



POWER SKY (H.K.) LTD.

SOT-23 Plastic-Encapsulate Transistors

MMBT3904 TRANSISTOR (NPN)

FEATURES

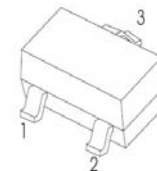
- Complementary Type The PNP Transistor MMBT3906 is Recommended
- Epitaxial Planar Die Construction

MARKING: 1AM

MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
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	200	mA
P_C	Total Device Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance From Junction to Ambient	625	°C/W
T_J	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55 ~ +150	°C

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1. BASE
2. EMITTER
3. COLLECTOR

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu A, I_E = 0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1mA, I_B = 0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 10\mu A, I_C = 0$	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	t_d	$V_{CC} = 3V, V_{BE} = -0.5V$		35	nS
Rise Time	t_r	$I_C = 10mA, I_{B1} = -I_{B2} = 1.0mA$		35	nS
Storage Time	t_s	$V_{CC} = 3V, I_C = 10mA,$		200	nS
Fall Time	t_f	$I_{B1} = -I_{B2} = 1mA$		50	nS

CLASSIFICATION OF $h_{FE(1)}$

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

Typical Characterisitics

MMBT3904

