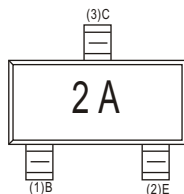


TRANSISTOR(PNP)

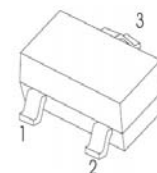
FEATURES

- Complementary Type The NPN Transistor MMBT3904 is Recommended
- Epitaxial Planar Die Construction

MARKING: 2A



SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_{C}	Collector Current	-200	mA
P_{C}	Total Device Dissipation	200	mW
$R_{\theta\text{JA}}$	Thermal Resistance Junction to Ambient	625	$^{\circ}\text{C}/\text{W}$
T_{J}	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55 ~ +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	$I_{\text{C}}=-10\mu\text{A}, I_{\text{E}}=0$	-40		V
Collector-emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	$I_{\text{C}}=-1\text{mA}, I_{\text{B}}=0$	-40		V
Emitter-base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	$I_{\text{E}}=-10\mu\text{A}, I_{\text{C}}=0$	-5		V
Collector cut-off current	I_{CBO}	$V_{\text{CB}}=-40\text{V}, I_{\text{E}}=0$		-0.1	μA
Collector cut-off current	I_{CEX}	$V_{\text{CE}}=-30\text{V}, V_{\text{BE}(\text{off})}=-3\text{V}$		-50	nA
Emitter cut-off current	I_{EBO}	$V_{\text{EB}}=-5\text{V}, I_{\text{C}}=0$		-0.1	μA
DC current gain	$h_{\text{FE}(1)}$	$V_{\text{CE}}=-1\text{V}, I_{\text{C}}=-10\text{mA}$	100	300	
	$h_{\text{FE}(2)}$	$V_{\text{CE}}=-1\text{V}, I_{\text{C}}=-50\text{mA}$	60		
	$h_{\text{FE}(3)}$	$V_{\text{CE}}=-1\text{V}, I_{\text{C}}=-100\text{mA}$	30		
Collector-emitter saturation voltage	$V_{\text{CE}(\text{sat})}$	$I_{\text{C}}=-50\text{mA}, I_{\text{B}}=-5\text{mA}$		-0.3	V
Base-emitter saturation voltage	$V_{\text{BE}(\text{sat})}$	$I_{\text{C}}=-50\text{mA}, I_{\text{B}}=-5\text{mA}$		-0.95	V
Transition frequency	f_{T}	$V_{\text{CE}}=-20\text{V}, I_{\text{C}}=-10\text{mA}, f=100\text{MHz}$	300		MHz
Delay Time	t_{d}	$V_{\text{CC}}=-3\text{V}, V_{\text{BE}}=-0.5\text{V}$		35	nS
Rise Time	t_{r}	$I_{\text{C}}=-10\text{mA}, I_{\text{B}1}=-I_{\text{B}2}=-1\text{mA}$		35	nS
Storage Time	t_{s}	$V_{\text{CC}}=-3\text{V}, I_{\text{C}}=-10\text{mA},$		225	nS
Fall Time	t_{f}	$I_{\text{B}1}=-I_{\text{B}2}=-1\text{mA}$		75	nS

CLASSIFICATION OF $h_{\text{FE}(1)}$

Rank	O	Y
Range	100-200	200-300

