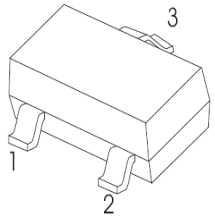
SOT-23 Plastic-Encapsulate Transistor

MMBTA42 TRANSISTOR (NPN)

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

FEATURES

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary to MMBTA92 (PNP)

Marking: 1D

PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOT-23	7'	330	3000	203×203×195	45000	438×438×220	180000

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	300	V
V_{CEO}	Collector-Emitter Voltage	300	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current –Continuous	0.3	A
P_{C*}	Collector Power Dissipation	350	mW
$R_{\theta JA}$	Thermal Resistance, junction to Ambient	357	℃/mW
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55-150	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100μA, I_E=0	300		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 1mA, I_B=0	300		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 100μA, I_C=0	5		V
Collector cut-off current	I_{CBO}	V_{CB}=200V, I_E=0		0.25	μA
Emitter cut-off current	I_{EBO}	V_{EB}= 5V, I_C=0		0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}= 10V, I_C= 1mA	60		
	$h_{FE(2)}$	V_{CE}= 10V, I_C=10mA	100	200	
	$h_{FE(3)}$	V_{CE}=10V, I_C=30mA	60		
Collector-emitter saturation voltage	V_{CE}(sat)	I_C=20mA, I_B= 2mA		0.2	V
Base-emitter saturation voltage	V_{BE}(sat)	I_C= 20mA, I_B=2mA		0.9	V
Transition frequency	f_T	V_{CE}= 20V, I_C= 10mA, f=30MHz	50		MHz

Typical Characteristics

Fig.1 Static characteristics

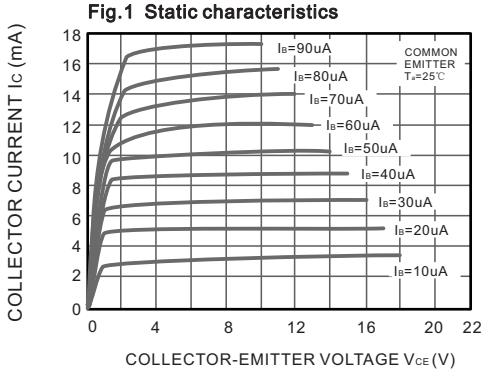


Fig.2 Pc—— Ta

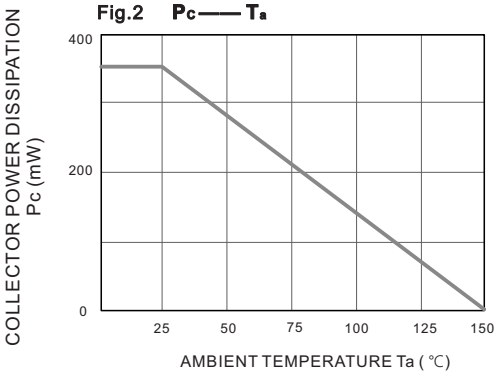


Fig.3 Cob / Cib—— VCB / VEB

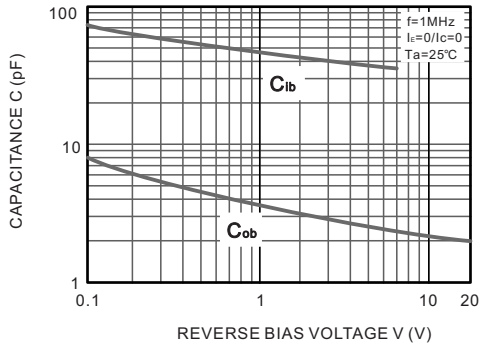


Fig.4 VCEsat—— Ic

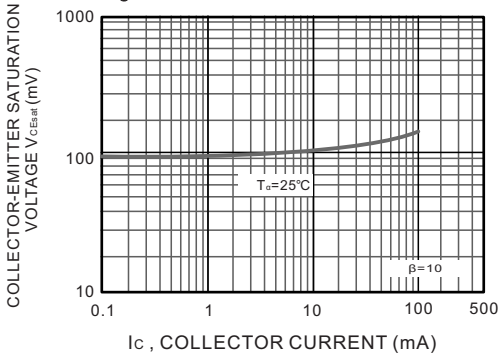


Fig.5 hFE--Ic

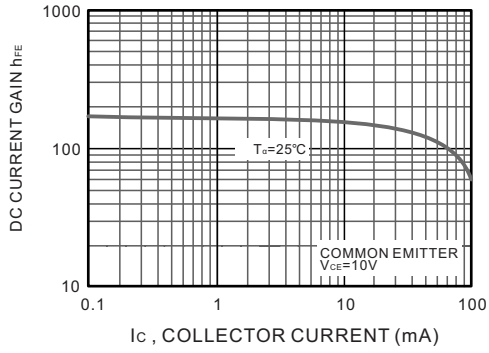


Fig.6 VBEsat—— Ic

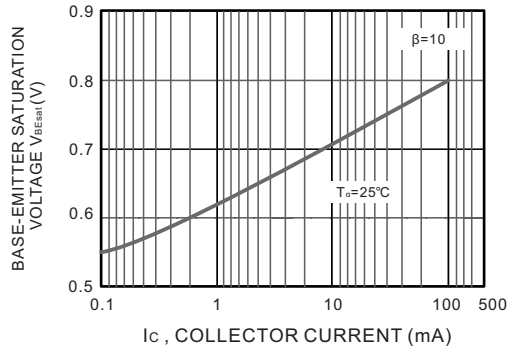


Fig.7 Ic—— VBE

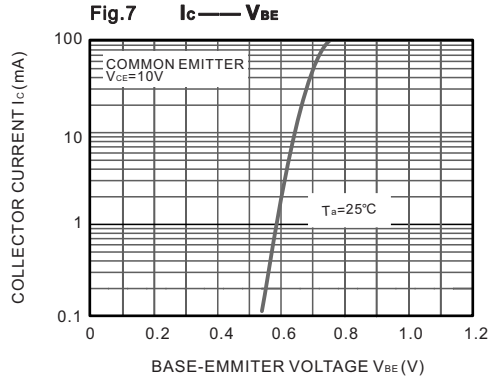
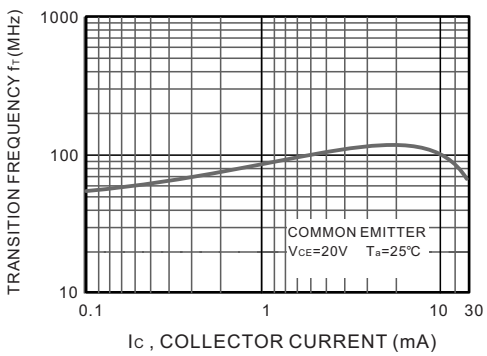


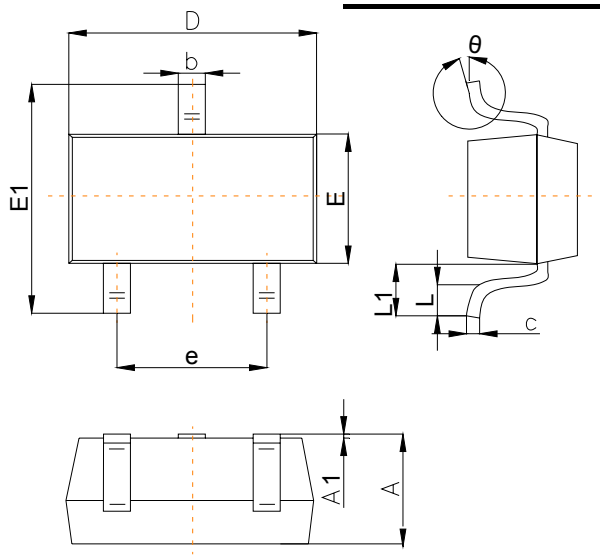
Fig.8 fT——Ic



The curve above is for reference only.

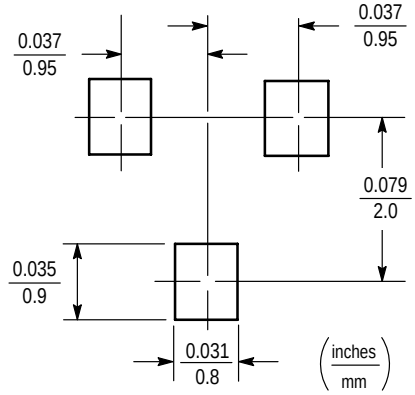
Outlitne Drawing

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	1.00		1.40
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.20		1.60
E1	2.4		2.80
e		1.90	
L	0.10		0.30
L1	0.4		
θ	0°		10°

Suggested Pad Layout



Note:
1.Controlling dimension:in/millimeters.
2.General tolerance: ±0.05mm.
3.The pad layout is for reference purposes only.