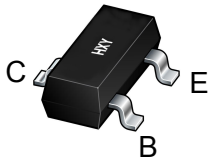
MMBTA42

NPN Plastic-Encapsulate Transistors

FEATURES

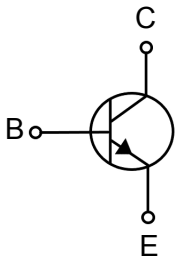
- High breakdown voltage
- Low collector-emitter saturation voltage



SOT-23

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MMBTA42	SOT-23	1D	3000



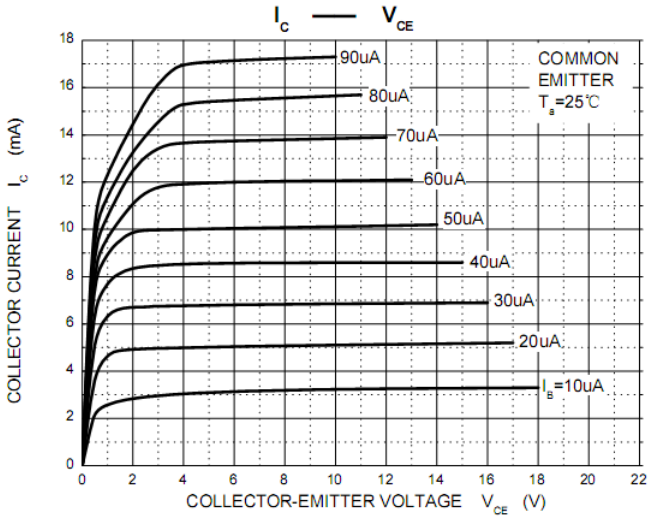
MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

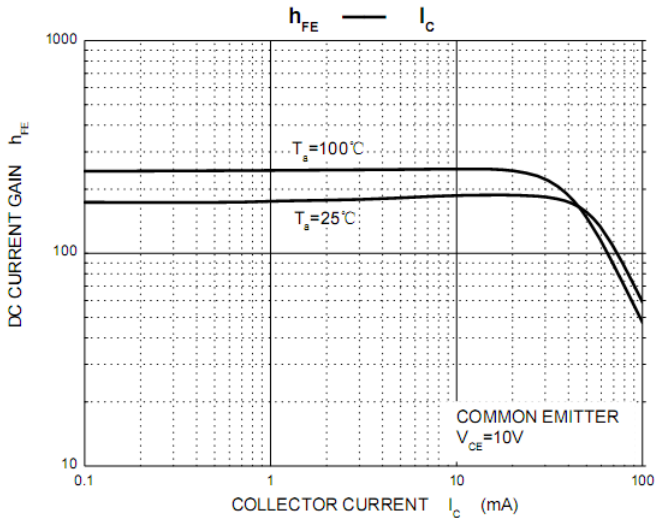
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	300	V
Collector-Emitter Voltage	V_{CEO}	300	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	300	mA
Collector Power Dissipation	P_C	350	mW
Thermal Resistance From Junction To Ambient	$R_{\Theta JA}$	357	℃/W
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55～+150	℃

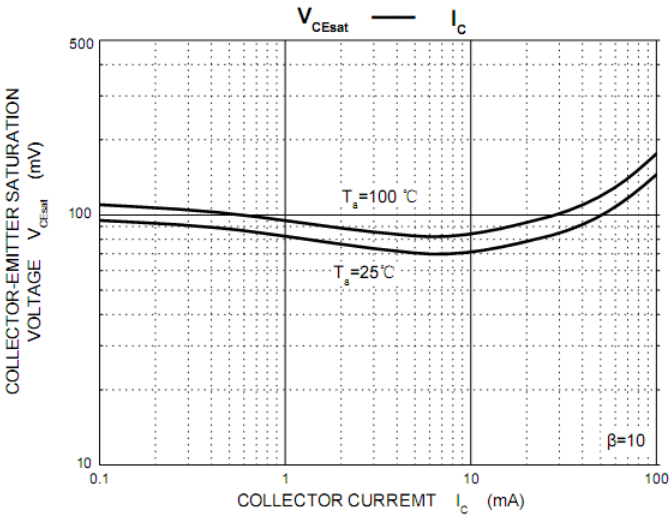
ELECTRICAL CHARACTERISTICS (T_a=25℃unless otherwise specified)

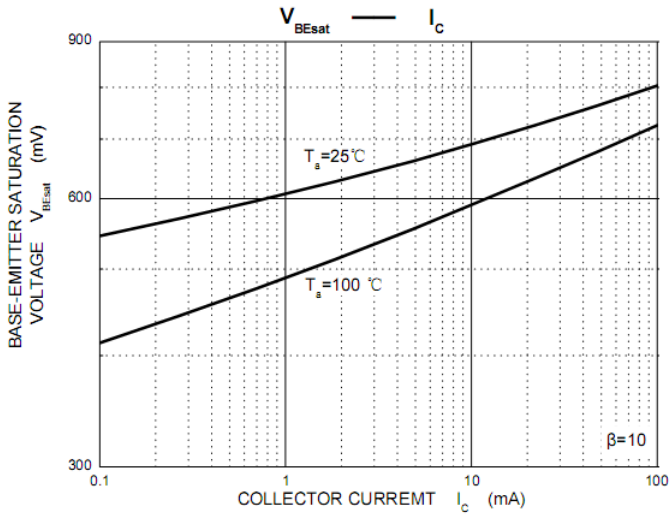
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100μA,I_E=0	300		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 1mA, I_B=0	300		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 100μA, I_C=0	5		V
Collector cut-off current	I_{CBO}	V_{CB}=200V, 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

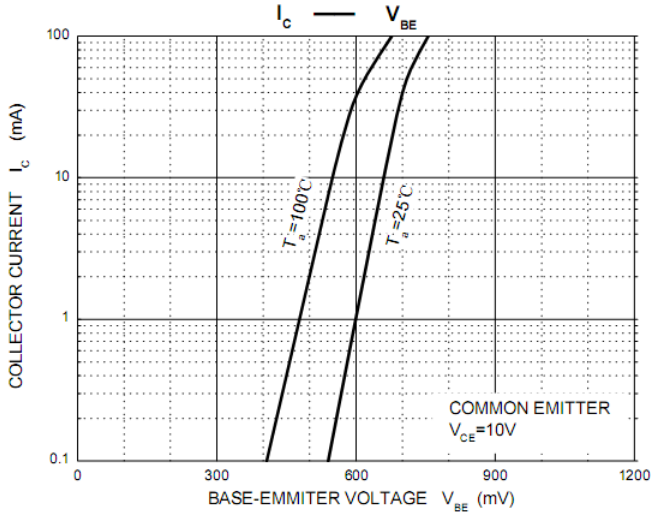
Typical Characteristics

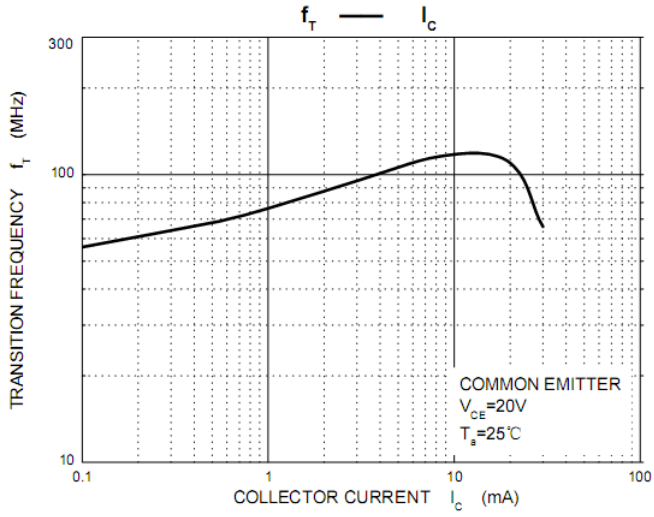


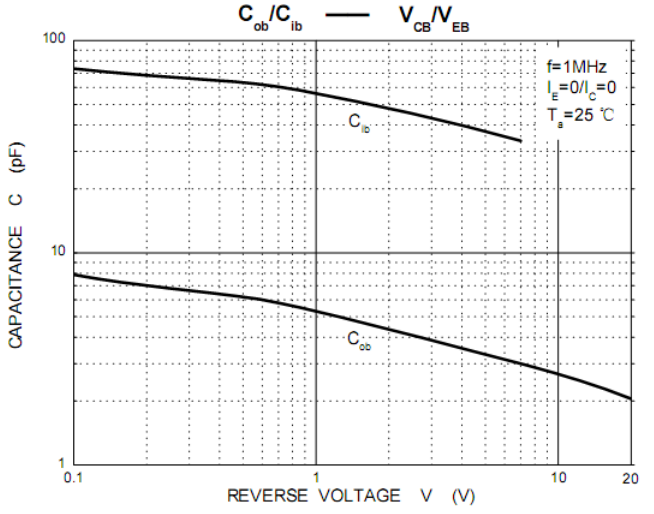


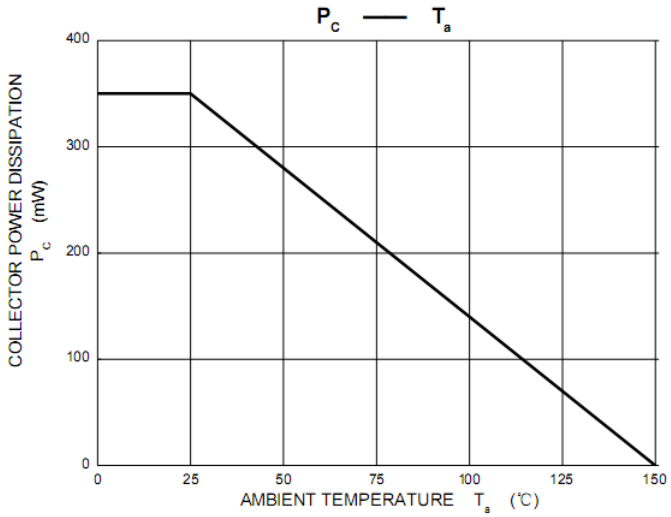

V_{CEsat} — I_C
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
500
100
10
0.1
1
10
100
T_a=100 ℃
T_a=25℃
β=10
COLLECTOR CURREMT I_C (mA)


V_{BEsat} — I_C
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
900
600
300
0.1
1
10
100
T_a=25℃
T_a=100 ℃
β=10
COLLECTOR CURREMT I_C (mA)

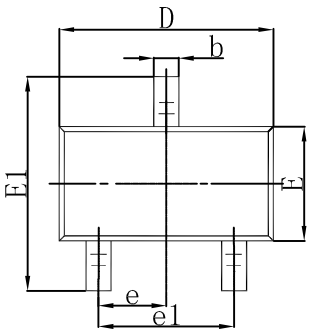

I_C — V_{BE}
COLLECTOR CURRENT I_C (mA)
100
10
1
0.1
0
300
600
900
1200
T_a=100℃
T_a=25℃
COMMON EMITTER
V_{CE}=10V
BASE-EMMITER VOLTAGE V_{BE} (mV)

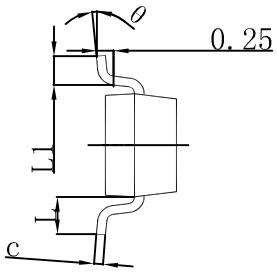

f_T — I_C
TRANSITION FREQUENCY f_T (MHz)
300
100
10
0.1
1
10
100
COMMON EMITTER
V_{CE}=20V
T_a=25℃
COLLECTOR CURRENT I_C (mA)

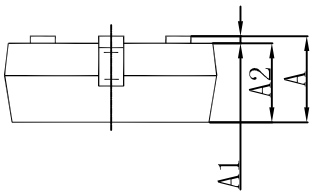

C_{ob}/C_{ib} — V_{CB}/V_{EB}
CAPACITANCE C (pF)
100
10
1
0.1
1
10
20
f=1MHz
I_E=0/I_C=0
T_a=25 ℃
C_{ib}
C_{ob}
REVERSE VOLTAGE V (V)


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (mW)
400
300
200
100
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)

SOT-23 Package Outline Dimensions

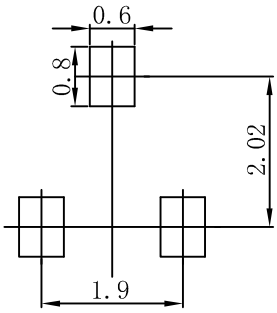






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



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

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