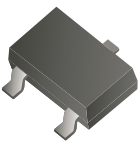


MMBT5401-HF (PNP)

RoHS Device
Halogen Free



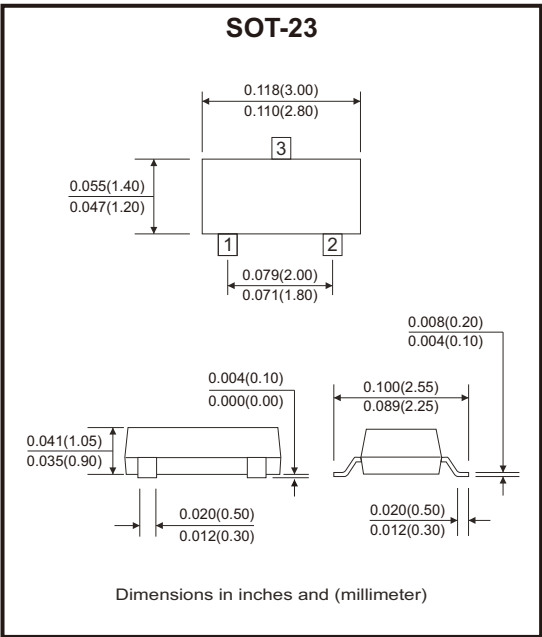
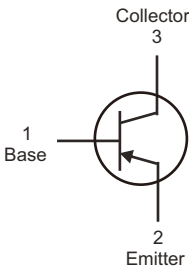
Features

- Epoxy meets UL-94 V-0 flammability rating.
- Moisture sensitivity Level 1.

Mechanical data

- Case: SOT-23, molded plastic.
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102.

Circuit Diagram



Maximum Ratings (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Collector-base voltage	$I_C = -100\mu\text{A}$, $I_E = 0$	V_{CB0}	-180	V
Collector-emitter voltage	$I_C = -1\text{mA}$, $I_B = 0$	V_{CE0}	-160	V
Emitter-base voltage	$I_E = -10\mu\text{A}$, $I_C = 0$	V_{EB0}	-6	V
Collector current		I_C	-600	mA
Collector power dissipation		P_C	300	mW
Operation junction temperature		T_J	150	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	-55 to +150	$^{\circ}\text{C}$
Thermal resistance from junction to ambient		$R_{\theta JA}$	417	$^{\circ}\text{C/W}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-base voltage	V _{CBO}	I _C = -100μAdc, I _E = 0	-180			V
Collector-emitter voltage	V _{CEO}	I _C = -1mAdc, I _B = 0	-160			V
Emitter-base voltage	V _{EBO}	I _E = -10μAdc, I _C = 0	-6			V
Collector-base cut-off current	I _{CBO}	V _{CB} = -120Vdc			-50	nA
Emitter-emitter cut-off current	I _{EBO}	V _{EB} = -4Vdc			-50	nA
DC current gain	h _{FE(1)}	V _{CE} = -5Vdc, I _C = -1mA	80			
	h _{FE(2)}	V _{CE} = -5Vdc, I _C = -10mA	100		300	
	h _{FE(3)}	V _{CE} = -5Vdc, I _C = -50mA	50			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = -10mA, I _B = -1mA			-0.2	V
		I _C = -50mA, I _B = -5mA			-0.5	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C = -10mA, I _B = -1mA			-1.0	V
		I _C = -50mA, I _B = -5mA			-1.0	V
Transition frequency	f _r	V _{CE} = -5Vdc, I _C = -10mAdc, f = 30MHz	100		300	MHz

Rating and Characteristic Curves (MMBT5401-HF)

Fig.1 - Static Characteristic

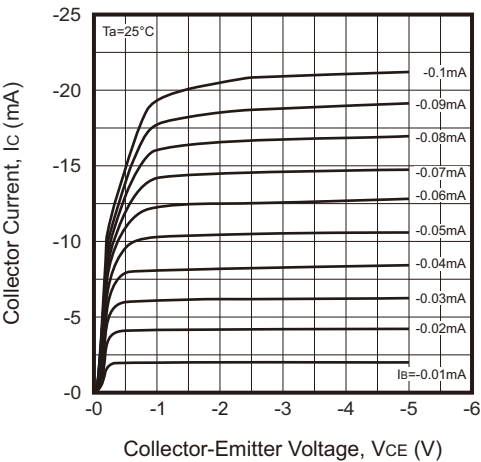
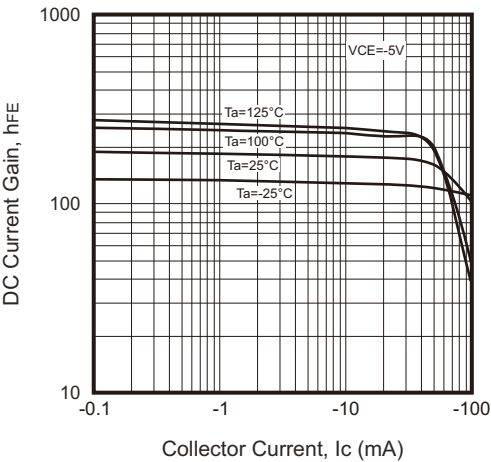


Fig.2 - DC Current Gain



Rating and Characteristic Curves (MMBT5401-HF)

Fig.3 - Collector-Emitter Saturation Voltage

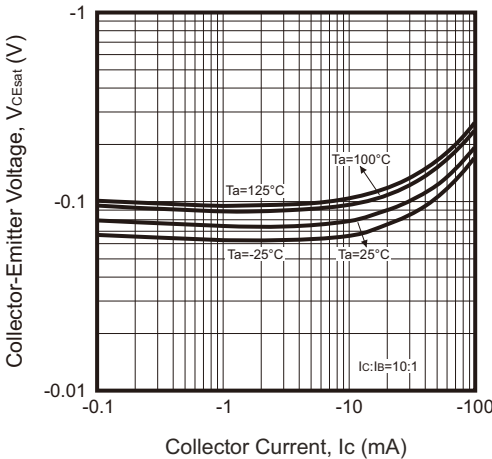


Fig.4 - Base-Emitter Saturation Voltage

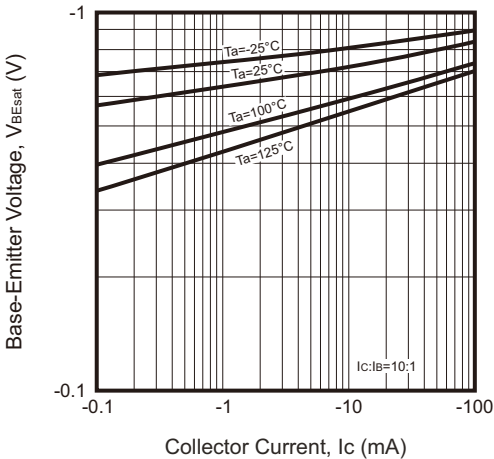


Fig.5 - Base-Emitter on Voltage

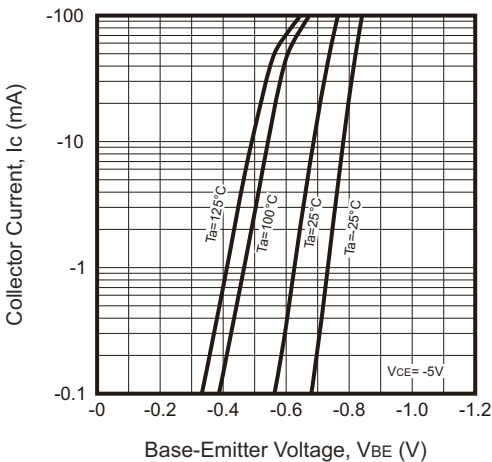


Fig.6 - $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

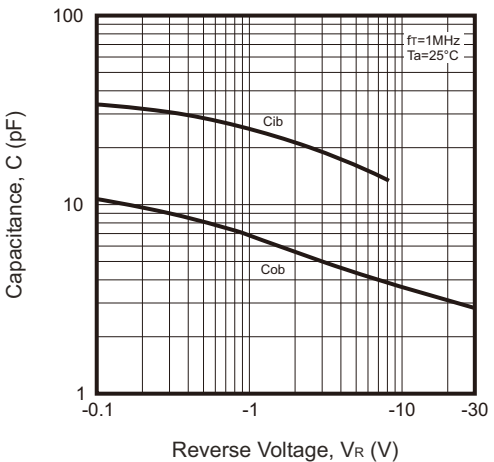
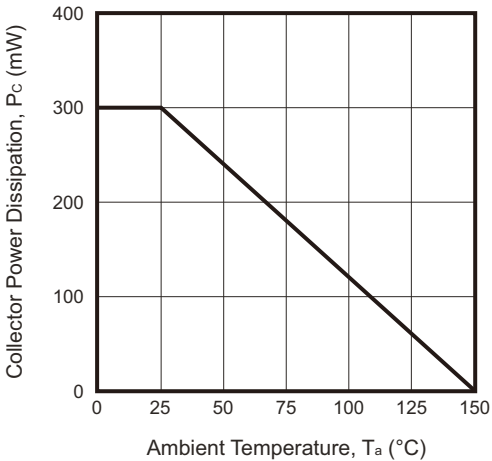
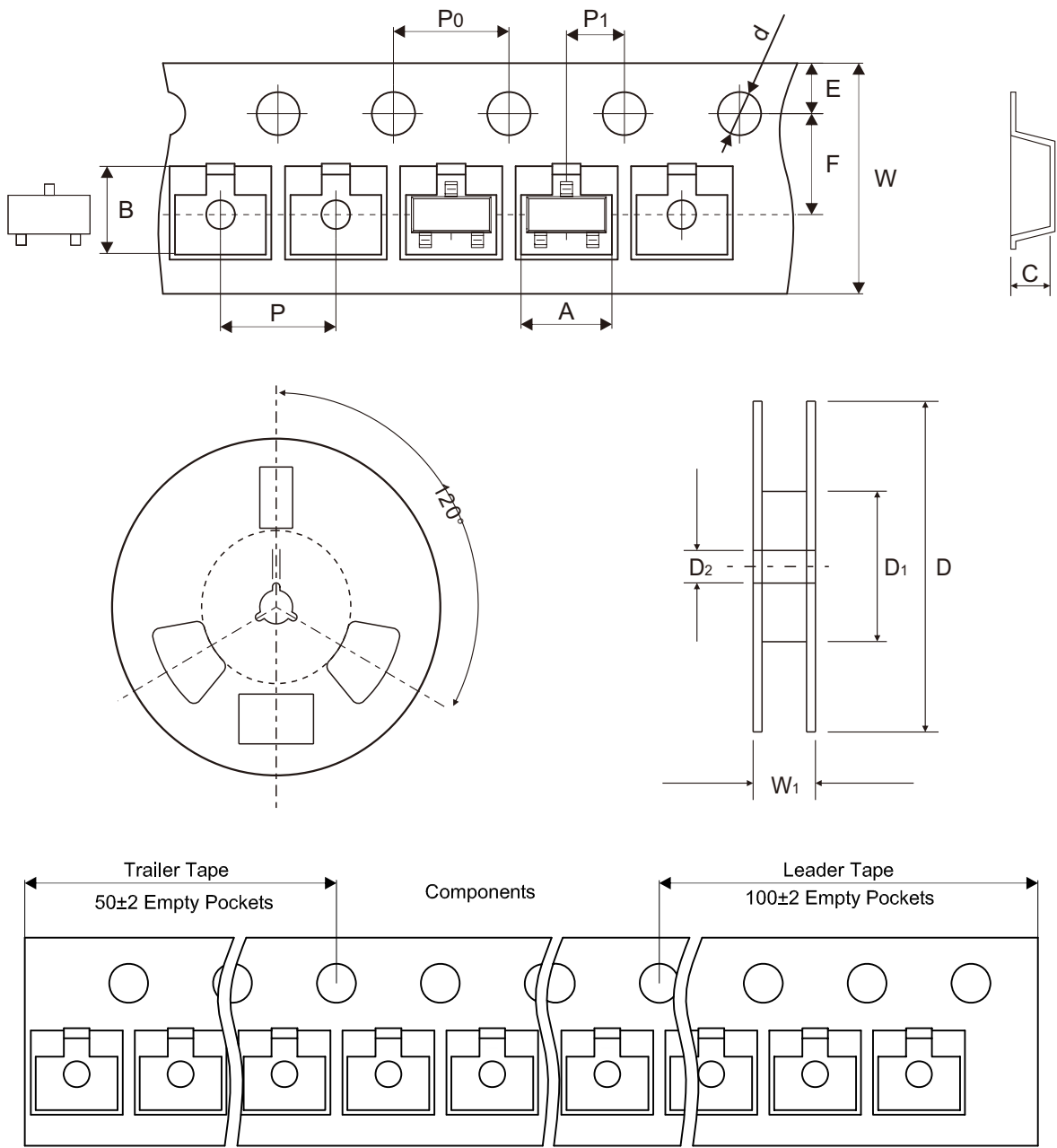


Fig.7 - Collector Power Derating Curve



Reel Taping Specification

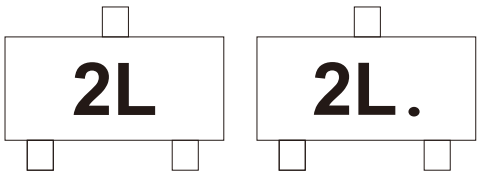


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 + 0.10 - 0.00	178.00 ± 1.00	54.60 ± 1.00	13.30 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.150 ± 0.039	0.524 ± 0.039

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	11.10 ± 0.20
	(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	0.437 ± 0.008

Marking Code

Part Number	Marking Code
MMBT5401-HF	2L

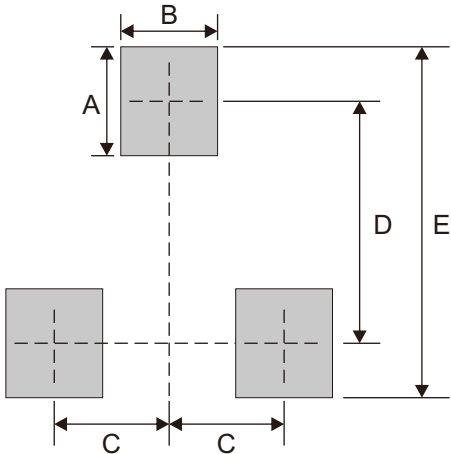


Solid dot = Control code

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

Note: 1. The pad layout is for reference purposes only.



Standard Packaging

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