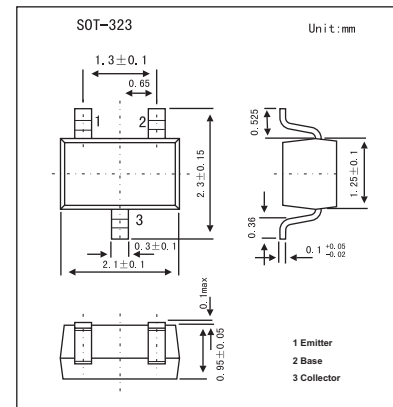
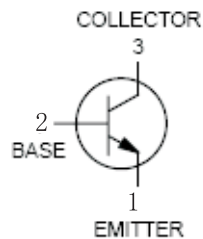


General Purpose Transistor

MMBT2222AW

■ Features

- General purpose transistor.

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CE0}	40	V
Collector-base voltage	V_{CB0}	75	V
Emitter-base voltage	V_{EB0}	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	$^\circ\text{C}/\text{W}$
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

MMBT2222AW

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V(BR)CEO	Ic = 1.0 mA, IB = 0	40			V
Collector-base breakdown voltage	V(BR)CBO	Ic = 10 μA, IE = 0	75			V
Emitter-base breakdown voltage	V(BR)EBO	IE = 10 μA, IC = 0	6			V
Base cutoff current	IBL	VCE = 60 V, VEB = 3.0 V			20	nA
Collector cutoff current	ICEX	VCE = 60 V, VEB = 3.0 V			10	nA
DC current gain *	HFE	Ic = 150 mA, VCE = 10 V	100		300	
Collector-emitter saturation voltage *	VCE(sat)	Ic = 150 mA, IB = 15 mA			0.3	V
		Ic = 500 mA, IB = 50 mA			1.0	
Base-emitter saturation voltage *	VBE(sat)	Ic = 150 mA, IB = 15 mA	0.6		1.2	
		Ic = 500 mA, IB = 50 mA			2.0	
Current-gain-bandwidth product	fr	Ic = 20 mA, VCE = 20 V, f = 100 MHz	300			MHz
Output capacitance	Cobo	VCB = 10 V, IE = 0, f = 1.0 MHz			8.0	pF
Input capacitance	Cibo	VEB = 0.5 V, Ic = 0, f = 1.0 MHz			30	pF
Input impedance	hie	VCE = 10 V, Ic = 10 mA, f = 1.0 kHz	0.25		1.25	kΩ
Voltage feedback ratio	hre	VCE = 10 V, Ic = 10 mA, f = 1.0 kHz			4.0	X10 ⁻⁴
Small-signal current gain	hfe	VCE = 10 V, Ic = 10 mA, f = 1.0 kHz	75		375	
Output admittance	hoe	VCE = 10 V, Ic = 10 mA, f = 1.0 kHz	25		200	μmhos
Noise figure	NF	VCE = 10 V, Ic = 100 μA, Rs = 1.0 kΩ, f = 1.0 kHz			4.0	dB
Delay time	td	VCC = 3.0 V, VBE = -0.5 V, Ic = 150 mA, IB1 = 15 mA			10	ns
Rise time	tr				25	ns
Storage time	ts	VCC = 30 V, Ic = 150 mA,			225	ns
Fall time	tf	IB1 = IB2 = 15 mA			60	ns

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

■ Marking

Marking	P1
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