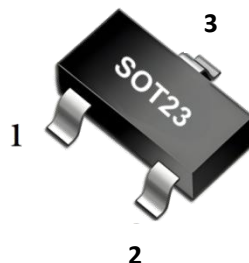


MMBT4401

NPN SILICON TRANSISTOR

DESCRIPTION

The MMBT4401 is designed for use as a medium power amplifier and switch requiring collector currents up to 500mA.



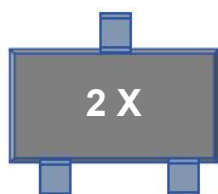
1. BASE
2. EMITTER
3. COLLECTOR

FEATURES

*Switching Transistor

MARKING

Type Code: Marking: 2 X



ABSOLUTE MAXIMUM RATINGS (Tc=25°C, unless otherwise specified)

SYMBOL	PARAMETER	VALUE	UNIT
V _{CB0}	Collector-base voltage	60	V
V _{CEO}	Collector-emitter voltage	40	V
V _{EB0}	Emitter-base voltage	6	V
I _c	Collector current	0.6	A
P _c	Collector Power Dissipation	300	mW
T _j	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~150	°C
ROJA	Thermal Resistance From Junction To Ambient	417	°C/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

MMBT4401

NPN SILICON TRANSISTOR

■ ELECTRICAL CHARACTERISTICS (Tc=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-100\mu A, I_C=0$	6		V
Collector cutoff current	I_{CBO}	$V_{CB}=50V, I_E=0$		0.1	μA
Collector cut-off current	I_{CEX}	$V_{CE}=35V, V_{EB}=0.4V$		0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=5V, I_C=0$		0.1	μA
DC Current Gain	h_{FE1}	$V_{CE}=1V, I_C=0.1mA$	20		
	h_{FE2}	$V_{CE}=1V, I_C=1mA$	40		
	h_{FE3}	$V_{CE}=1V, I_C=10mA$	80		
	h_{FE4}	$V_{CE}=1V, I_C=150mA$	100	300	
	h_{FE5}	$V_{CE}=2V, I_C=500mA$	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=150mA, I_B=15mA$		0.4	V
		$I_C=500mA, I_B=50mA$		0.75	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=150mA, I_B=15mA$		0.95	V
		$I_C=500mA, I_B=50mA$		1.2	V
Transition frequency	f_T	$V_{CE}=10V, I_C=20mA, f=100MHz$	250		MHz
Delay time	t_d	$V_{CC}=30V, V_{BE(off)}=2V$ $I_C=150mA, I_{B1}=15mA$		15	ns
Rise time	t_r			20	ns
Storage time	t_s	$V_{CC}=30V, I_C=150mA$ $I_{B1}=I_{B2}=15mA$		225	ns
Fall time	t_f			60	ns

■ TEST CIRCUIT

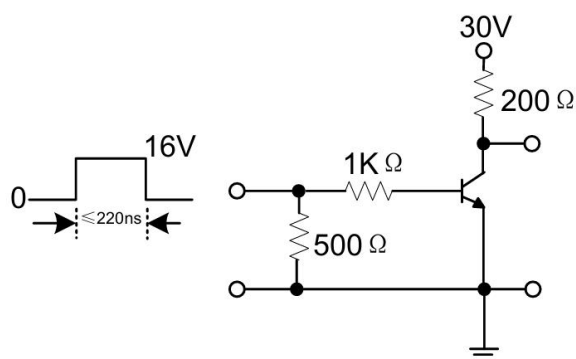


Figure1. Saturated Turn-On Switching Timer

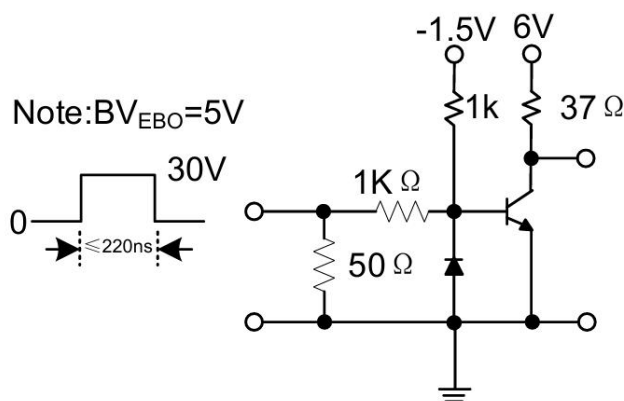
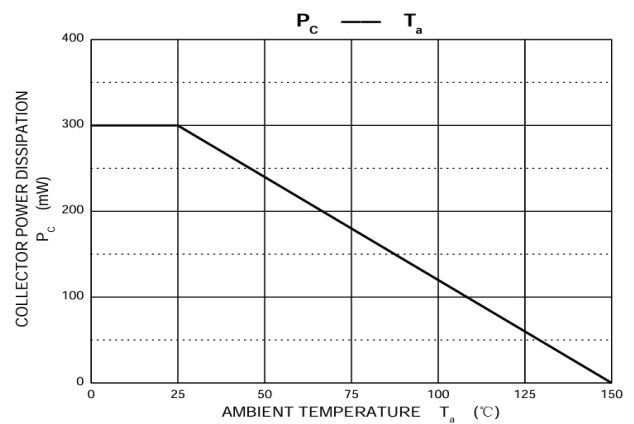
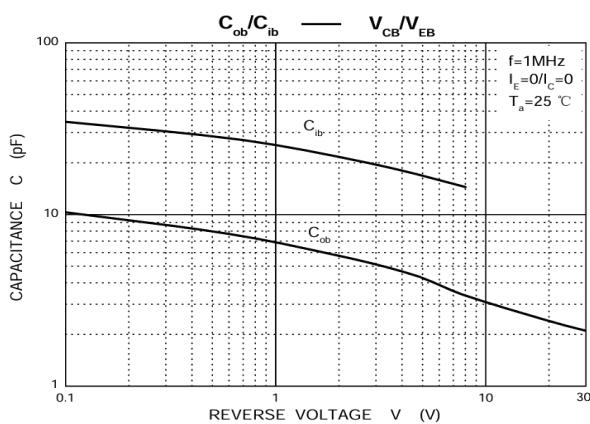
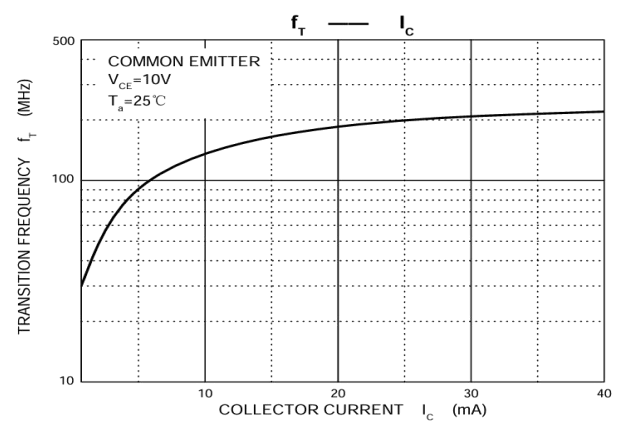
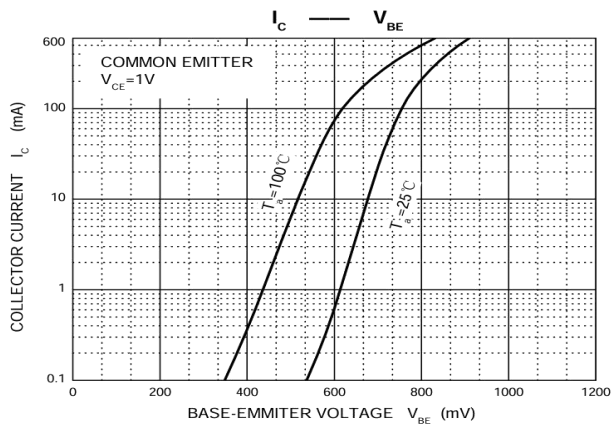
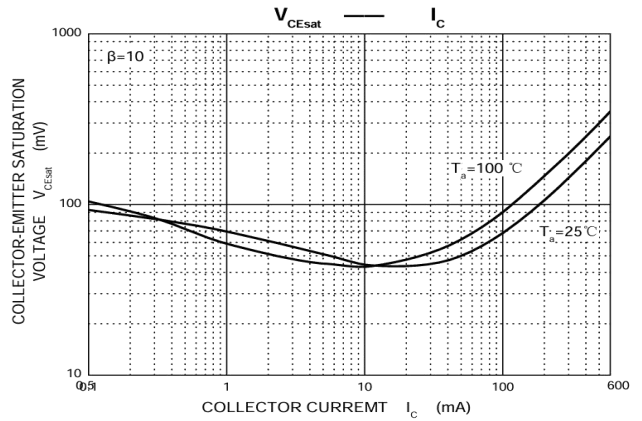
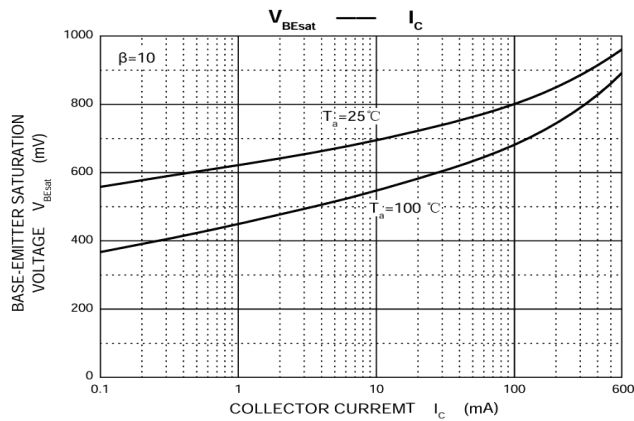
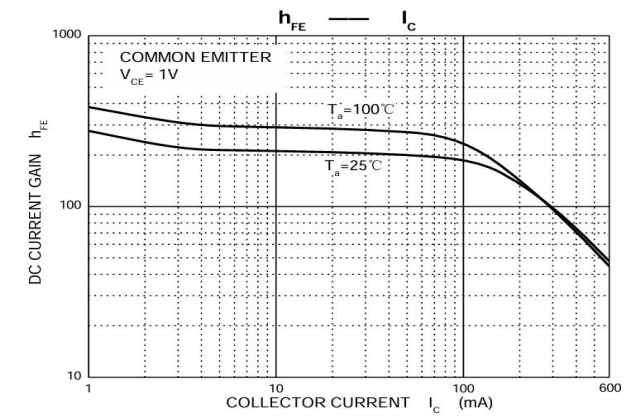
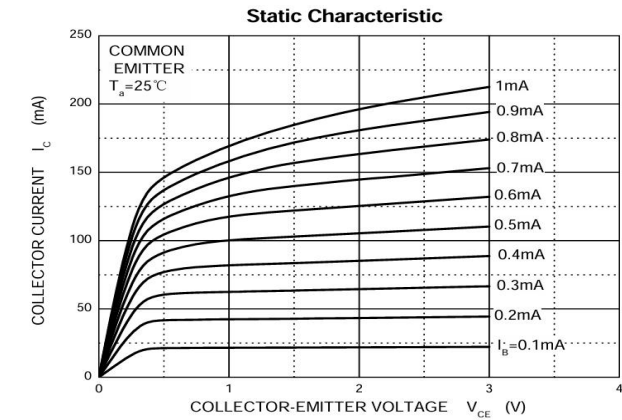


Figure2. Saturated Turn-Off Switching Timer

MMBT4401

NPN SILICON TRANSISTOR

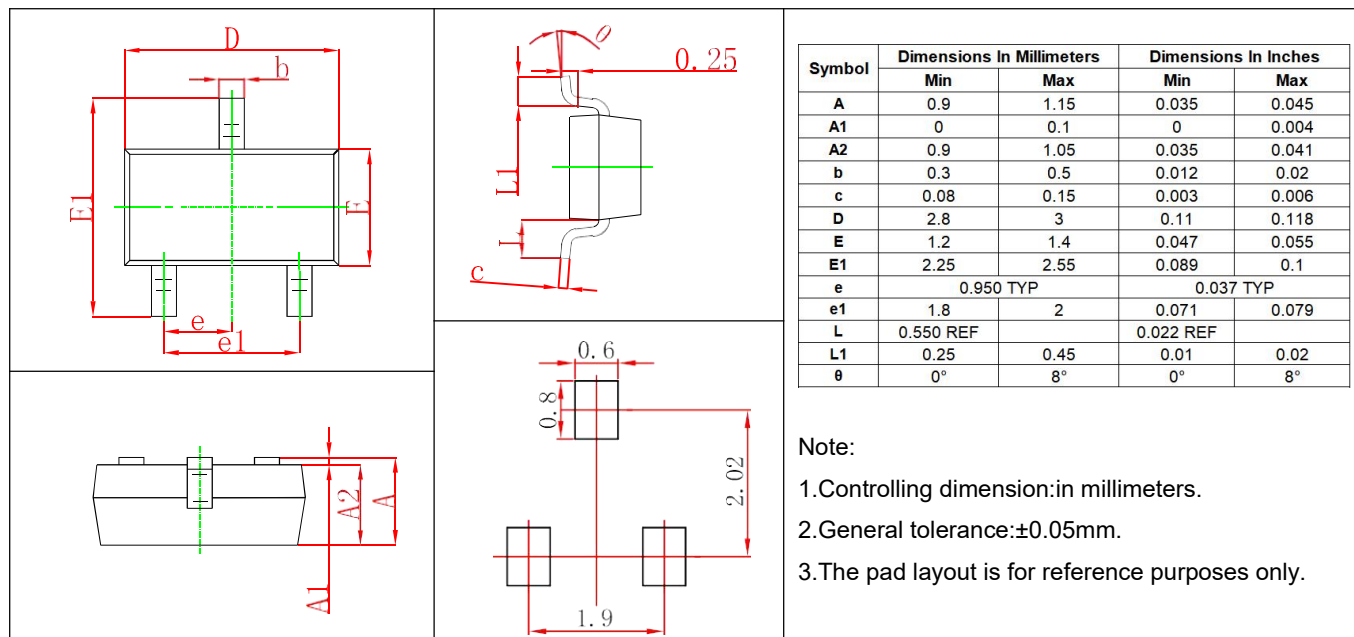
■ TYPICAL CHARACTERISTICS



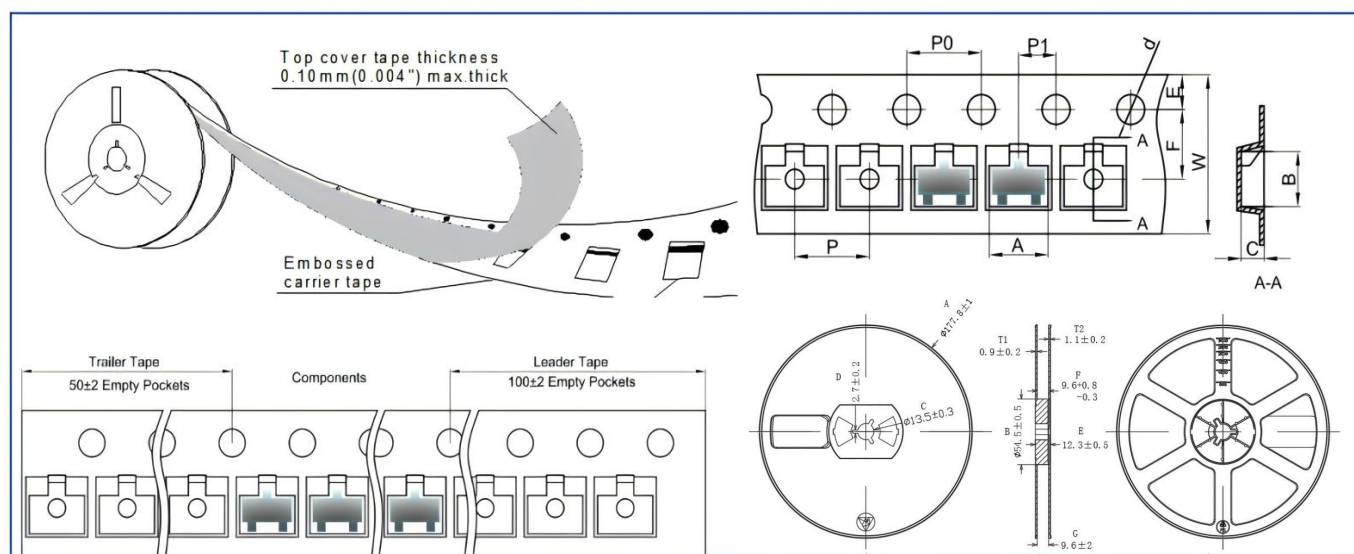
MMBT4401

NPN SILICON TRANSISTOR

SOT23 PACKAGE OUTLINE DIMENSIONS



REEL PACKING



Dimensions are in millimeter										
PKG TYPE	A	B	C	d	E	F	Po	P	P1	W
SOT-23	3.17	2.77	1.22	Φ1.55	1.75	3.50	4.00	4.00	2.00	8.00
Reel Option	A	B	C	D	E	F	G	T1	T2	Q.TY PER REEL
7" Dia	Φ177.8	Φ54.5	Φ13.5	2.7	12.3	9.6	9.6	0.9	1.1	3000PCS