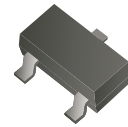


General Purpose Transistor

MMBT2907A-HF (PNP)

RoHS Device

Halogen Free

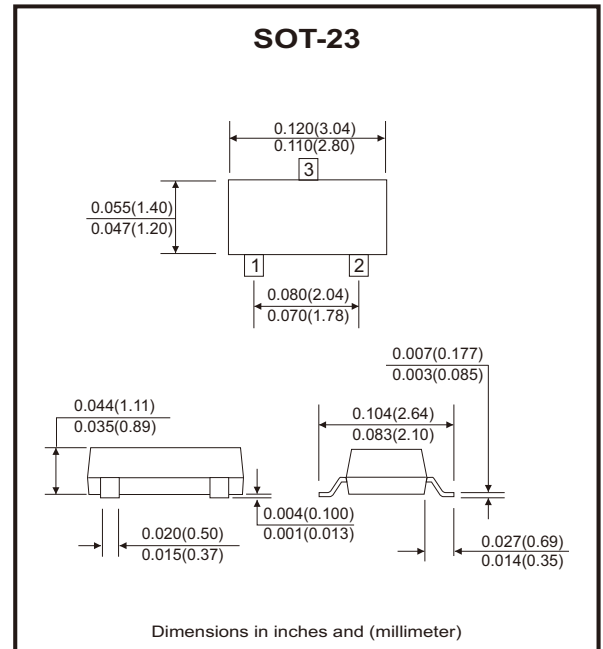


Features

- Epitaxial planar die construction
- Device is designed as a general purpose amplifier and switching.

Mechanical data

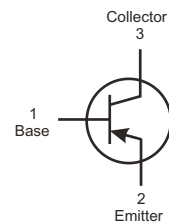
- Case: SOT-23, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.
- Weight: 0.0078 grams(approx.).



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

Parameter	Symbol	Value	Unit
Collector-Emitter voltage	V_{CEO}	-60	V
Collector-Base voltage	V_{CBO}	-60	V
Emitter-Base voltage	V_{EBO}	-5	V
Collector current-continuous	I_c	-600	mA

Circuit diagram



Thermal Characteristics (at $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Total device dissipation	FR-5 board (Note.1) @ $T_a=25^\circ\text{C}$ Derate above 25°C	P_D	225 1.8	mW mW / $^\circ\text{C}$
Thermal resistance	Junction to ambient (Note.1)	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total device dissipation	Alumina substrate (Note.2) @ $T_a=25^\circ\text{C}$ Derate above 25°C	P_D	300 2.4	mW mW / $^\circ\text{C}$
Thermal resistance	Junction to ambient (Note.2)	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction temperature range		T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-55 to +150	$^\circ\text{C}$

Note. 1. FR-5= 1.0X0.75X0.062 in

2. Alumina = 0.4X0.3X0.024 in . 99.5% alumina.

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REV:B

Electrical Characteristics (@T_A=25°C unless otherwise noted)

OFF CHARACTERISTICS

Parameter	Symbol	Conditions	Min.	Max.	Unit
Collector-Emitter breakdown voltage	V _{BR(CEO)}	I _C =-10mA, I _B =0	-60		V
Collector-Base breakdown voltage	V _{BR(CBO)}	I _C =-10μA, I _E =0	-60		V
Emitter-Base breakdown voltage	V _{BR(EBO)}	I _E =-10μA, I _C =0	-5		V
Collector cut-off current	I _{CEX}	V _{CE} =-30V, V _{EB(off)} =-0.5V		-50	nA
Collector cut-off current	I _{CBO}	V _{CB} =-50V, I _E =0	T _A =25°C	-0.01	μA
			T _A =125°C	-10	
Base current	I _B	V _{CE} =-30V, V _{EB(off)} =-0.5V		-50	nA

ON CHARACTERISTICS (Note.1)

DC current gain	h _{FE}	V _{CE} =-10V, I _C =-0.1mA	75		
		V _{CE} =-10V, I _C =-1.0mA	100		
		V _{CE} =-10V, I _C =-10mA	100		
		V _{CE} =-10V, I _C =-150mA (Note 3)	100	300	
		V _{CE} =-10V, I _C =-500mA (Note 3)	50		
Collector-Emitter saturation voltage (Note 3)	V _{CE(sat)}	I _C =-150mA, I _B =-15mA I _C =-500mA, I _B =-50mA		-0.4 -1.6	V
Base-Emitter saturation voltage	V _{BE(sat)}	I _C =-150mA, I _B =-15mA I _C =-500mA, I _B =-50mA		-1.3 -2.6	V

SMALL-SIGNAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min.	Max.	Unit
Current-Gain-Bandwidth Product (Note 4)	f _T	V _{CE} =-20V, I _C =-50mA f=100MHz	200		MHz
Output Capacitance	C _{obo}	V _{CB} =-10V, I _E =0, f=1.0MHz		8	pF
Input Capacitance	C _{ibo}	V _{EB} =-2.0V, I _C =0, f=1.0MHz		30	pF

SWITCHING CHARACTERISTICS

Turn-On time	t _{on}	V _{CC} =-30V, I _C =-150mA, I _{B1} =-15mA		45	nS
Delay time	t _d			10	
Rise time	t _r			40	
Storage time	t _s	V _{CC} =-6V, I _C =-150mA I _{B1} =-I _{B2} =-15mA		225	
Fall time	t _f			60	
Turn-off time	t _{off}			280	

Notes:

1. Pulse test: Pulse Width < 300μs, Duty Cycle < 2.0%.
2. f_T is defined as the frequency at which h_{FE} extrapolates to unity.

RATING AND CHARACTERISTIC CURVES (MMBT2907A-HF)

Fig.1 - DC Current Gain

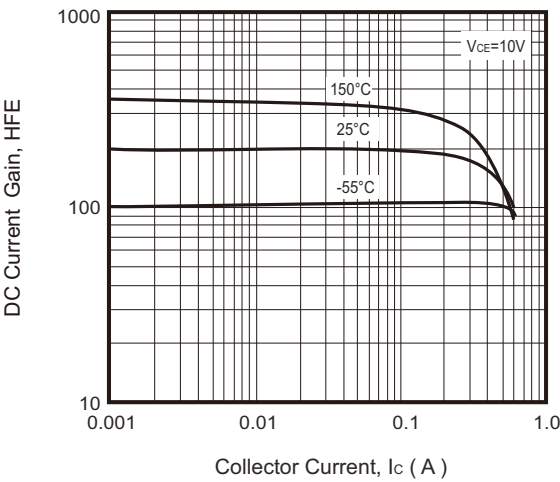


Fig.2 - Collector Saturation Region

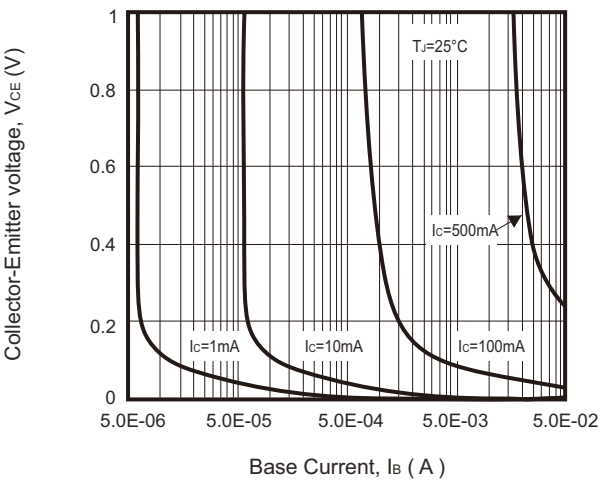


Fig.3 - Collector Emitter Saturation Voltage vs. Collector Current

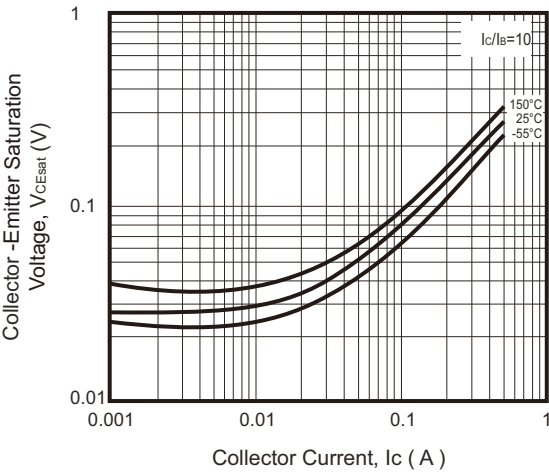


Fig.4 - Base Emitter Saturation Voltage vs. Collector Current

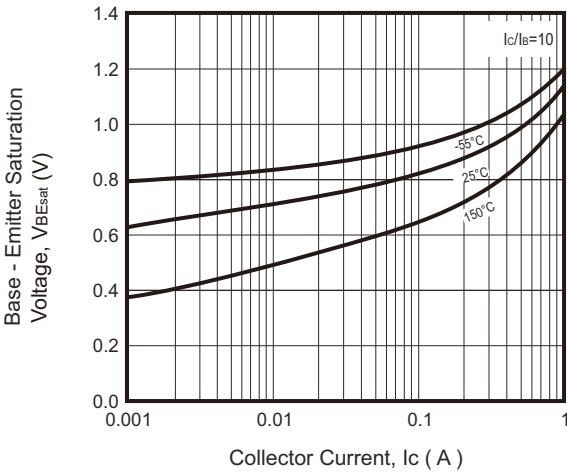


Fig.5 - Base Emitter Voltage vs. Collector Current

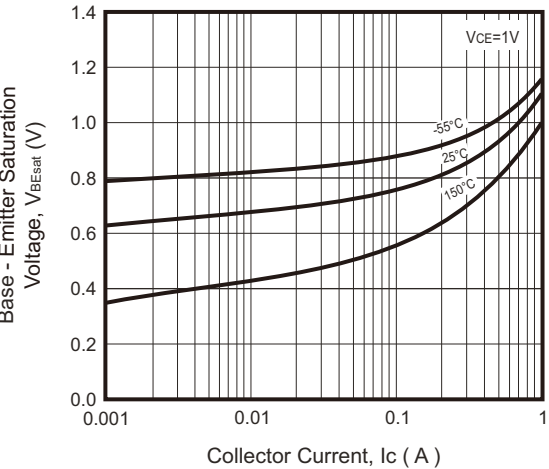
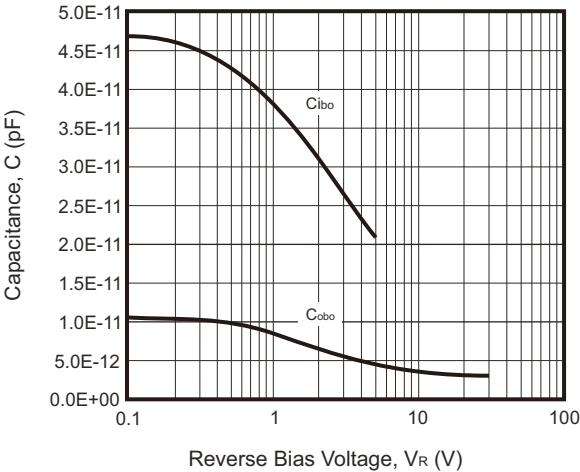


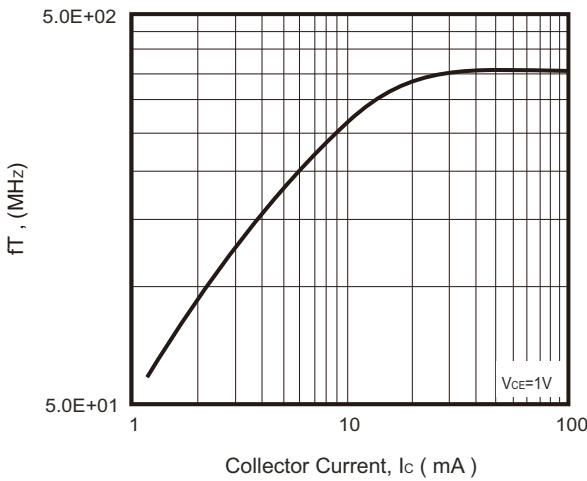
Fig.6 - Capacitance



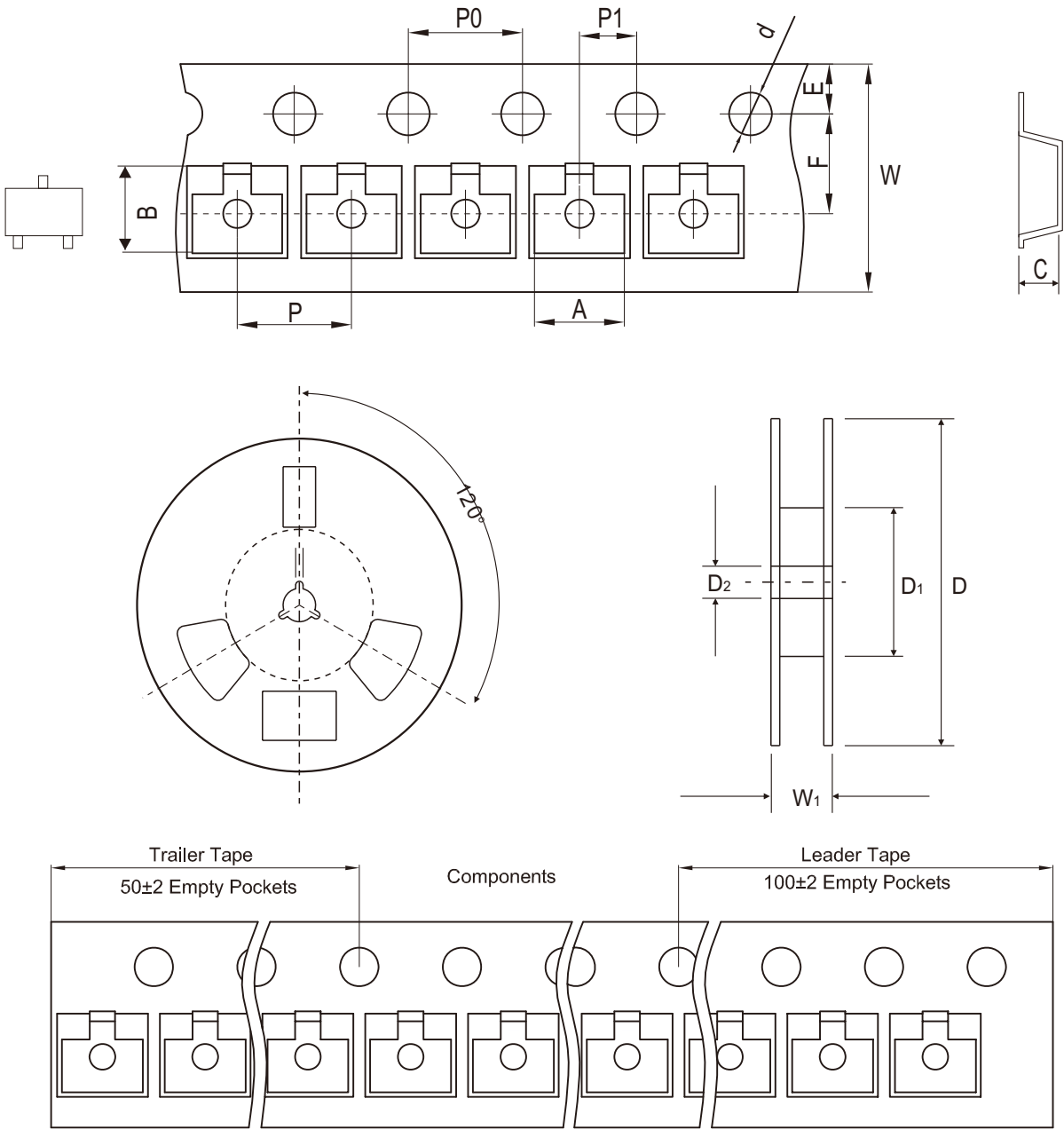
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RATING AND CHARACTERISTIC CURVES (MMBT2907A-HF)

Fig.7 - Current-Gain Bandwidth Product



Reel Taping Specification



SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	See Note 1			1.50 + 0.10 - 0.00	178 Max.	50.00 Min	13.00 ± 0.50
	(inch)				0.059 + 0.004 - 0.000	7.008 Max.	1.969 Min	0.512 ± 0.002

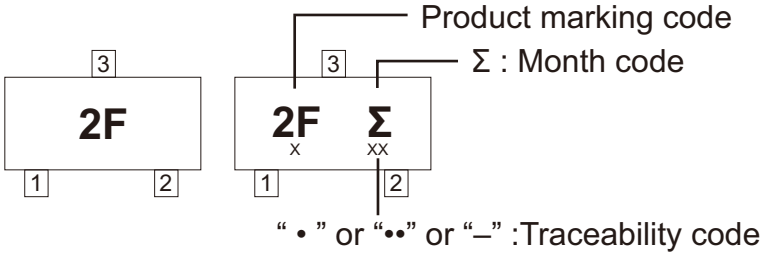
SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.30 Max.	10.90 Max.
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.327 Max.	0.429 Max.

Note: 1. A,B, and C are determined by component size. The clearance between the components and the cavity must be within 0.05mm to 50mm max.

Company reserves the right to improve product design , functions and reliability without notice.

Marking Code

Part Number	Marking Code	
MMBT2907A-HF	2F Σ	2F



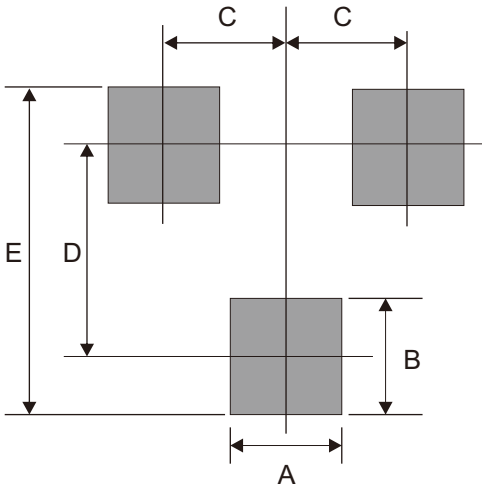
Month Code:

Month	Odd Year (per A.D.)	Even Year (per A.D.)
Jan	1	E
Feb	2	F
Mar	3	H
Apr	4	J
May	5	K
Jun	6	L

Month	Odd Year (per A.D.)	Even Year (per A.D.)
Jul	7	N
Aug	8	P
Sep	9	U
Oct	T	X
Nov	V	Y
Dec	C	Z

Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.90	0.035
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