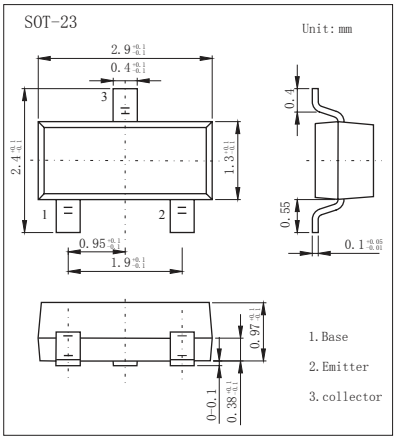
NPN Transistors

MMBT2222A (KMBT2222A)



■ Features

- Epitaxial planar die construction.
- Complementary PNP type available(MMBT2907A)

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	70	V
Collector - Emitter Voltage	V_{CEO}	40	
Emitter - Base Voltage	V_{EBO}	6	
Collector Current - Continuous	I_C	600	mA
Power Dissipation	P_D	250	mW
Thermal resistance from junction to ambient	$R_{\theta JA}$	417	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100 μA, I_E = 0	75			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10 mA, I_B = 0	40			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100 μ A, I_C = 0	6			V
Collector cutoff current	I_{CBO}	V_{CB}=60V, I_E=0			100	nA
Collector cut-off current	I_{CEX}	V_{CE}=30V,$V_{EB(off)}$=-3V			10	nA
Emitter cutoff current	I_{EBO}	V_{EB}= 3V, I_C=0			100	nA
DC current gain	h_{FE}	V_{CE}=10V, I_C= 0.1mA	40			
		V_{CE}=10V, I_C= 150mA	100		300	
		V_{CE}=10V, I_C= 500mA	42			
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	V
base-emitter saturation voltage *	$V_{BE(sat)}$	I_C = 150 mA; I_B = 15 mA	0.6		1.2	V
		I_C = 500 mA; I_B = 50 mA			2	V
Transition frequency	f_T	I_C = 20 mA; V_{CE} = 20 V; f = 100 MHz	300			MHz
Delay time	t_d	V_{CC}=30V, $V_{BE(off)}$=-0.5V, I_C=150mA , I_{B1}= 15mA			10	ns
Rise time	t_r				25	ns
Storage time	t_s	V_{CC}=30V, I_C=150mA,I_{B1}=-I_{B2}=15mA			225	ns
Fall time	t_f				60	ns

* pulse test: Pulse Width ≤300μs, Duty Cycle≤ 2.0%.

■ Mrarking

Marking	1P

NPN Transistors

MMBT2222A (KMBT2222A)

■ Typical Characterisitics

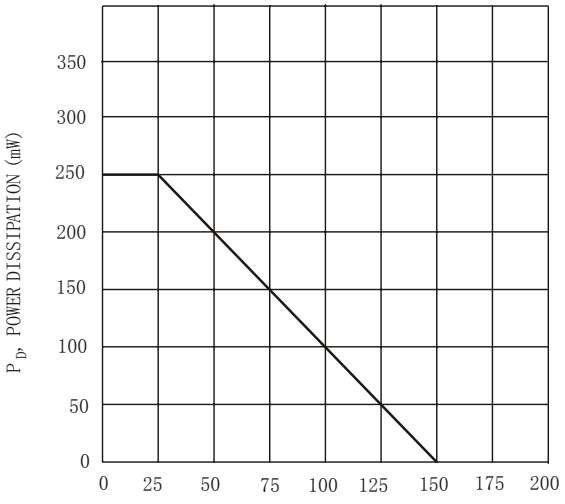


Fig. 1, Max Power Dissipation vs Ambient Tem perature

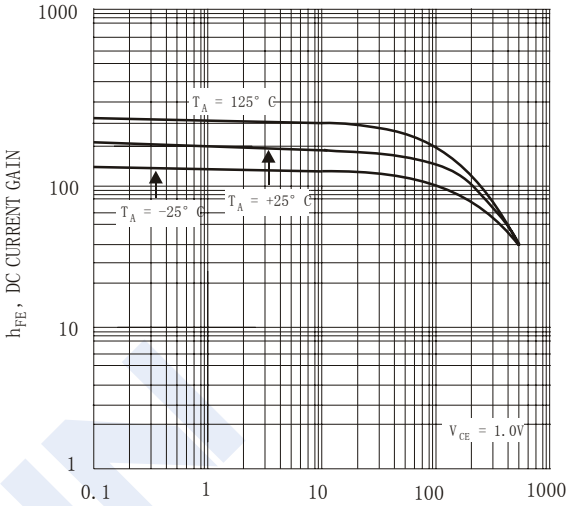


Fig. 2, Typical DC Current Gain vs Collector Current

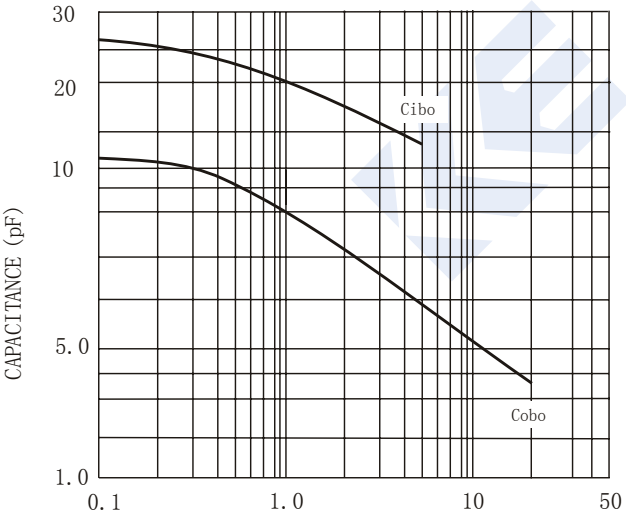


Fig. 3 Typical Capacitance

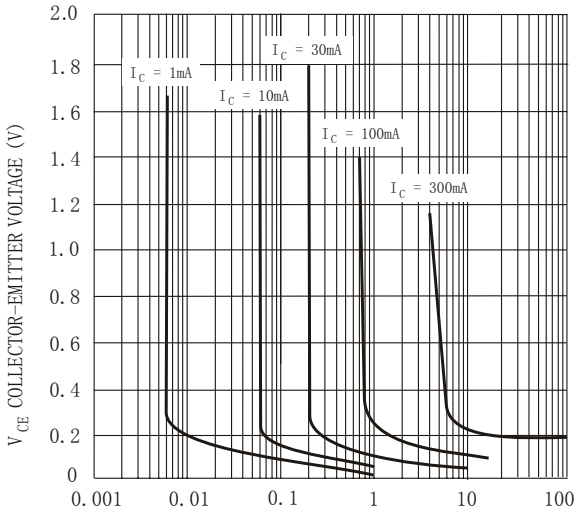


Fig. 4 Typical Collector Saturation Region