

■ PNP Transistors



■ Simplified outline(SOT-23)

■ Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available(MMBT2222A)

■ Marking

Marking	2F
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■ Absolute Maximum Ratings Ta = 25°C

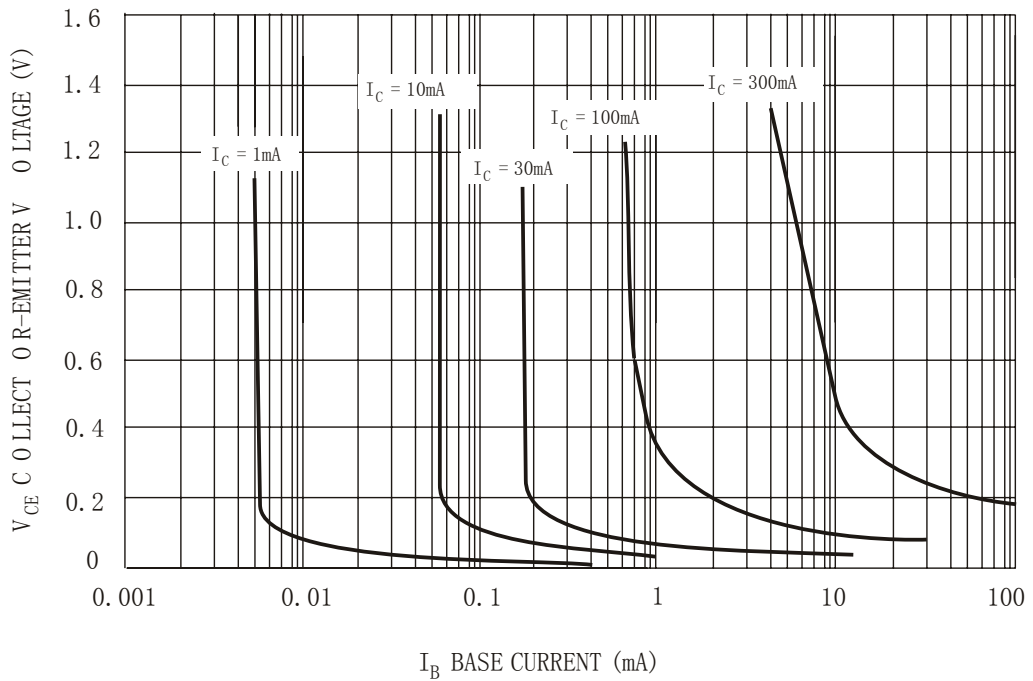
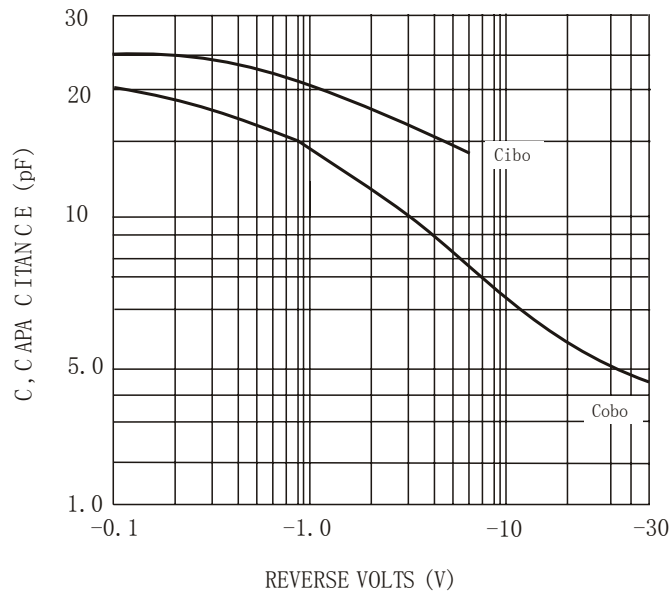
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V _{CB0}	-60	V
Collector - Emitter Voltage	V _{CEO}	-60	
Emitter - Base Voltage	V _{EBO}	-5	
Collector Current - Continuous	I _c	600	mA
Power Dissipation	P _d	250	mW
Thermal resistance from junction to ambient	R _{θJA}	500	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = -100 μA, I _E = 0	-60		V
Collector-Emitter Breakdown Voltage*	V _{(BR)CEO}	I _C = -10 mA, I _B = 0	-60		V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = -100 μA, I _C = 0	-5		V
Collector Cutoff Current	I _{CBO}	V _{CB} = -50 V, I _E = 0		-20	nA
Collector Cutoff Current	I _{CEx}	V _{CE} = -30 V, V _{EB(off)} = 0.5V		-50	nA
DC Current Gain	h _{FE}	V _{CE} = -10V, I _C = -0.1mA	75		
		V _{CE} = -10V, I _C = -1mA	100		
		V _{CE} = -10V, I _C = -10mA	100		
		V _{CE} = -10V, I _C = -150mA	100	300	
		V _{CE} = -10V, I _C = -500mA	50		
Collector-Emitter Saturation Voltage *	V _{CE(sat)}	I _C = -150 mA, I _B = -15 mA		-0.4	V
		I _C = -500 mA, I _B = -50 mA		-1.6	V
Base-Emitter Saturation Voltage *	V _{BE(sat)}	I _C = -150 mA, I _B = -15 mA		-1.3	V
		I _C = -500 mA, I _B = -50 mA		-2.6	V
Current Gain - Bandwidth Product	f _T	V _{CE} = -20V, I _C = -50mA, f = 100MHz	200		MHz
Delay Time	t _d	V _{CC} = -30 V, I _C = -150 mA, I _{B1} = -15 mA		10	ns
Rise Time	t _r			40	ns
Storage Time	t _s	V _{CC} = -6.0 V, I _C = -150 mA, I _{B1} = I _{B2} = -15 mA		80	ns
Fall Time	t _f			30	ns

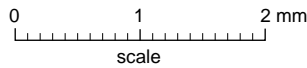
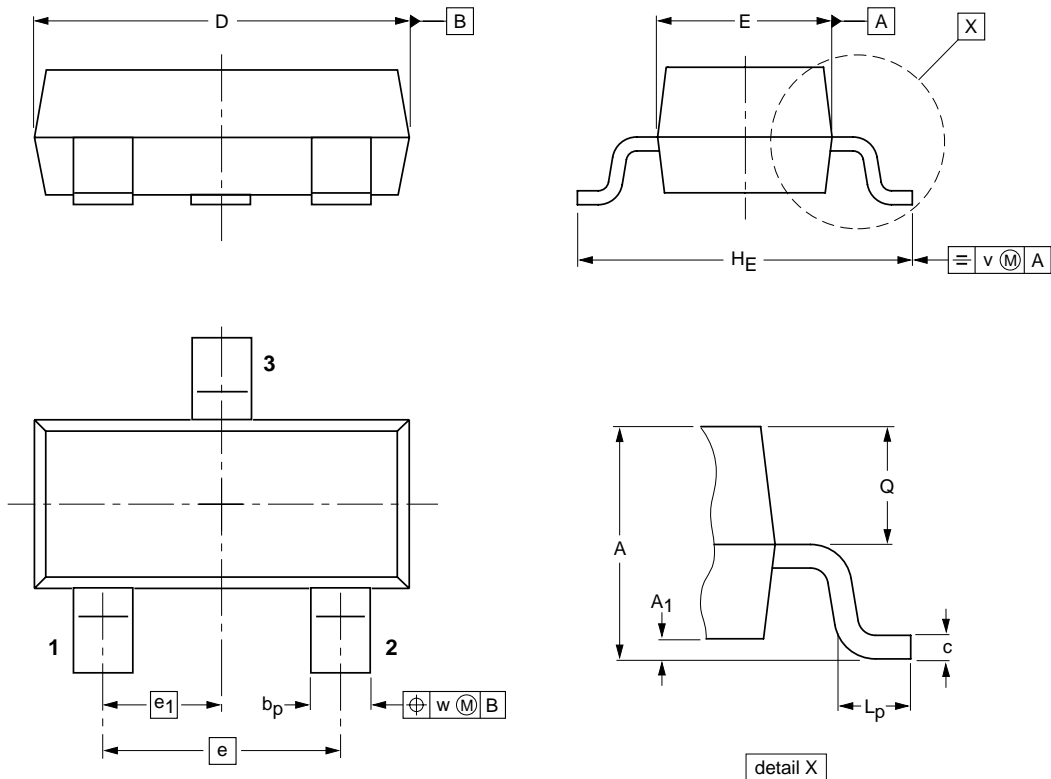
* Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2.0%

■ Typical Characteristics



Package Outline

SOT-23



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 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1