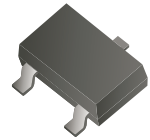


MMBTA42-G (NPN)

RoHS Device



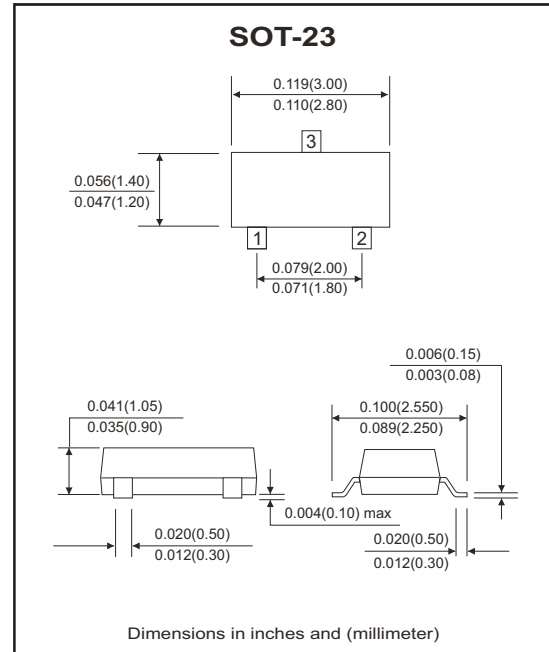
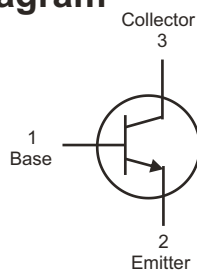
Features

- High breakdown voltage.
- Low collector-emitter saturation voltage.
- Ultra small surface mount package.

Mechanical data

- Case: SOT-23, molded plastic.

Circuit Diagram



Maximum Ratings (at TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base voltage	V _{CB0}	300	V
Collector-Emitter voltage	V _{CEO}	300	V
Emitter-Base voltage	V _{EBO}	5	V
Collector current-continuous	I _C	300	mA
Collector current-peak	I _{CM}	500	mA
Collector power dissipation	P _C	350	mW
Thermal resistance, junction to ambient	R _{θJA}	357	°C/W
Junction temperature	T _J	150	°C
Storage temperature	T _{STG}	-55 to +150	°C

Electrical Characteristics (TA=25°C, unless otherwise specified)

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-base breakdown voltage	I _C =100μA, I _E =0	V _{(BR)CBO}	300		V
Collector-emitter breakdown voltage	I _C =1mA, I _B =0	V _{(BR)CEO}	300		V
Emitter-base breakdown voltage	I _E =100μA, I _C =0	V _{(BR)EBO}	5		V
Collector cut-off current	V _{CB} =200V, I _E =0	I _{CBO}		0.25	μA
Emitter cut-off current	V _{EB} =5V, I _C =0	I _{EBO}		0.1	μA
DC current gain	V _{CE} =10V, I _C =1mA	h _{FE(1)}	60		
	V _{CE} =10V, I _C =10mA	h _{FE(2)}	100	200	
	V _{CE} =10V, I _C =30mA	h _{FE(3)}	60		
Collector-emitter saturation voltage	I _C =20mA, I _B =2mA	V _{CE(sat)}		0.2	V
Base-emitter saturation voltage	I _C =20mA, I _B =2mA	V _{BE(sat)}		0.9	V
Transition frequency	V _{CE} =20V, I _C =10mA f=30MHz	f _T	50		MHz

Rating and Characteristic Curves (MMBTA42-G)

Fig.1 - I_C — V_{CE}

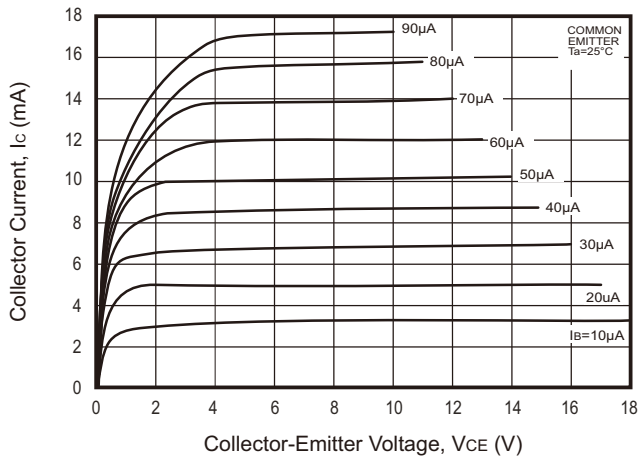


Fig.2 - h_{FE} — I_C

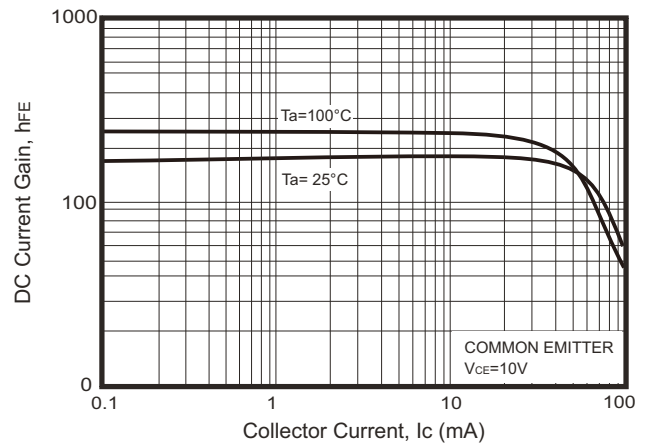


Fig.3 - V_{CEsat} — I_C

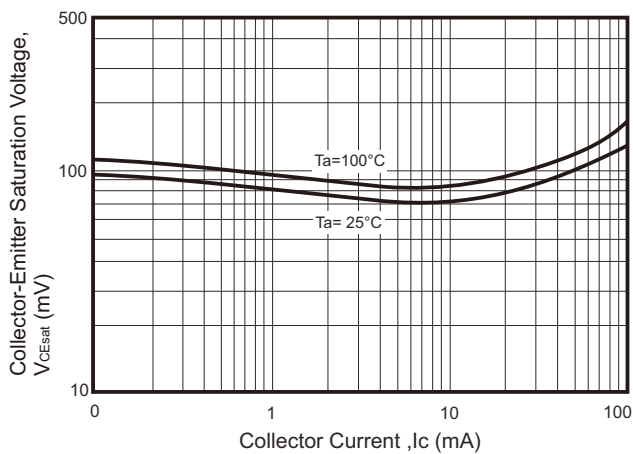


Fig.4 - V_{BEsat} — I_C

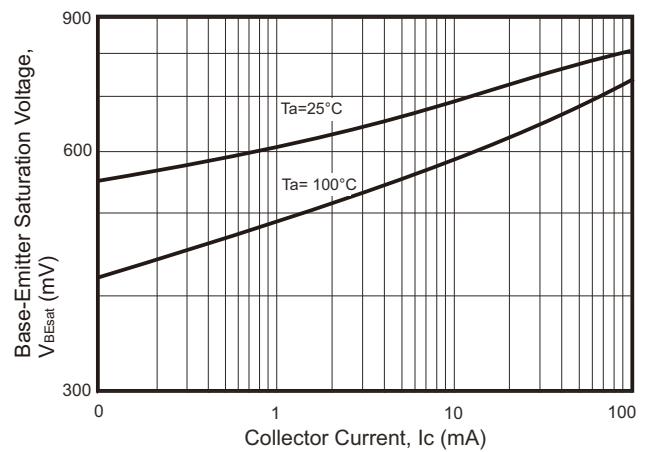


Fig.5 - I_C — V_{BE}

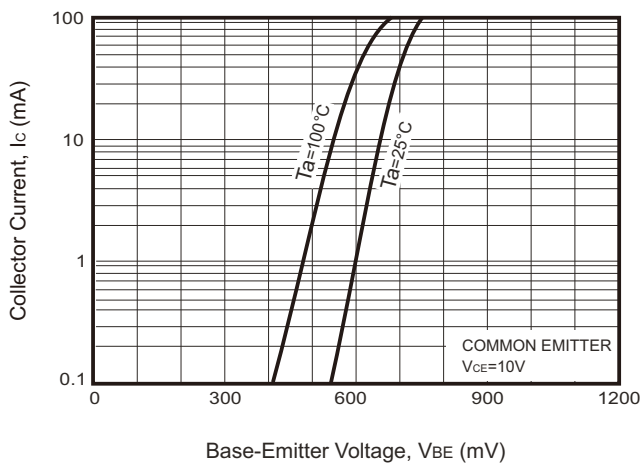
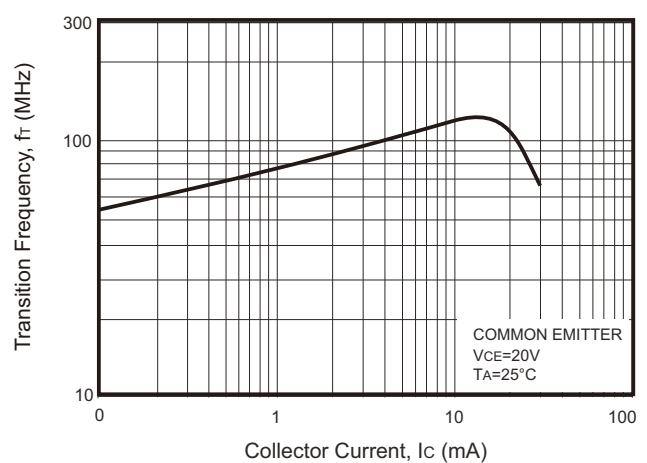


Fig.6 - f_T — I_C



Rating and Characteristic Curves (MMBTA42-G)

Fig.7- Cob/Cib – V_{CB}/V_{EB}

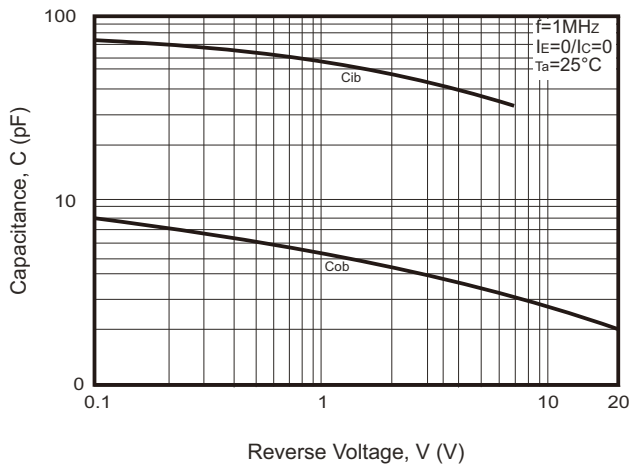
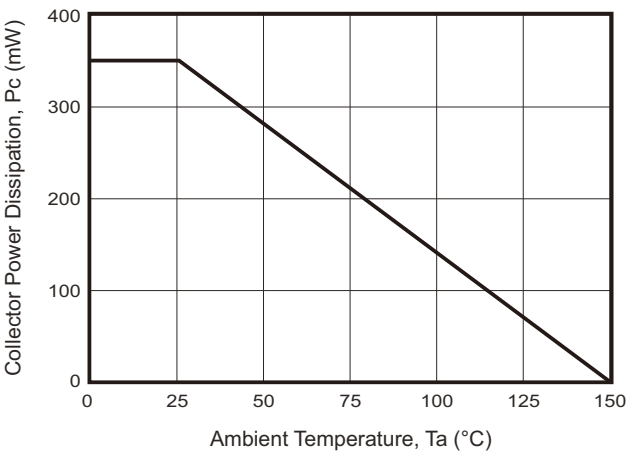
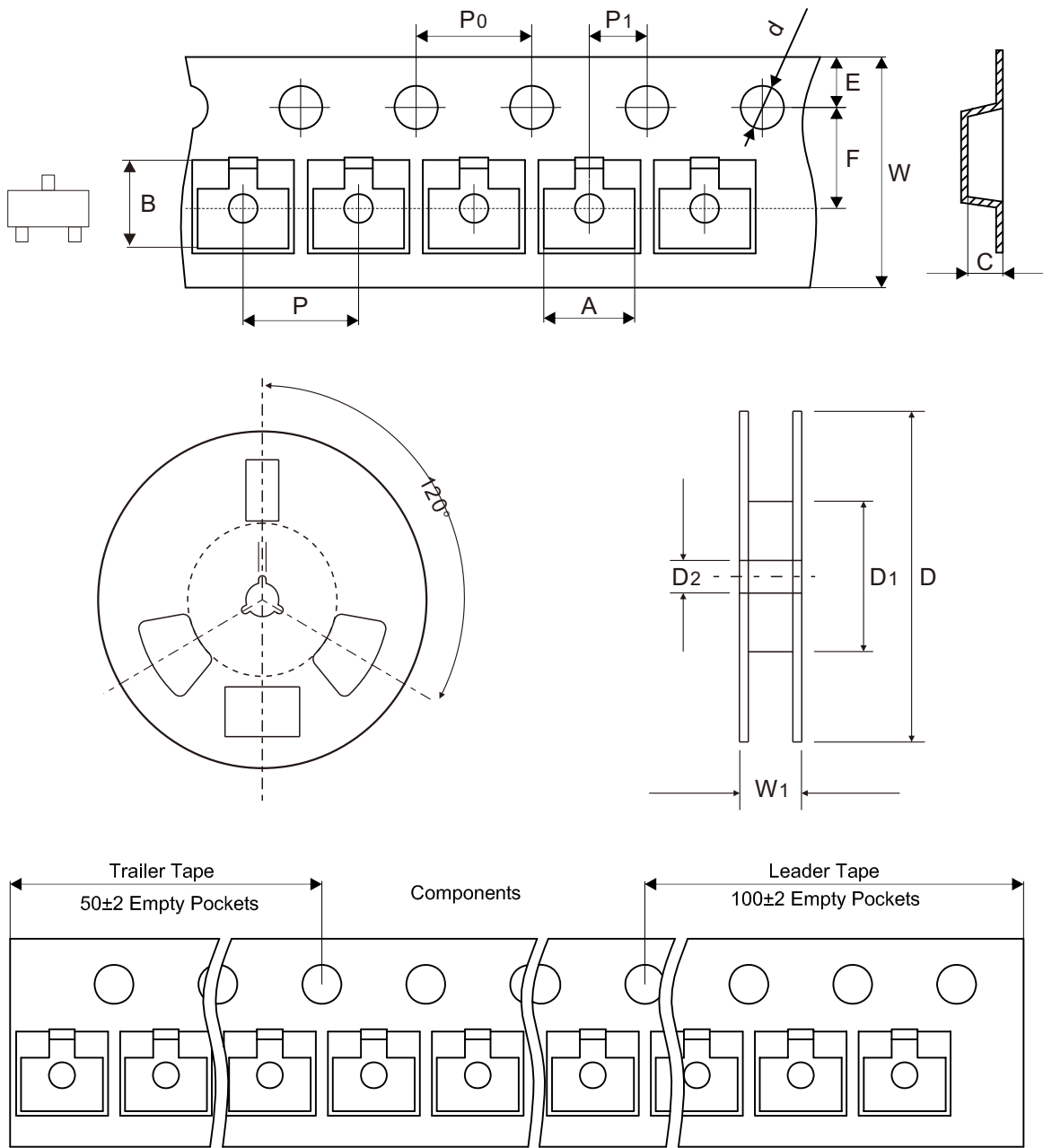


Fig.8 - $P_C - T_a$



Reel Taping Specification

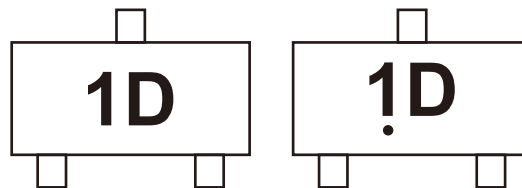


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 - 0.004	0.484 ± 0.039

Marking Code

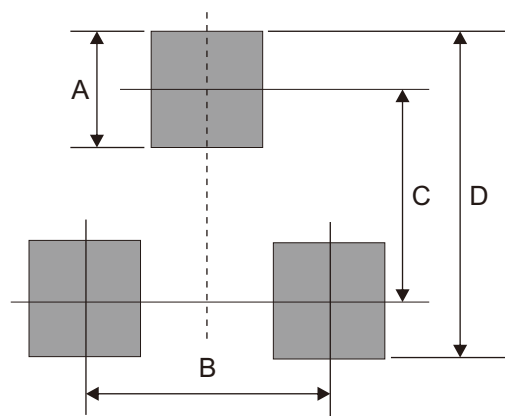
Part Number	Marking Code
MMBTA42-G	1D



Solid dot = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	1.90	0.075
C	2.02	0.080
D	2.82	0.111



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7