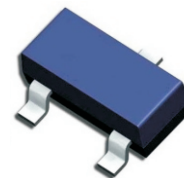


General Purpose Transistor

COMCHIP

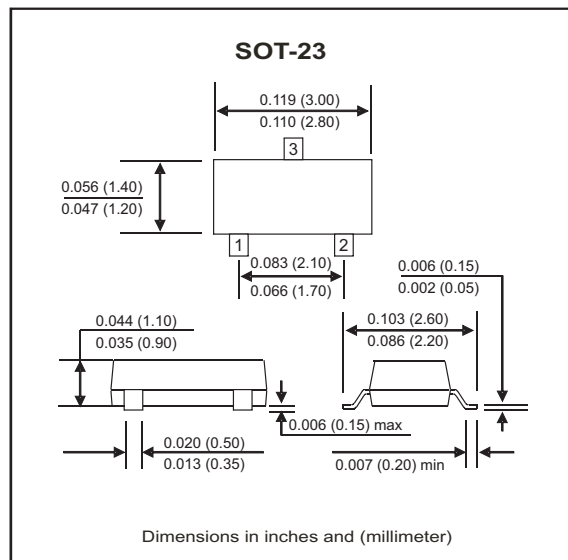
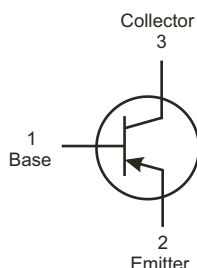
SMD Diodes Specialist

MMBT3906-HF (PNP) RoHS Device



Features

- Epitaxial planar die construction
- As complementary type, the NPN transistor MMBT3904-G-HF is recommended



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

Parameter	Symbol	Min	Typ	Max	Unit
Collector-Base voltage	V_{CB0}			-40	V
Collector-Emitter voltage	V_{CE0}			-40	V
Emitter-Base voltage	V_{EB0}			-5	V
Collector current-Continuous	I_C			-0.2	A
Collector dissipation	P_C			0.3	W
Storage temperature and junction temperature	T_{STG}, T_J	-55		+150	$^{\circ}\text{C}$

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

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-Base breakdown voltage	$I_C = -100\mu\text{A}, I_E = 0$	$V_{(BR)CB0}$	-40		V
Collector-Emitter breakdown voltage	$I_C = -1\text{mA}, I_B = 0$	$V_{(BR)CE0}$	-40		V
Emitter-Base breakdown voltage	$I_E = -100\mu\text{A}, I_C = 0$	$V_{(BR)EB0}$	-5		V
Collector cut-off current	$V_{CB} = -40\text{V}, I_E = 0$	I_{CB0}		-0.1	μA
Collector cut-off current	$V_{CE} = -40\text{V}, I_B = 0$	I_{CE0}		-0.1	μA
Emitter cut-off current	$V_{EB} = -5\text{V}, I_C = 0$	I_{EB0}		-0.1	μA
DC current gain	$V_{CE} = -1\text{V}, I_C = -10\text{mA}$	$h_{FE(1)}$	100	300	
	$V_{CE} = -1\text{V}, I_C = -50\text{mA}$	$h_{FE(2)}$	60		
Collector-Emitter saturation voltage	$I_C = -50\text{mA}, I_B = -5\text{mA}$	$V_{CE(sat)}$		-0.3	V
Base-Emitter saturation voltage	$I_C = -50\text{mA}, I_B = -5\text{mA}$	$V_{BE(sat)}$		-0.95	V
Transition frequency	$V_{CE} = -20\text{V}, I_C = -10\text{mA}$ $f = 100\text{MHz}$	f_T	250		Mhz
Delay time	$V_{CC} = -3.0\text{V}, V_{BE} = -0.5\text{V}$	t_d		35	nS
Rise time	$I_C = -10\text{mA}, I_{B1} = -1.0\text{mA}$	t_r		35	nS
Storage time	$V_{CC} = -3.0\text{V}_{dc}, I_C = -10\text{mA}$	t_s		225	nS
Fall time	$I_{B1} = I_{B2} = -1.0\text{mA}$	t_f		75	nS

REV:A

RATING AND CHARACTERISTIC CURVES (MMBT3906-HF)

Fig.1 Capacitance

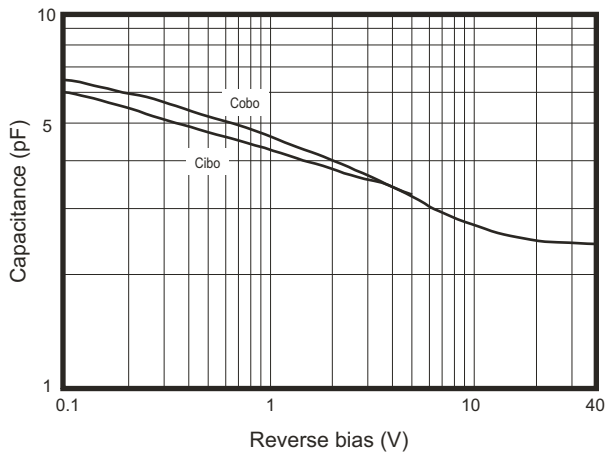


Fig. 2 - Charge data

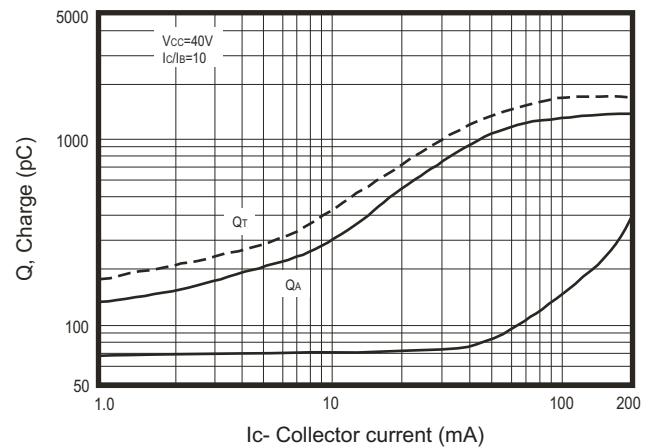


Fig. 3 - Turn-On Time

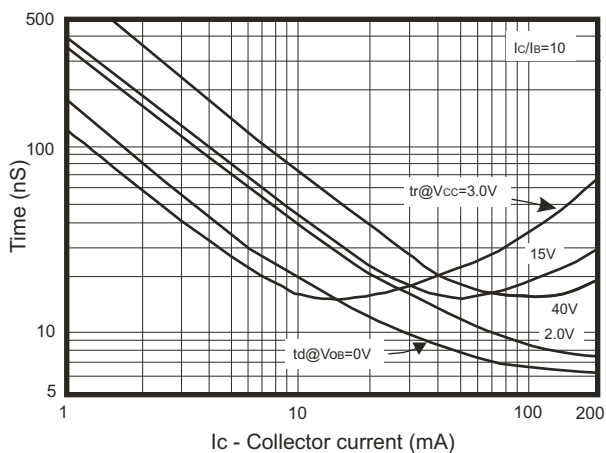


Fig. 4 - Fall time

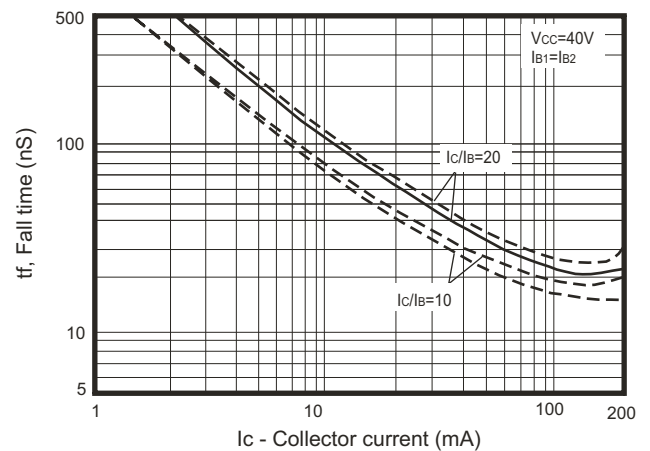


Figure 5

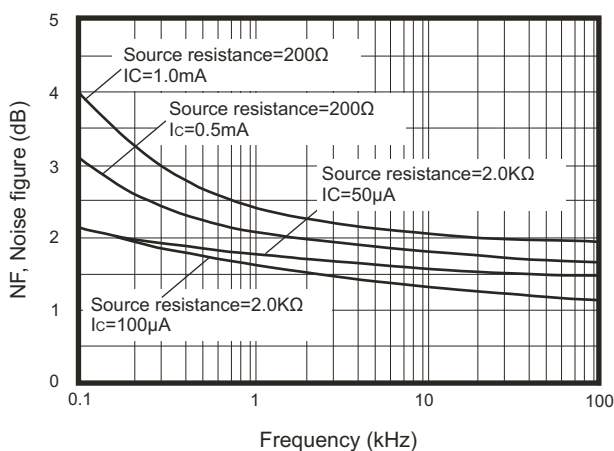
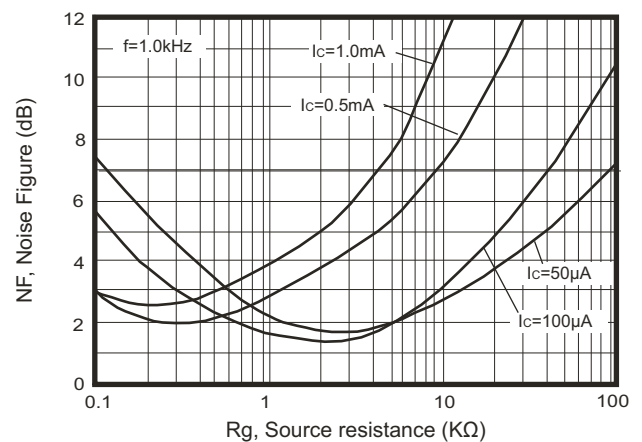


Figure 6



h Parameters ($V_{CE} = -10V_{dc}$, $f = 1.0kHz$, $T_A = 25^\circ C$)

Fig.7 Current gain

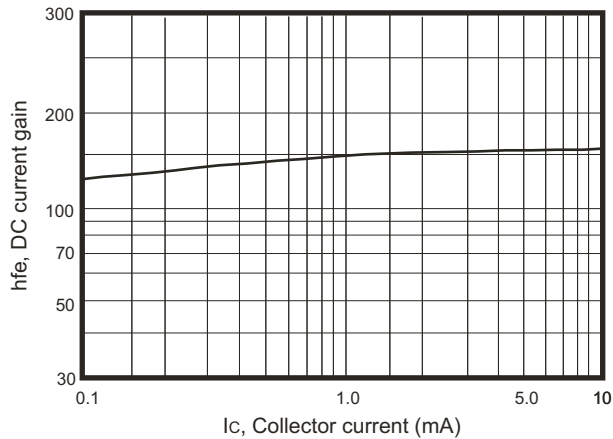


Fig. 8 - Output Admittance

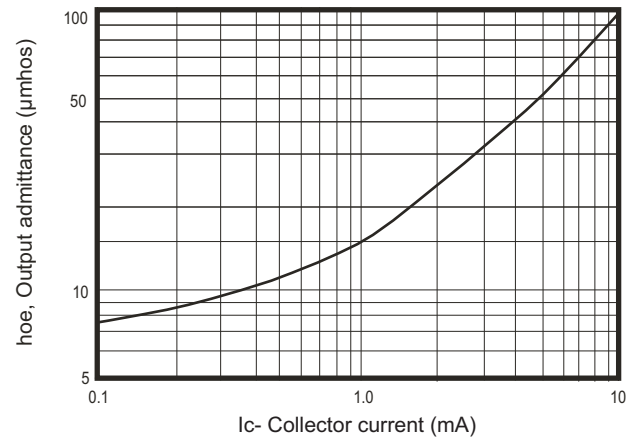


Fig. 9- Input impedance

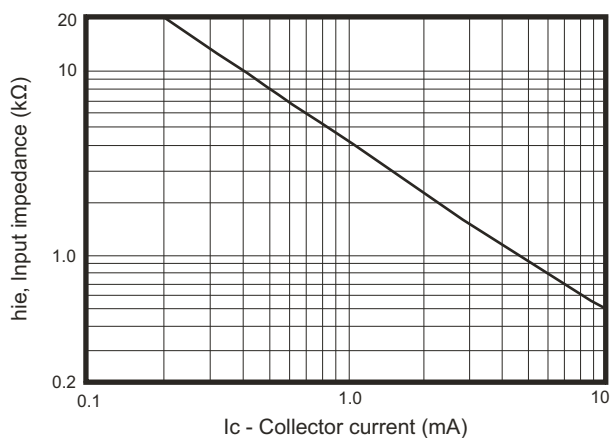


Fig. 10- Voltage feedback ratio

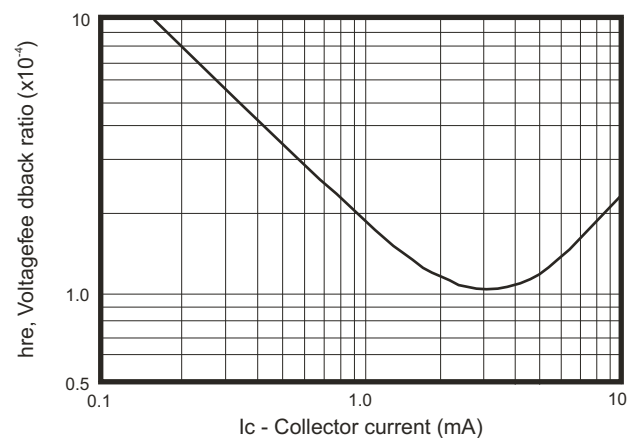


Fig. 11- "ON" voltages

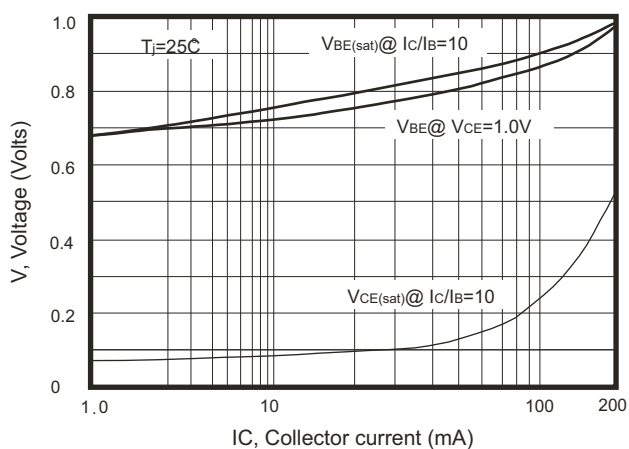
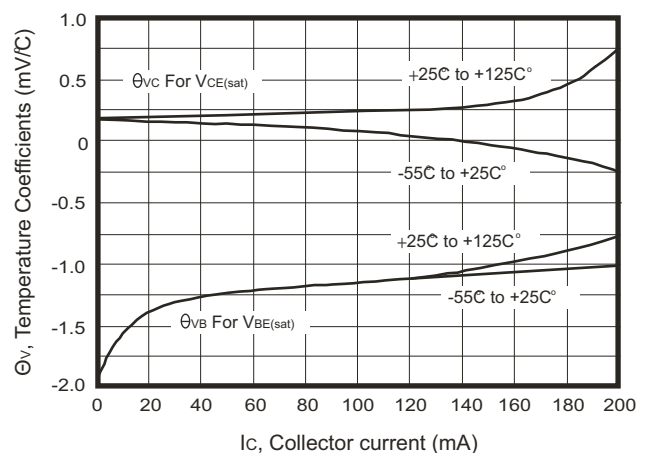
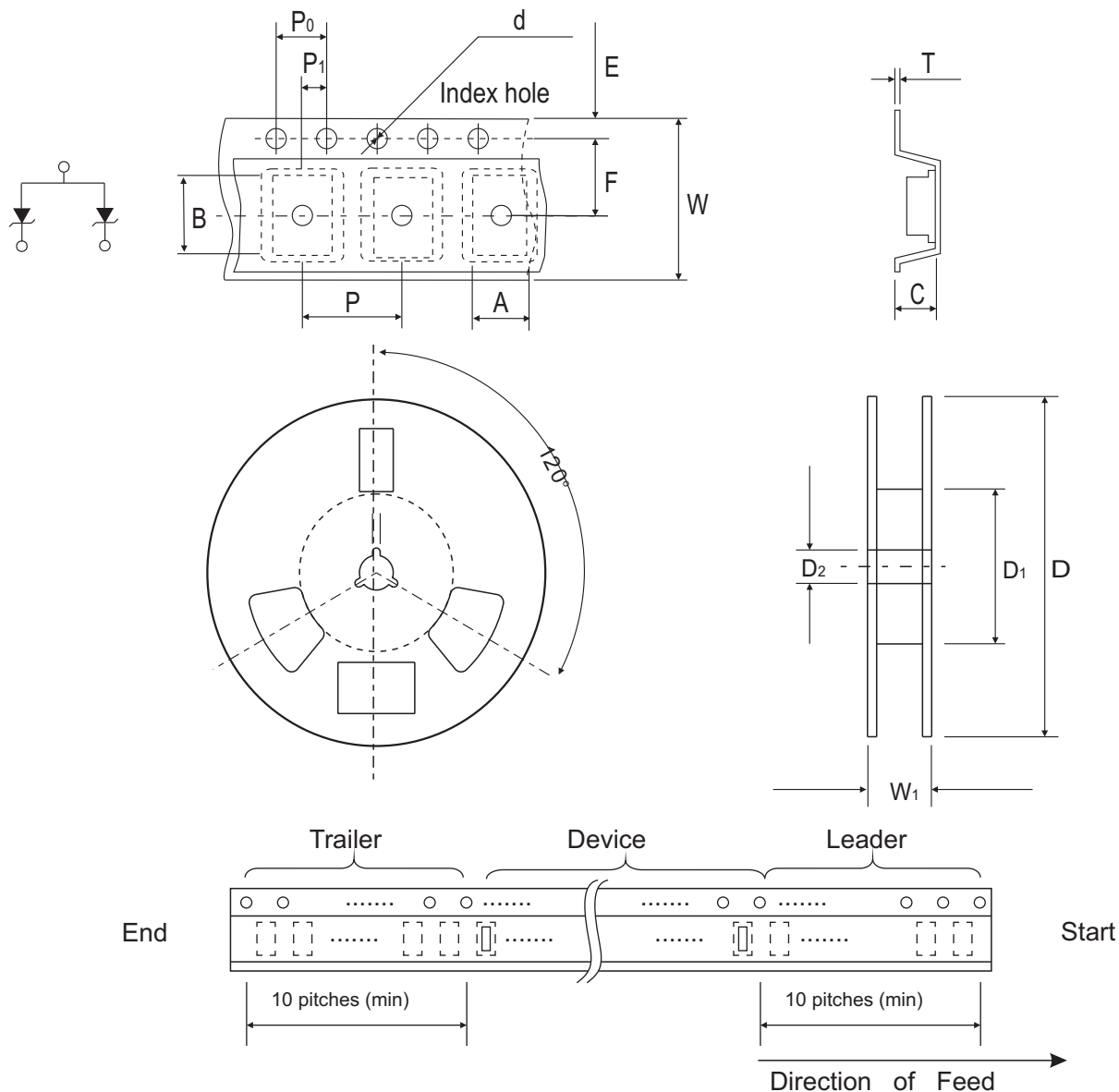


Fig. 12- Temperature coefficients



Reel Taping Specification

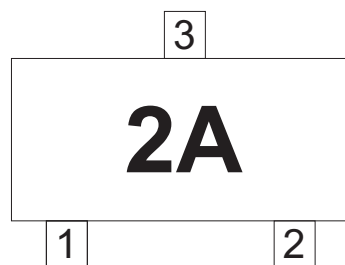


SOT-23	SYMBOL	A	B	C	d	D	D ₁	D ₂
	(mm)	3.10 ± 0.10	2.85 ± 0.10	1.40 ± 0.10	1.55 ± 0.10	178 ± 1	50.0 MIN.	13.0 ± 0.20
	(inch)	0.122 ± 0.004	0.112 ± 0.004	0.035 ± 0.004	0.061 ± 0.004	7.008 ± 0.040	1.969 MIN.	0.512 ± 0.008

SOT-23	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁
	(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	14.4 MAX.
	(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	0.567 MAX

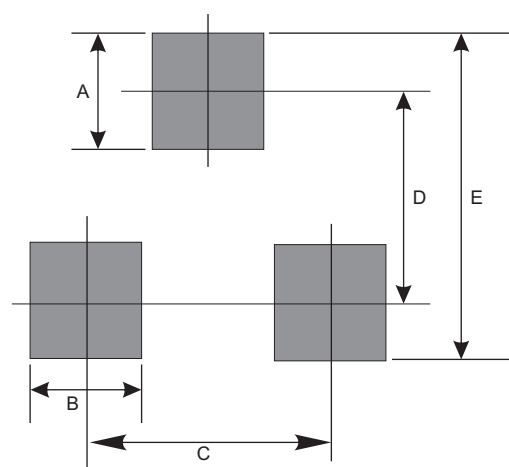
Marking Code

Park Number	Marking Code
MMBT3906-HF	2A



Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.65	0.025
C	1.90	0.075
D	2.02	0.080
E	3.03	0.120



Standard Package

Case Type	Qty per Reel	Reel Size
	(Pcs)	(inch)
SOT-23	3000	7