FUKUCOM COMPANY LTD.

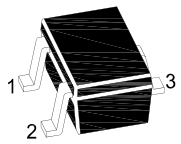
福 靈 有 限 公 司

FLAT P, 3/F., EVEREST INDUSTRIAL CENTRE, 396 KWUN TONG ROAD,
KWUN TONG, KOWLOON, HONG KONG.
TEL: 852-2790 0314 FAX: 852-2790 0206

MMBT2222E / MMBT2222AE

NPN Silicon Epitaxial Planar Transistor

for switching and amplifier applications



1.Base 2.Emitter 3.Collector
SOT-523 Plastic Package

Absolute Maximum Ratings (T_a = 25 °C)

Parameter		Symbol	Value	Unit
Collector Base Voltage	MMBT2222E MMBT2222AE	V_{CBO}	60 75	V
Collector Emitter Voltage	MMBT2222E MMBT2222AE	V_{CEO}	30 40	V
Emitter Base Voltage	MMBT2222E MMBT2222AE	V_{EBO}	5 6	V
Collector Current		I_C	600	mA
Power Dissipation		P_{tot}	150	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	- 55 to + 150	°C

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Characteristics at T_a = 25 °C

Parameter		Symbol	Min.	Max.	Unit
DC Current Gain					
at V_{CE} = 10 V, I_C = 0.1 mA		h_{FE}	35	-	-
at V_{CE} = 10 V, I_C = 1 mA		h_{FE}	50	-	-
at V_{CE} = 10 V, I_C = 10 mA		h_{FE}	75	-	-
at V_{CE} = 1 V, I_C = 150 mA		h_{FE}	50	-	-
at V_{CE} = 10 V, I_C = 150 mA		h_{FE}	100	300	-
at V_{CE} = 10 V, I_C = 500 mA	MMBT2222E	h_{FE}	30	-	-
	MMBT2222AE	h_{FE}	40	-	-
Collector Base Cutoff Current					
at V_{CB} = 50 V	MMBT2222E	I_{CBO}	-	100	nA
at V_{CB} = 60 V	MMBT2222AE		-	100	
Emitter Base Cutoff Current					
at V_{EB} = 3 V		I_{EBO}	-	100	nA
Collector Base Breakdown Voltage					
at I_C = 10 µA	MMBT2222E	$V_{(BR)CBO}$	60	-	V
	MMBT2222AE		75	-	
Collector Emitter Breakdown Voltage					
at I_C = 10 mA	MMBT2222E	$V_{(BR)CEO}$	30	-	V
	MMBT2222AE		40	-	
Emitter Base Breakdown Voltage					
at I_E = 10 µA	MMBT2222E	$V_{(BR)EBO}$	5	-	V
	MMBT2222AE		6	-	
Collector Emitter Saturation Voltage					
at I_C = 150 mA, I_B = 15 mA	MMBT2222E		-	0.4	
	MMBT2222AE	$V_{CE(sat)}$	-	0.3	V
at I_C = 500 mA, I_B = 50 mA	MMBT2222E		-	1.6	
	MMBT2222AE		-	1	
Base Emitter Saturation Voltage					
at I_C = 150 mA, I_B = 15 mA	MMBT2222E		-	1.3	
	MMBT2222AE	$V_{BE(sat)}$	0.6	1.2	V
at I_C = 500 mA, I_B = 50 mA	MMBT2222E		-	2.6	
	MMBT2222AE		-	2	
Transition Frequency					
at V_{CE} = 20 V, $-I_E$ = 20 mA, f = 100 MHz		f_T	300	-	MHz
Collector Output Capacitance					
at V_{CB} = 10 V, f = 100 KHz		C_{ob}	-	8	pF
Delay Time					
at V_{CC} = 30 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 150 mA, I_{B1} = 15 mA		t_d	-	10	ns
Rise Time					
at V_{CC} = 30 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 150 mA, I_{B1} = 15 mA		t_r	-	25	ns
Storage Time					
at V_{CC} = 30 V, I_C = 150 mA, I_{B1} = $-I_{B2}$ = 15 mA		t_{stg}	-	225	ns
Fall Time					
at V_{CC} = 30 V, I_C = 150 mA, I_{B1} = $-I_{B2}$ = 15 mA		t_f	-	60	ns

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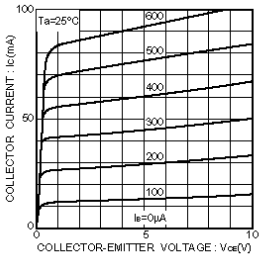


Fig.1 Grounded emitter output characteristics

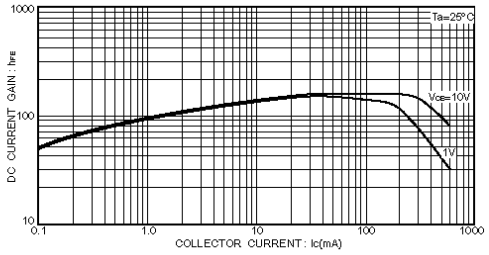


Fig.3 DC current gain vs. collector current(I)

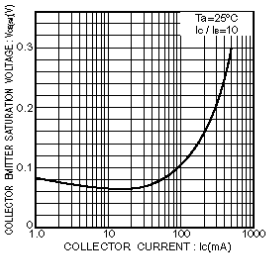


Fig.2 Collector-emitter saturation voltage vs. collector current

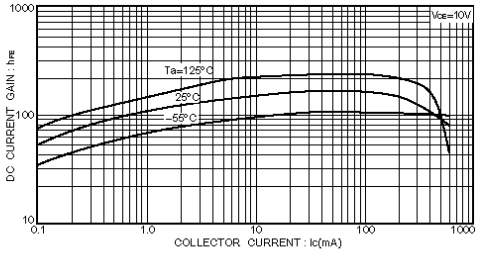


Fig.4 DC current gain vs. collector current(II)

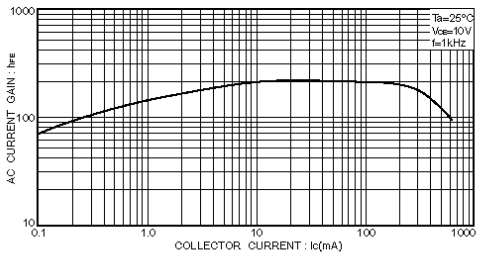


Fig.5 AC current gain vs. collector current

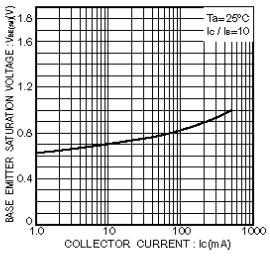
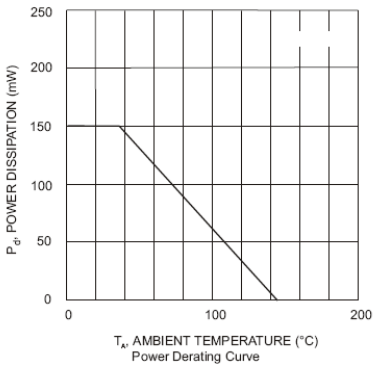


Fig.6 Base-emitter saturation voltage vs. collector current



Power Derating Curve