

SOT-23 Plastic-Encapsulate Transistors

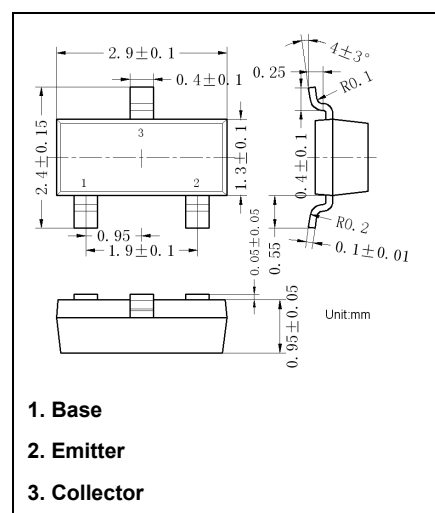
MMBT2222A

NPN Transistors

Features

- Epitaxial planar die construction
- Complementary PNP Type available (MMBT2907A)

Marking: 1P



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

Symbol	Parameter	Value	Unit
V_{CB0}	Collector Base Voltage	75	V
V_{CEO}	Collector Emitter Voltage	40	V
V_{EB0}	Emitter Base Voltage	6	V
I_C	Collector Current	600	mA
P_C	Collector Power Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	417	$^{\circ}\text{C}/\text{W}$
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)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{(BR)CB0}$	Collector-base breakdown voltage	$I_C = 10\mu\text{A}$, $I_E = 0$	75			V
$V_{(BR)CEO}^*$	Collector-emitter breakdown voltage	$I_C = 10\text{mA}$, $I_B = 0$	40			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E = 10\mu\text{A}$, $I_C = 0$	6			V
I_{CBO}	Collector cut-off current	$V_{CB} = 60\text{V}$, $I_E = 0$			10	nA
I_{CEX}	Collector cut-off current	$V_{CE} = 30\text{V}$, $V_{EB(off)} = -3\text{V}$			10	nA
I_{EBO}	Emitter cut-off current	$V_{EB} = 3\text{V}$, $I_C = 0$			100	nA
$h_{FE(1)}^*$		$V_{CE} = 10\text{V}$, $I_C = 150\text{mA}$	200		300	
$h_{FE(2)}$		$V_{CE} = 10\text{V}$, $I_C = 0.1\text{mA}$	40			
$h_{FE(3)}^*$		$V_{CE} = 10\text{V}$, $I_C = 500\text{mA}$	42			
$V_{CE(sat)}^*$	Collector-emitter saturation voltage	$I_C = 500\text{mA}$, $I_B = 50\text{mA}$			1	V
		$I_C = 150\text{mA}$, $I_B = 15\text{mA}$			0.3	V
$V_{BE(sat)}^*$	Base-emitter saturation voltage	$I_C = 500\text{mA}$, $I_B = 50\text{mA}$			2.0	V
		$I_C = 150\text{mA}$, $I_B = 15\text{mA}$			1.2	V
f_T	Transition frequency	$V_{CE} = 20\text{V}$, $I_C = 20\text{mA}$, $f = 100\text{MHz}$	300			MHz
t_d	Delay time	$V_{CC} = 30\text{V}$, $V_{BE(off)} = -0.5\text{V}$, $I_C = 150\text{mA}$, $I_{B1} = 15\text{mA}$			10	ns
t_r	Rise time				25	ns
t_s	Storage time	$V_{CC} = 30\text{V}$, $I_C = 150\text{mA}$			225	ns
t_f	Fall time	$I_{B1} = -I_{B2} = 15\text{mA}$			60	ns

Typical Characteristics

