SOT-23 Plastic-Encapsulate Transistors

MMBT3904 TRANSISTOR (NPN)

SOT-23

1. BASE
2. EMITTER
3. COLLECTOR

FEATURES

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

MARKING: 1AM

MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	200	mA
P_C	Total Device Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	625	℃/W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55 to +150	℃

ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	V_{CBO}	I_C= 10μA, I_E=0	60		V
Collector-emitter breakdown voltage	V_{CEO}	I_C= 1mA, I_B=0	40		V
Emitter-base breakdown voltage	V_{EBO}	I_E=10μA, I_C=0	6		V
Collector cut-off current	I_{CBO}	V_{CB}=60V, I_E=0		0.1	μA
Collector cut-off current	I_{CEX}	V_{CE}=30V,$V_{BE(off)}$=3V		50	nA
Emitter cut-off current	I_{EBO}	V_{EB}=5V, I_C=0		0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=1V, I_C=10mA	100	400	
	$h_{FE(2)}$	V_{CE}=1V, I_C= 50mA	60		
	$h_{FE(3)}$	V_{CE}=1V, I_C= 100mA	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=50mA, I_B= 5mA		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C= 50mA, I_B= 5mA		0.95	V
Transition frequency	f_T	V_{CE}= 20V, I_C= 10mA,f=100MHz	300		MHz
Delay Time	td	V_{CC}=3V,V_{BE}=-0.5V		35	nS
Rise Time	tr	I_C=10mA, I_{B1}=-I_{B2}=1.0mA		35	nS
Storage Time	ts	V_{CC}=3.0V,I_C=10mAdc		200	nS
Fall Time	tf	I_{B1}=-I_{B2}=1mA		50	nS

CLASSIFICATION OF $h_{FE(1)}$

Rank	O	Y	G
Range	100-200	200-300	300-400

Typical Characteristics

MMBT3904