

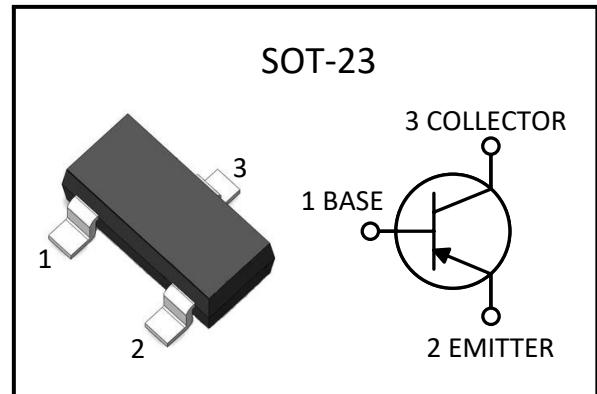
MMBT4403

PNP Plastic-Encapsulate Transistor

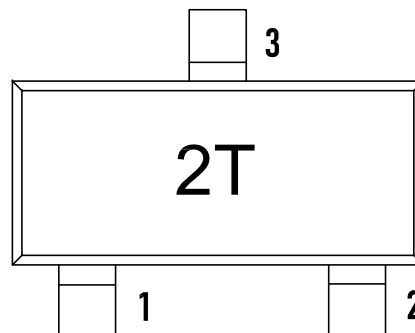
Features

- $V_{CE} = -40V$
- $I_C = -0.6A$
- $f_T = 200MHz$ @ $V_{CE} = -10V$, $I_C = -20mA$, $f = 100MHz$
- Collector currents up to 600 mA.
- General purpose amplifier and switch requiring.

Package



Marking



Ordering information

Order code	Package	Marking	Base qty	h_{FE}
MMBT4403	SOT-23	2T	3K	70~140

Absolute Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-0.6	A
P_C	Collector Power Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	400	$^\circ C/W$
T_J, T_{stg}	Operation Junction And Storage Temperature Range	-55 to + 150	$^\circ C$



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Electrical Characteristics ($T_A=+25^{\circ}\text{C}$, unless otherwise specified)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit	
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=-100\mu\text{A}, I_E=0$	-40	-	-	V	
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=-1\text{mA}, I_B=0$	-40	-	-		
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=-100\mu\text{A}, I_C=0$	-5	-	-		
I_{CBO}	Collector cut-off current	$V_{CB}=-35\text{V}, I_E=0$	-	-	-0.1	uA	
I_{CEX}	Collector cut-off current	$V_{CE}=-35\text{V}, V_{BE}=-0.4\text{V}$	-	-	-0.1		
I_{EBO}	Emitter cut-off current	$V_{EB}=-4\text{V}, I_C=0$	-	-	-0.1		
$h_{FE(1)}$	DC current gain	$V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$	30	-	-		
$h_{FE(2)}$		$V_{CE}=-1\text{V}, I_C=-1\text{mA}$	60	-	-		
$h_{FE(3)}$		$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	100	-	-		
$h_{FE(4)}$		$V_{CE}=-2\text{V}, I_C=-150\text{mA}$	100	-	300		
$h_{FE(5)}$		$V_{CE}=-2\text{V}, I_C=-500\text{mA}$	20	-	-		
$V_{CE(sat(1))}$	Collector-emitter saturation voltage	$I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-	-0.4	V	
$V_{BE(sat(1))}$	Base-emitter saturation voltage	$I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-	-0.95		
$V_{CE(sat(2))}$	Collector-emitter saturation voltage	$I_C=-500\text{mA}, I_B=-50\text{mA}$	-	-	-0.75	V	
$V_{BE(sat(2))}$	Base-emitter saturation voltage	$I_C=-500\text{mA}, I_B=-50\text{mA}$	-	-	-1.3		
f_T	Transition frequency	$V_{CE}=-10\text{V}, I_C=-20\text{mA},$ $f=100\text{MHz}$	200	-	-	MHZ	
t_d	Delay time	$V_{CC}=-30\text{V}, V_{BE(off)}=-0.5\text{V},$ $I_C=-150\text{mA}, I_{B1}=-15\text{mA}$	-	-	15	nS	
t_r	Rise time		-	-	20		
t_s	Storage time		$V_{CC}=-30\text{V},$	-	-		225
t_f	Fall time		$I_C=-150\text{mA}, I_{B1}=I_{B2}=-15\text{mA}$	-	-		60



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Typical Performance Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Figure 1 : Static Characteristic

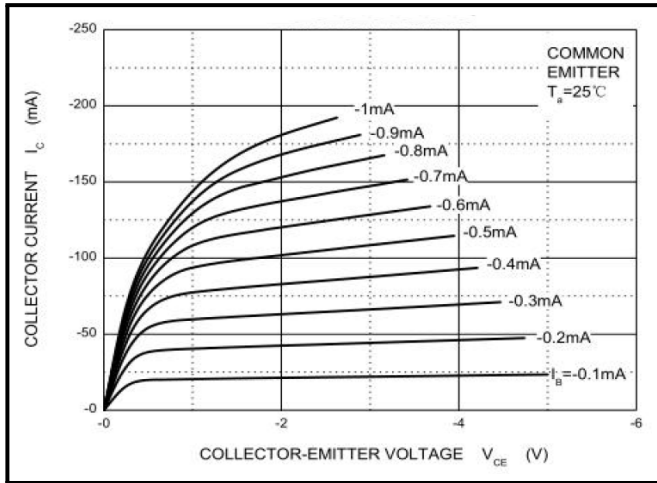


Figure 2 : $h_{FE}-I_C$

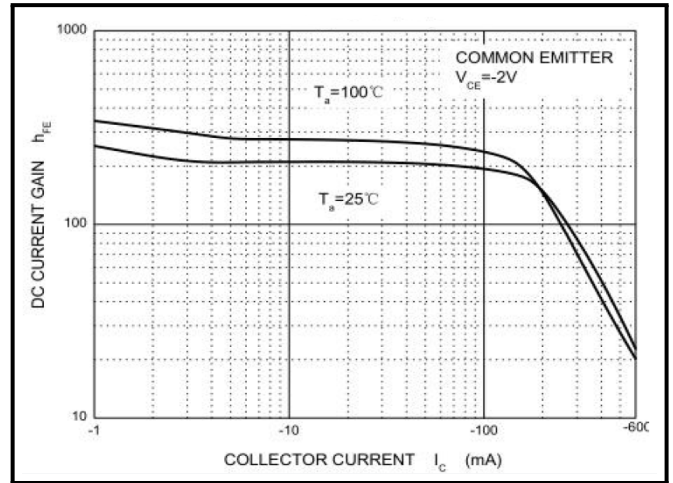


Figure 3 : $V_{CEsat}-I_C$

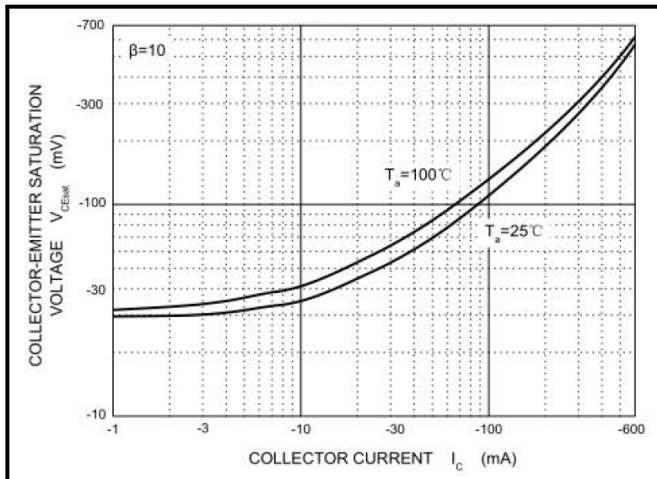
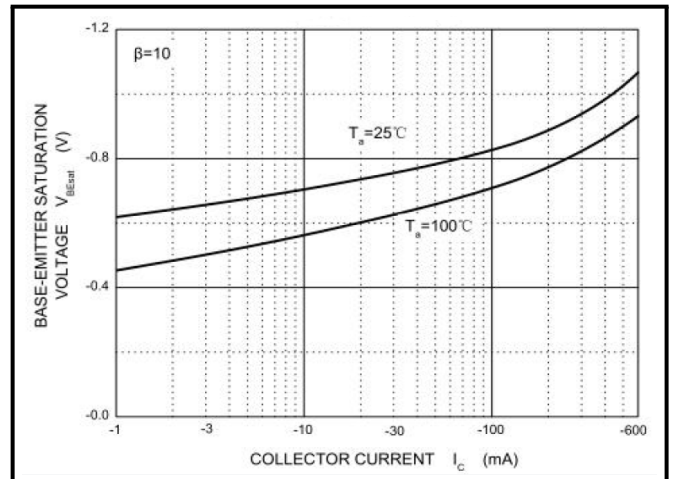


Figure 4 : $V_{BEsat}-I_C$



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Figure 5 : $I_C - V_{BE}$

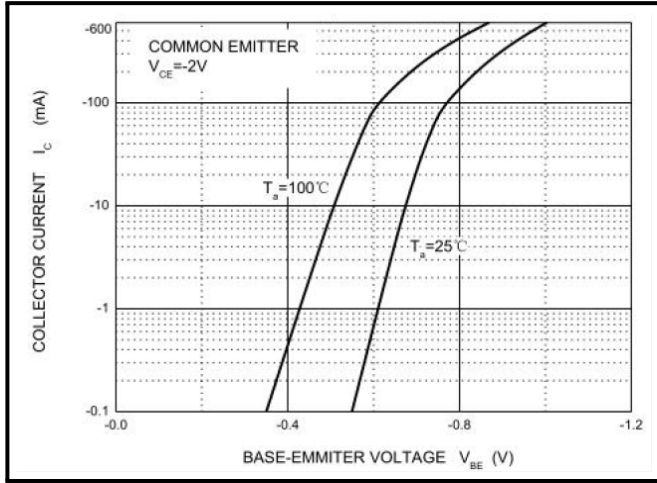


Figure 6 : $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

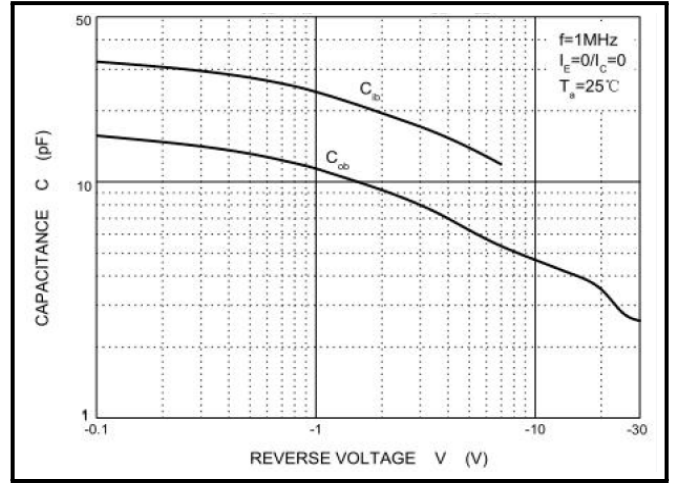


Figure 7 : $f_T - I_C$

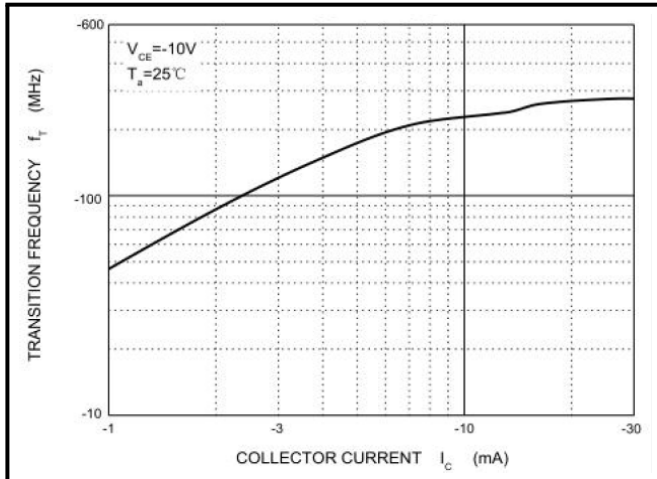
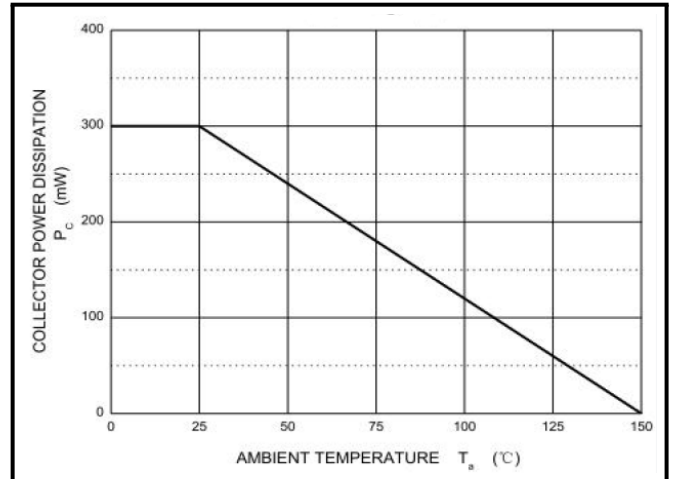


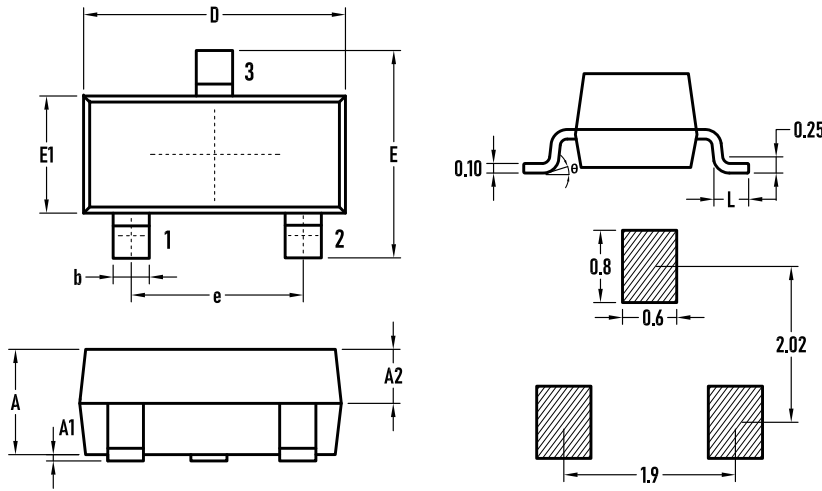
Figure 6 : $P_C - T_a$



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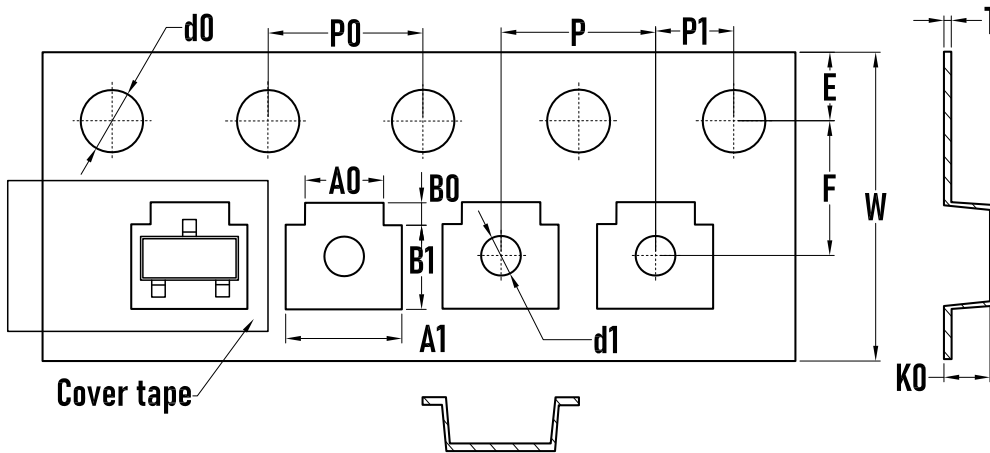
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Outline Drawing - SOT-23



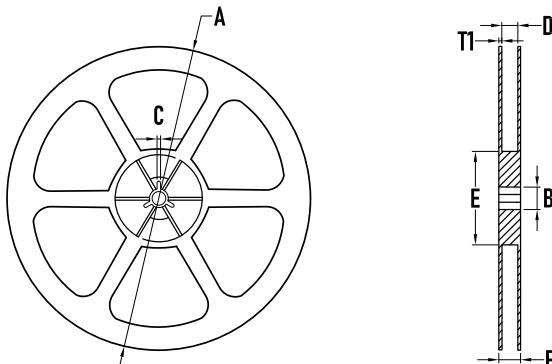
SYMBOL	MILLIMETER		
	MIN.	Typ	MAX
A	0.95	1.00	—
A1	0.02	0.06	0.10
A2	—	0.60	—
D	2.85	2.90	2.95
b	0.37	0.40	0.43
E	2.35	2.40	2.45
E1	1.25	1.30	1.35
e	1.85	1.90	1.95
L	0.35	0.40	0.48
θ	0	—	6°

Packaging Tape - SOT-23



SYMBOL	MILLIMETER
A0	2.10±0.10
A1	3.10±0.10
B0	0.65±0.10
B1	2.75±0.10
d0	1.55±0.10
d1	1.00±0.05
E	1.75±0.10
F	3.50±0.10
K0	1.10±0.10
P	4.00±0.10
P0	4.00±0.10
P1	2.00±0.10
W	8.00±0.30
T	0.20 ±0.05

Packaging Reel



SYMBOL	MILLIMETER
A	177.8±0.2
B	3.1
C	13.50
D	9.6±0.3
E	75±0.2
F	12.3±0.3
T1	1.0±0.2
Quantity	3000PCS

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Revision: 2022-Jan-1-A



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