General Purpose Transistor

COMCHIP
SMD Diodes Specialist

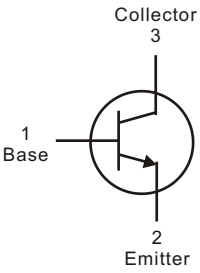
MMBT3904-G (NPN)

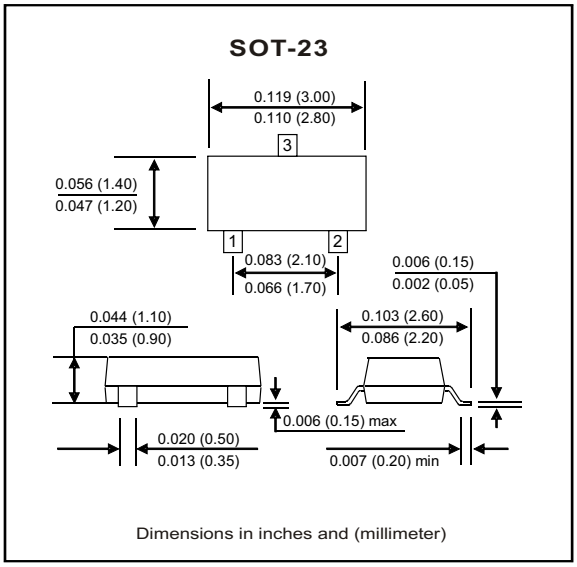
RoHS Device

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_{CBO}			60	V
Collector-Emitter voltage	V_{CEO}			40	V
Emitter-Base voltage	V_{EBO}			6	V
Collector current-Continuous	I_C			0.2	A
Collector dissipatioin	P_C			0.2	W
Storage tempe rature and junction tempe rature	T_{STG} , T_J	-55		+150	°C

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

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-Base breakdown voltage	I_C =100μA , I_E=0	$V_{(BR)CBO}$	60		V
Collector-Emitter breakdown voltage	I_C =1mA , I_B=0	$V_{(BR)CEO}$	40		V
Emitter-Base breakdown voltage	I_E =100μA , I_C=0	$V_{(BR)EBO}$	6		V
Collector cut-off current	V_{CB}=60V , I_E=0	I_{CBO}		0.1	μA
Collector cut-off current	V_{CE}=40V , I_B=0	I_{CEO}		0.1	μA
Emitter cut-off current	V_{EB}=5V , I_C=0	I_{EBO}		0.1	μA
DC current gain	V_{CE}=1V , I_C=10mA	$h_{FE(1)}$	100	300	
	V_{CE}=1V , I_C=50mA	$h_{FE(2)}$	60		
Collector-Emitter saturation voltage	I_C=50mA , I_B=5mA	V_{CE}(sat)		0.3	V
Base-Emitter saturation voltage	I_C=50mA , I_B=5mA	V_{BE}(sat)		0.95	V
Transition frequency	V_{CE}=20V , I_C=10mA f=100MHz	f_T	250		Mhz
Delay time	V_{CC}=3.0V_{dc} , V_{BE}=-0.5V_{dc}	td		35	nS
Rise time	I_C=10mA_{dc} , I_{B1}=1.0mA_{dc}	tr		35	nS
Storage time	V_{CC}=3.0V_{dc} , I_C=10mA_{dc}	ts		200	nS
Fall time	I_{B1}=I_{B2}=1.0mA_{dc}	tf		50	nS

RATING AND CHARACTERISTIC CURVES (MMBT3904-G)

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

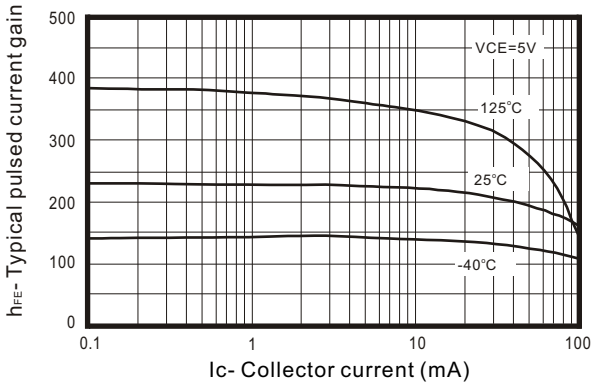


Fig.2 Collector-Emitter saturation voltage V.S. Collector current

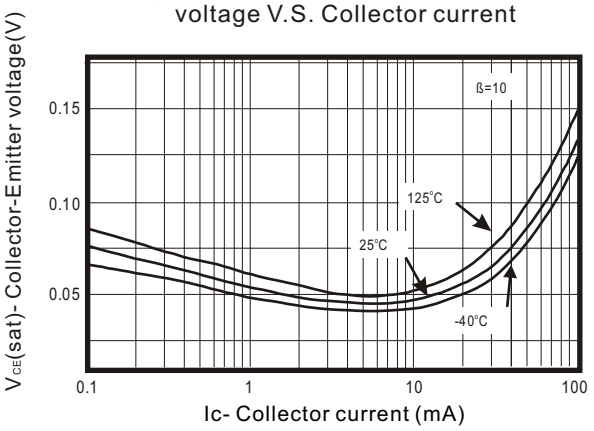


Fig.3 Base-Emitter saturatioin voltage V.S. Collector current

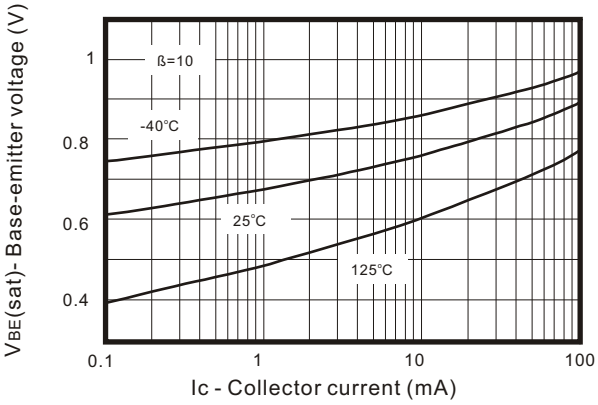


Fig.4 Base-Emitter ON voltage V.S. Collector current

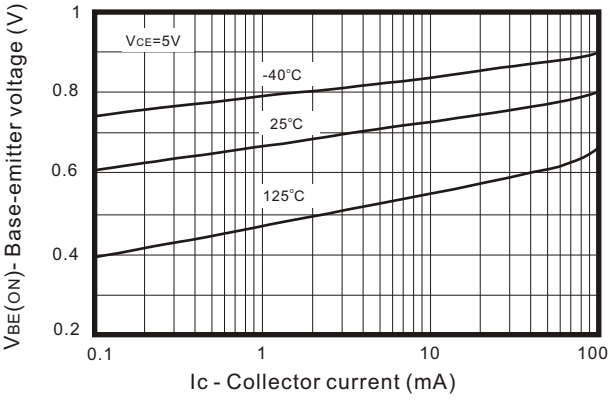


Fig.5 Collector-cutoff current V.S. Ambient temperature

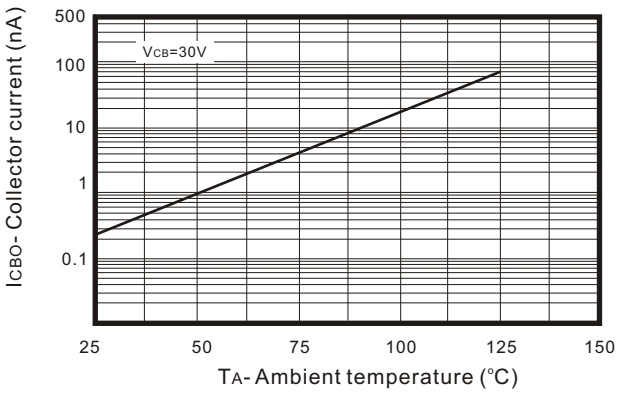


Fig.6 Capacitance V.S. Reverse bias voltage