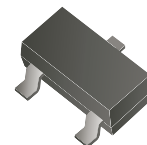


MMBTA13/14-HF (NPN)

RoHS Device

Halogen Free



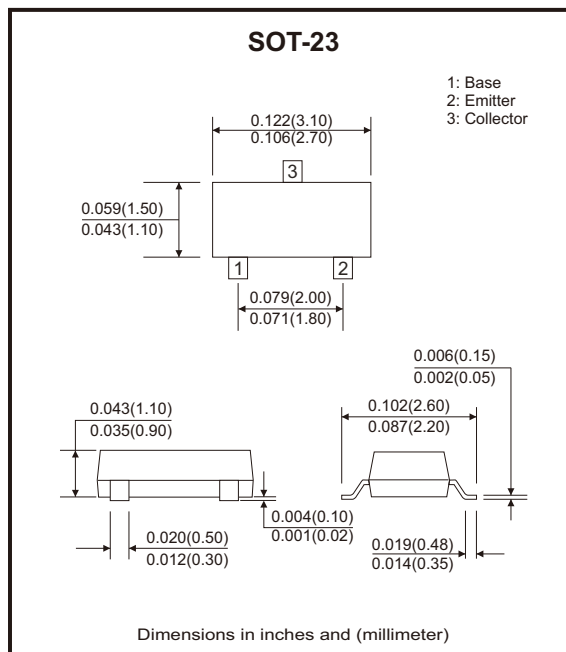
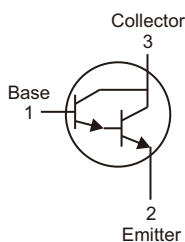
Features

- Epitaxial planar die construction.
- High current gain.

Mechanical data

- Case: SOT-23, molded plastic.
- Mounting position: Any.

Circuit Diagram



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

Parameter	Symbol	Value	Units
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	10	V
Collector current (DC)	I_C	0.3	A
Collector dissipation	P_C	0.3	W
Thermal resistance, junction to ambient	$R_{\theta JA}$	417	°C/W
Junction and storage temperature	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (at Ta=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Collector-base breakdown voltage	$I_C = 100\mu A, I_E = 0$	$V_{(BR)CBO}$	30			V
Collector-emitter breakdown voltage	$I_C = 0.1mA, I_B = 0$	$V_{(BR)CEO}$	30			V
Emitter-base breakdown voltage	$I_E = 100\mu A, I_C = 0$	$V_{(BR)EBO}$	10			V
Collector cut-off current	$I_E = 0, V_{CB} = 30V$	I_{CBO}			0.1	μA
Collector cut-off current	$I_E = 0, V_{CE} = 10V$	I_{CEO}			0.1	μA
DC current gain	MMBTA13-HF $V_{CE} = 5V, I_C = 10mA$	h_{FE}	5000			
	MMBTA14-HF $V_{CE} = 5V, I_C = 10mA$	h_{FE}	10000			
	MMBTA13-HF $V_{CE} = 5V, I_C = 100mA$	h_{FE}	10000			
	MMBTA14-HF $V_{CE} = 5V, I_C = 100mA$	h_{FE}	20000			
Collector-emitter saturation voltage	$I_C = 100mA, I_B = 0.1mA$	$V_{CE(sat)}$			1.5	V
Base-emitter on voltage	$I_C = 100mA, V_{CE} = 5V$	V_{BE}			2.0	V
Transition frequency	$I_C = 10mA, V_{CE} = 5V, f = 100MHz$	f_T	125			MHz

Rating and Characteristic Curves (MMBTA13/14-HF)

Fig.1 - Max Power Dissipation vs Ambient Temperature

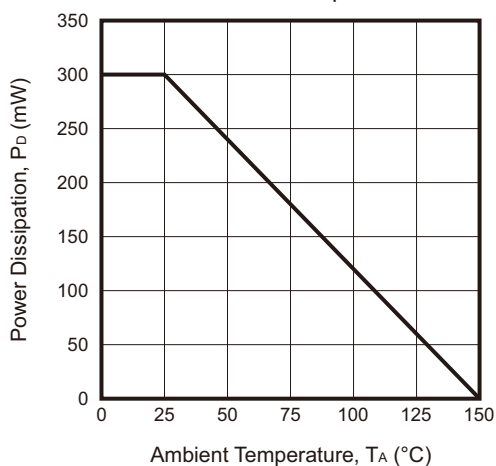
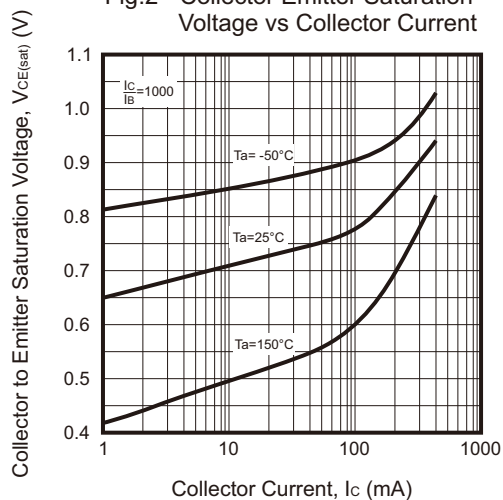
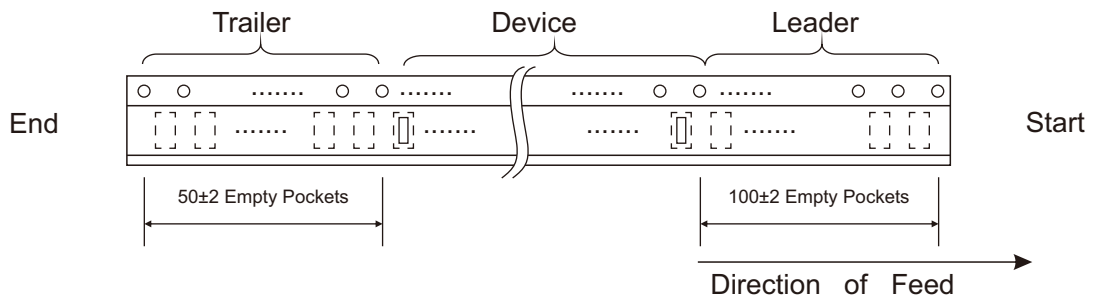
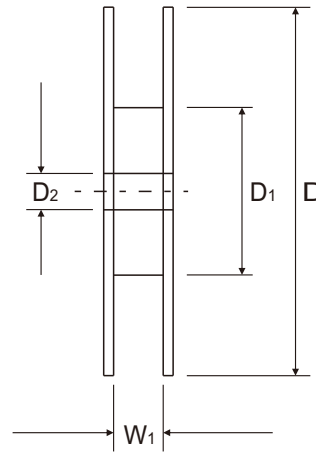
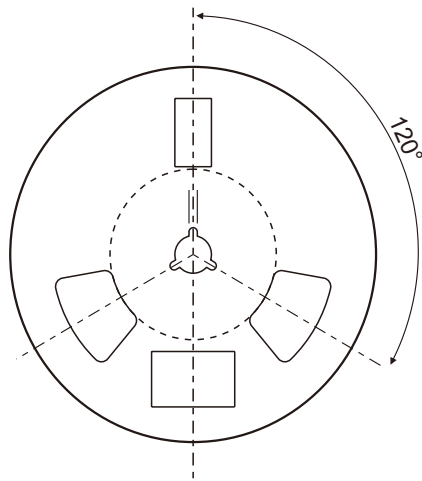
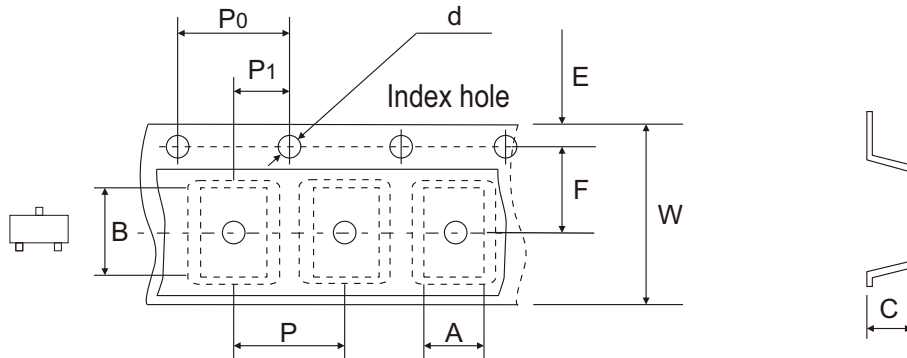


Fig.2 - Collector Emitter Saturation Voltage vs Collector Current



Reel Taping Specification

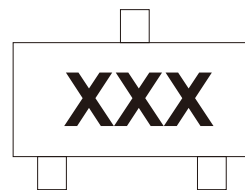


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 + 0.30 - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 + 0.012 - 0.004	0.374 ± 0.039

Marking Code

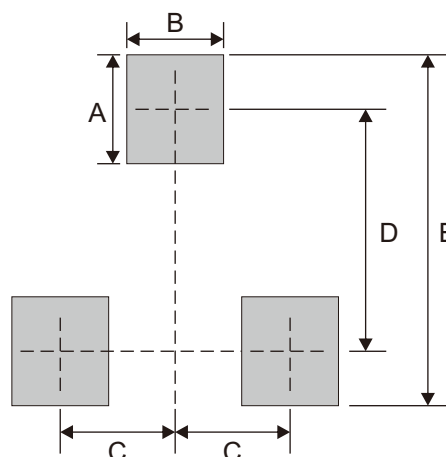
Part Number	Marking Code
MMBTA13-HF	K2D
MMBTA14-HF	K3D



xxx = Product type marking code

Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114



Standard Packaging

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