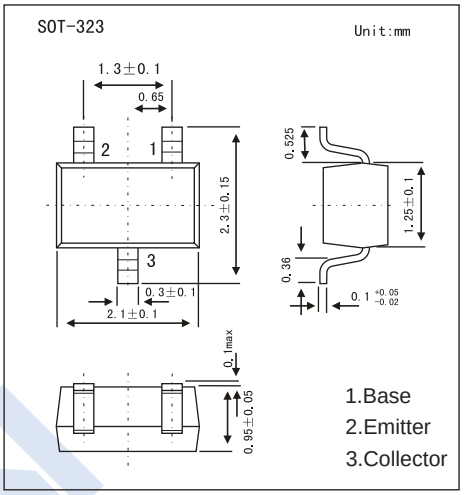
General Purpose Transistor

MMBT2222AW



■ Features

● General purpose transistor.

■ 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	$R_{èJA}$	833	℃/W
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	-55 to +150	℃

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■ 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 ì A, I_E = 0	75			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10 ì A, 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	kÙ
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	ì mhos
Noise figure	NF	V_{CE} = 10 V, I_C = 100 ì A, R_S = 1.0 kÙ, 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,			225	ns
Fall time	t_f	I_{B1} = I_{B2} = 15 mA			60	ns

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

■ Marking

Marking	1P

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■ Typical Characterisitics

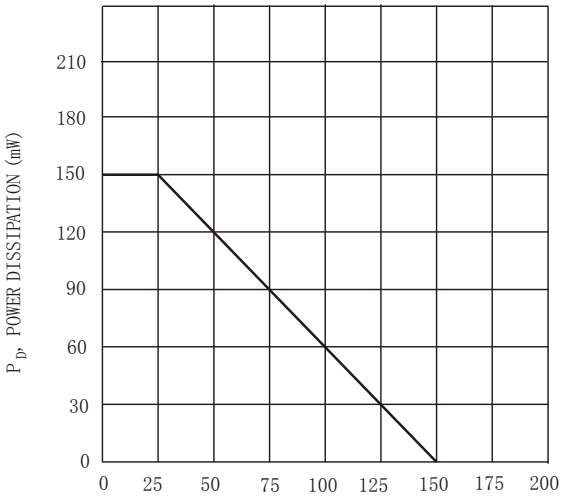

Fig. 1, Max Power Dissipation vs Ambient Tem perature

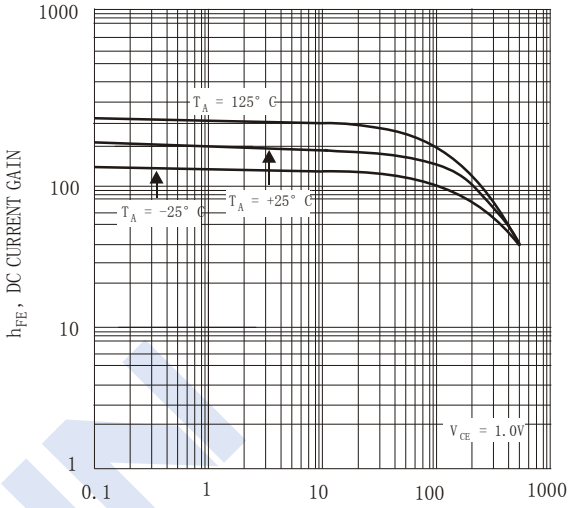

Fig. 2, Typical DC Current Gain vs Collector Current

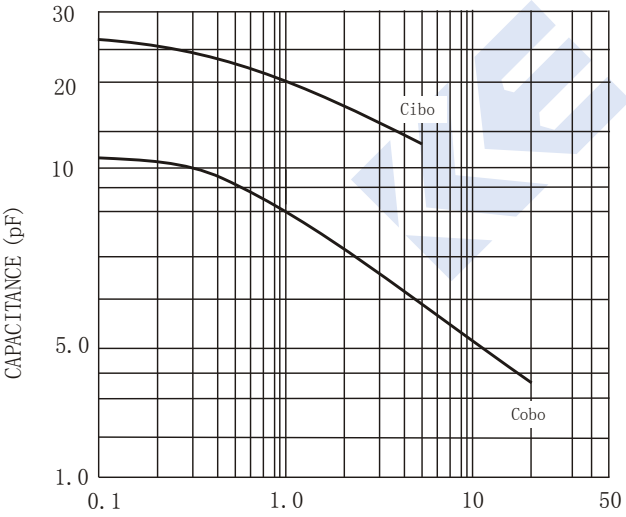

Fig. 3 Typical Capacitance

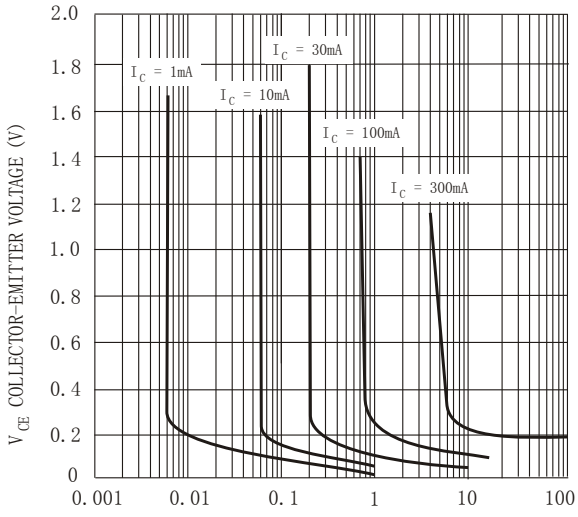

Fig. 4 Typical Collector Saturation Region