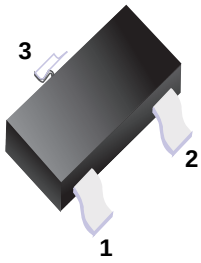
MMBT2222AW

NPN General Purpose Transistor

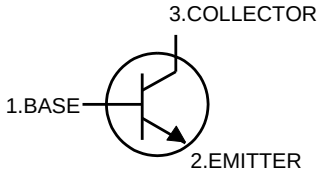


1.Base
2.Emitter
3.Collector

■ Features

● General purpose transistor.

■ Simplified outline(SOT-323)



■ Absolute Maximum Ratings Ta = 25℃

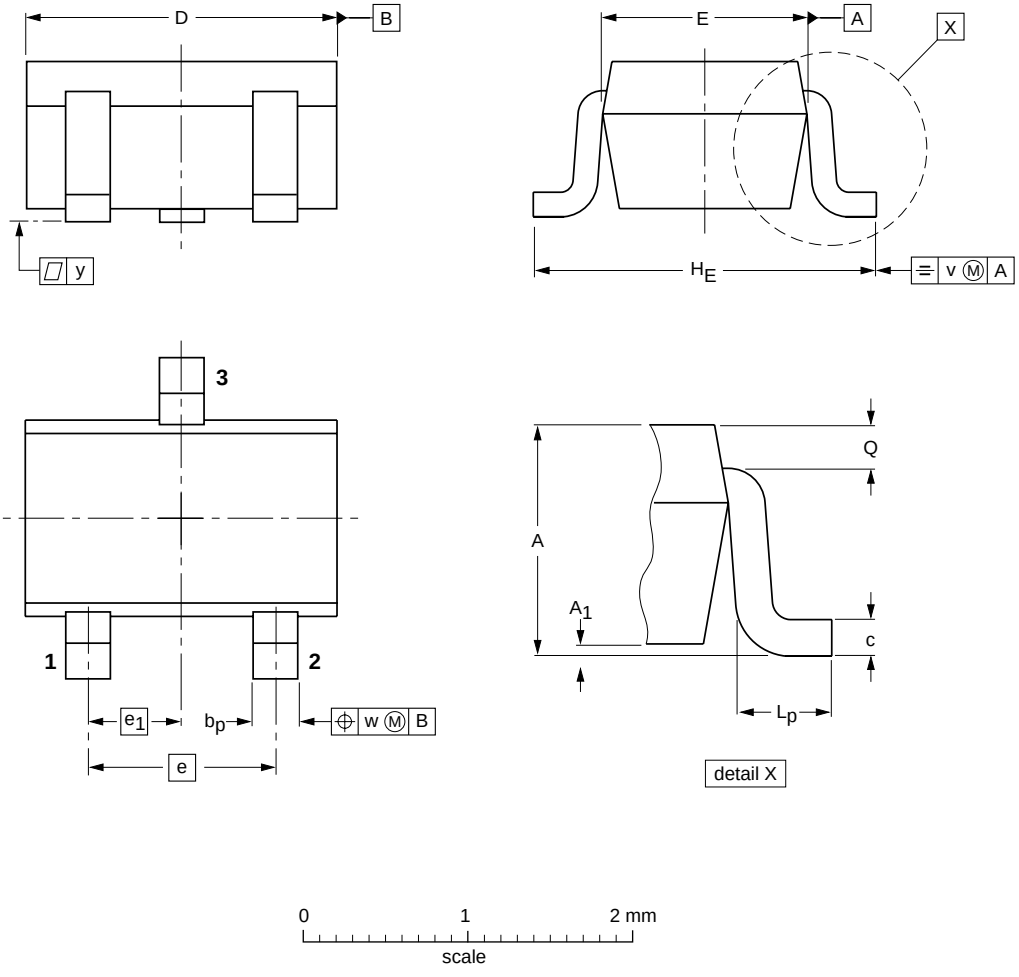
Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CEO}	40	V
Collector-base voltage	V_{CBO}	75	V
Emitter-base voltage	V_{EBO}	6.0	V
Collector current	I_C	600	mA
Total Device Dissipation FR-5 Board	P_D	150	mW
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	833	℃/W
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	-55 to +150	℃

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1.0 mA, I_B = 0	40			V
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 10 μA, I_E = 0	75			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10 μA, I_C = 0	6			V
Base cutoff current	I_{BL}	V_{CE} = 60 V, V_{EB} = 3.0 V			20	nA
Collector cutoff current	I_{CEX}	V_{CE} = 60 V, V_{EB} = 3.0 V			10	nA
DC current gain *	H_{FE}	I_C = 150 mA, V_{CE} = 10 V	100		300	
Collector-emitter saturation voltage *	$V_{CE(sat)}$	I_C = 150 mA, I_B = 15 mA			0.3	V
		I_C = 500 mA, I_B = 50 mA			1.0	
Base-emitter saturation voltage *	$V_{BE(sat)}$	I_C = 150 mA, I_B = 15 mA	0.6		1.2	
		I_C = 500 mA, I_B = 50 mA			2.0	
Current-gain-bandwidth product	f_T	I_C = 20 mA, V_{CE} = 20 V, f = 100 MHz	300			MHz
Output capacitance	C_{obo}	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz			8.0	pF
Input capacitance	C_{ibo}	V_{EB} = 0.5 V, I_C = 0, f = 1.0 MHz			30	pF
Input impedance	h_{ie}	V_{CE} = 10 V, I_C = 10 mA, f = 1.0 kHz	0.25		1.25	kΩ
Voltage feedback ratio	h_{re}	V_{CE} = 10 V, I_C = 10 mA, f = 1.0 kHz			4.0	$X10^{-4}$
Small-sgnal current gain	h_{fe}	V_{CE} = 10 V, I_C = 10 mA, f = 1.0 kHz	75		375	
Output admittance	h_{oe}	V_{CE} = 10 V, I_C = 10 mA, f = 1.0 kHz	25		200	μmhos
Noise figure	NF	V_{CE} = 10 V, I_C = 100 μA, R_S = 1.0 kΩ, f = 1.0 kHz			4.0	dB
Delay time	t_d	V_{CC} = 3.0 V, V_{BE} = -0.5 V, I_C = 150 mA, I_{B1} = 15 mA			10	ns
Rise time	t_r				25	ns
Storage time	t_s	V_{CC} = 30 V, I_C = 150 mA, I_{B1} = I_{B2} = 15 mA			225	ns
Fall time	t_f				60	ns

* Pulse test: pulse width ⩽ 300 μs, duty cycle ⩽ 2.0%.

■ SOT-323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

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