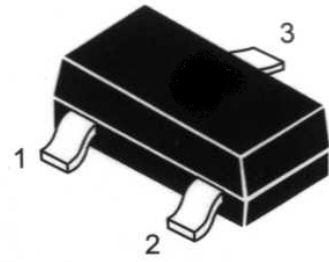


MMBT2222/ALT1 NPN EPITAXIAL SILICON TRANSISTOR

- * Complement to MMBT2907/ALT1
- * Collector Dissipation: $P_c(\max)=225\text{mW}$

Package:SOT-23



ABSOLUTE MAXIMUM RATINGS at $T_a=25^\circ\text{C}$

Characteristic	Symbol	Rating		Unit
		2222	2222A	
Collector-Base Voltage	V_{cbo}	60	75	V
Collector-Emitter Voltage	V_{ceo}	30	40	V
Emitter-Base Voltage	V_{ebo}	5	6	V
Collector Current	I_c	600		mA
Collector Dissipation $T_a=25^\circ\text{C}$ *	P_D	225		mW
Junction Temperature	T_j	150		$^\circ\text{C}$
Storage Temperature	T_{stg}	-55-150		$^\circ\text{C}$

PIN:	1	2	3
STYLE			
NO.1	B	E	C

ELECTRICAL CHARACTERISTICS at $T_a=25^\circ\text{C}$

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	MMBT2222 BV_{cbo} MMBT2222A	60 75		V	$I_c=10\mu\text{A}$ $I_e=0$
Collector-Emitter Breakdown Voltage	MMBT2222 BV_{ceo} MMBT2222A	30 40		V	$I_c=10\text{mA}$ $I_b=0$
Emitter-Base Breakdown Voltage	MMBT2222 BV_{ebo} MMBT2222A	5 6		V	$I_e=10\mu\text{A}$ $I_c=0$
Emitter Cutoff Current	MMBT2222A	I_{cex}	10	nA	$V_{ce}=60\text{V}$ $V_{eb}=3\text{V}$
Collect Cutoff Current	MMBT2222 MMBT2222A	I_{cbo}	10	nA	$V_{cb}=50\text{V}$ $I_e=0$ $V_{cb}=60\text{V}$ $I_e=0$
Collect Cutoff Current	MMBT2222 MMBT2222A	I_{cbo}	10	nA	$V_{cb}=50\text{V}$ $I_e=0$ $T_a=125^\circ\text{C}$ $V_{cb}=60\text{V}$ $I_e=0$ $T_a=125^\circ\text{C}$
Collect Cutoff Current	MMBT2222A	I_{ebo}	10	nA	$V_{cb}=3\text{V}$ $I_c=0$
DC Current Gain		H_{fe1}	35		$V_{ce}=10\text{V}$ $I_c=0.1\text{mA}$
DC Current Gain		H_{fe2}	50		$V_{ce}=10\text{V}$ $I_c=1\text{mA}$
DC Current Gain		H_{fe3}	75		$V_{ce}=10\text{V}$ $I_c=10\text{mA}$
DC Current Gain		H_{fe4}	100	300	$V_{ce}=10\text{V}$ $I_c=150\text{mA}$
DC Current Gain		H_{fe5}	50		$V_{ce}=1.0\text{V}$ $I_c=150\text{mA}$
DC Current Gain	MMBT2222 MMBT2222A	H_{fe6}	30 40		$V_{ce}=10\text{V}$ $I_c=500\text{mA}$

ELECTRICAL CHARACTERISTICS at Ta=25°C (continued)

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Collector-Emitter Saturation Voltage MMBT2222 MMBT2222A	Vce(sat)		0.4 0.3	V	Ic=150mA Ib= 15mA
Collector-Emitter Saturation Voltage MMBT2222 MMBT2222A	Vce(sat)		1.6 1.0	V	Ic=500mA Ib= 50mA
Base-Emitter Saturation Voltage MMBT2222 MMBT2222A	Vbe(sat)	0.6	1.3 1.2	V	Ic=150mA Ib= 15mA
Base-Emitter Saturation Voltage MMBT2222 MMBT2222A	Vbe(sat)		2.6 2.0	V	Ic=500mA Ib= 50mA
Input Base Capacitance MMBT2222 MMBT2222A	Cibo		30 25	PF	V EB = 0.5 Vdc, I C = 0, f = 1.0 MHz
Output Base Capacitance	Cobo		8	PF	Vcb=10V Ie=0 f=1MHz
Noise Figure	NF		10	dB	Vce= 10V Ic= 0.1mA f=1KHz Rs=2KΩ
Current Gain-Bandwidth Product MMBT2222 MMBT2222A	f _T	250 300		MHz	Vce= 20V Ic= 20mA f=100MHz

SWITCHING CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Delay Time	t _d		10	ns	(VCC = 30 Vdc, VEB(off) = - 0.5 Vdc
Rise Time	t _r		25	ns	I C = 150 mA dc, I B1 = 15 mA dc)
Storage Time	t _s		225	ns	(V CC = 30 Vdc, I C = 150 mA dc
Fall Time	t _f		60	ns	I B1 = I B2 = 15 mA dc)

* Total Device Dissipation : FR=1x0.75x0.062in Board,Derate 25°C.

Pulse Test : Pulse Width ≤300uS,Duty cycle≤2%

DEVICE MARKING:

MMBT2222LT1=M1B

MMBT2222ALT1=1P