mA, I <sub>B</sub> = 5mA	V <sub>BE(sat)</sub>		0.95	V
Transition frequency	V <sub>CE</sub> = 20V, I <sub>c</sub> = 10mA f = 100MHz	f <sub>T</sub>	250		Mhz
Delay time	V <sub>CC</sub> = 3.0V <sub>dc</sub> , V <sub>BE</sub> = -0.5V <sub>dc</sub>	t <sub>d</sub>		35	nS
Rise time	I <sub>c</sub> = 10mA <sub>dc</sub> , I <sub>B1</sub> = 1.0mA <sub>dc</sub>	t <sub>r</sub>		35	nS
Storage time	V <sub>CC</sub> = 3.0V <sub>dc</sub> , I <sub>c</sub> = 10mA <sub>dc</sub>	t <sub>s</sub>		200	nS
Fall time	I <sub>B1</sub> = I <sub>B2</sub> = 1.0mA <sub>dc</sub>	t <sub>f</sub>		50	nS

## RATING AND CHARACTERISTIC CURVES (MMBT3904-G)

Fig.1 Typical pulsed current gain V.S. Collector current

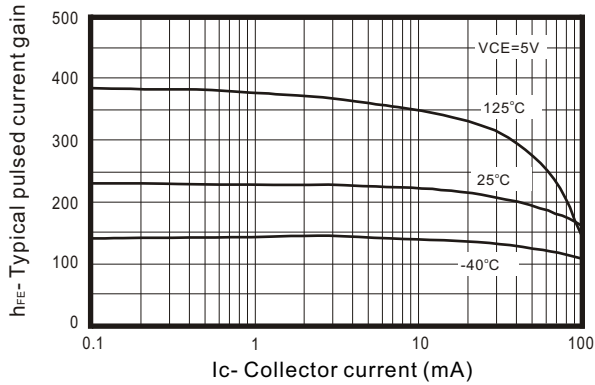


Fig.2 Collector-Emmitter saturation voltage V.S. Collector current

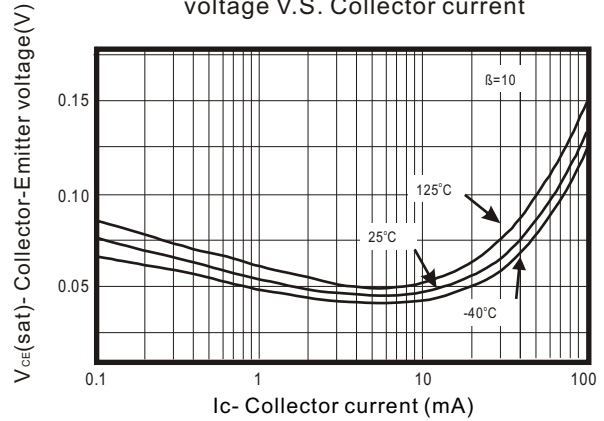


Fig.3 Base-Emmitter saturation voltage V.S. Collector current

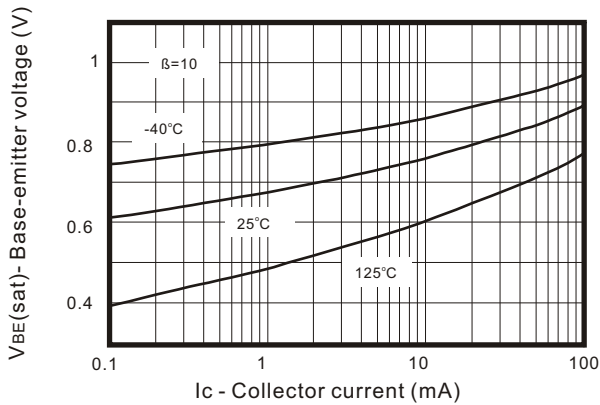


Fig.4 Base-Emmitter ON voltage V.S. Collector current

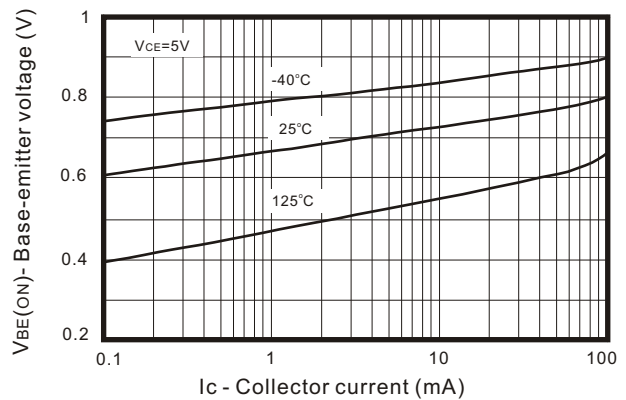


Fig.5 Collector-cutoff current V.S. Ambient temperature

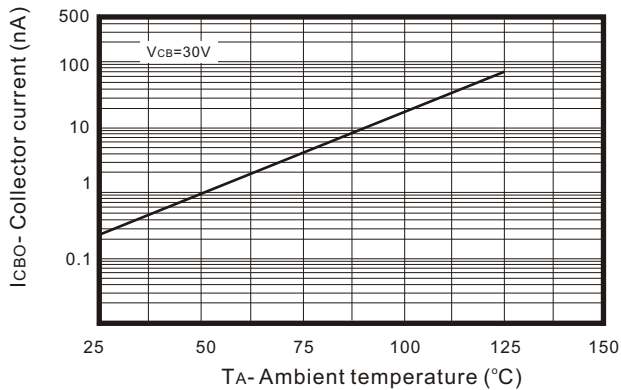


Fig.6 Capacitance V.S. Reverse bias voltage

