

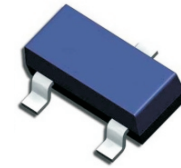
General Purpose Transistor



SMD Diodes Specialist

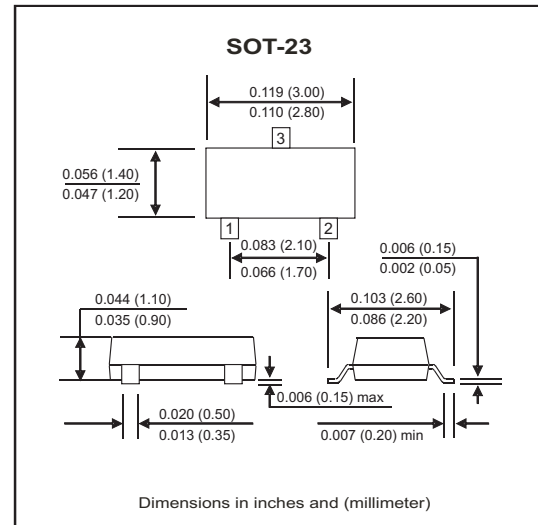
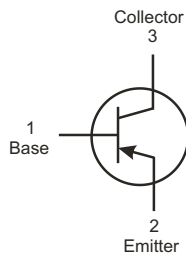
MMBT3906-HF (PNP)

RoHS Device



Features

- Halogen Free
- Epitaxial planar die construction
- As complementary type, the NPN transistor MMBT3906-HF is recommended



Maximum Ratings(at TA=25 °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	°C

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

Parameter	Conditions	Symbol	Min	Max	Unit
Collector-Base breakdown voltage	I _c = -100μA , I _E = 0	V _{(BR)CBO}	-40		V
Collector-Emitter breakdown voltage	I _c = -1mA , I _B = 0	V _{(BR)CEO}	-40		V
Emitter-Base breakdown voltage	I _E = -100μA , I _C = 0	V _{(BR)EBO}	-5		V
Collector cut-off current	V _{CB} = -40V , I _E = 0	I _{cBO}		-0.1	μA
Collector cut-off current	V _{CE} = -40V , I _B = 0	I _{CE0}		-0.1	μA
Emitter cut-off current	V _{EB} = -5V , I _C = 0	I _{EBO}		-0.1	μA
DC current gain	V _{CE} = -1V , I _c = -10mA	h _{FE(1)}	100	300	
	V _{CE} = -1V , I _c = -50mA	h _{FE(2)}	60		
Collector-Emitter saturation voltage	I _C = -50mA , I _B = -5mA	V _{CE(sat)}		-0.3	V
Base-Emitter saturation voltage	I _C = -50mA , I _B = -5mA	V _{BE(sat)}		-0.95	V
Transition frequency	V _{CE} = -20V , I _c = -10mA f = 100MHz	f _T	250		Mhz
Delay time	V _{CC} = -3.0V , V _{BE} = -0.5V	t _d		35	nS
Rise time	I _C = -10mA , I _{B1} = -1.0mA	t _r		35	nS
Storage time	V _{CC} = -3.0V _{dc} , I _c = -10mA	t _s		225	nS
Fall time	I _{B1} = I _{B2} = -1.0mA	t _f		75	nS

RATING AND CHARACTERISTIC CURVES (MMBT3906-HF)

Fig.1 Capacitance

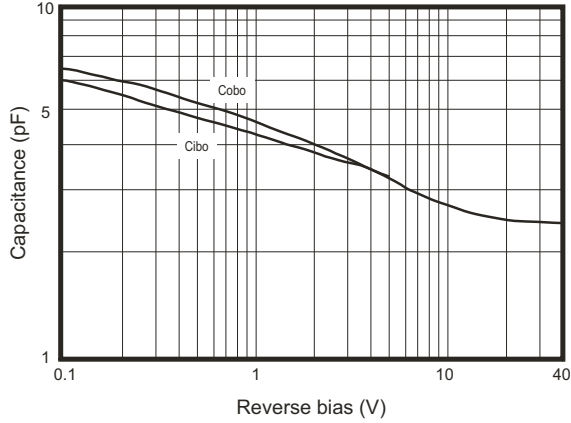


Fig. 2 - Charge data

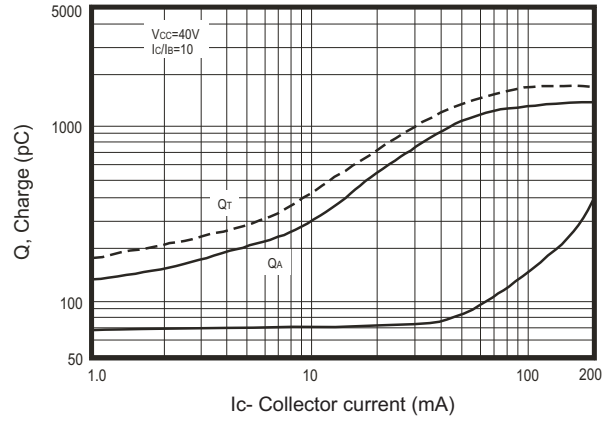


Fig. 3 - Turn-On Time

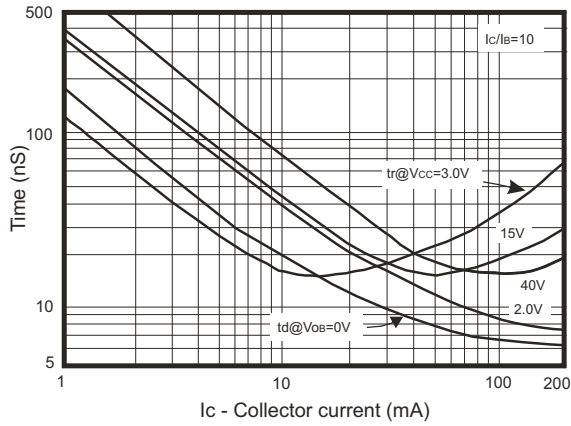


Fig. 4 - Fall time

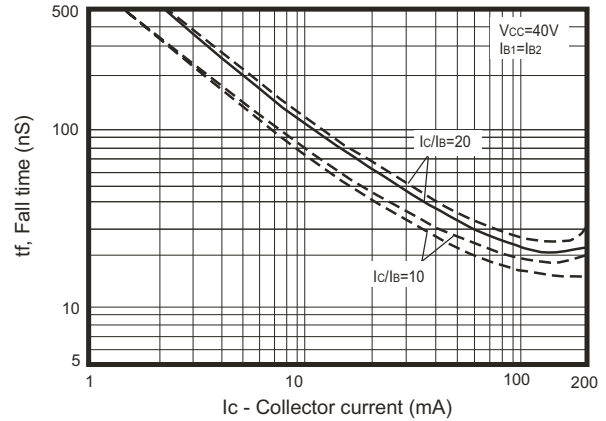


Figure 5

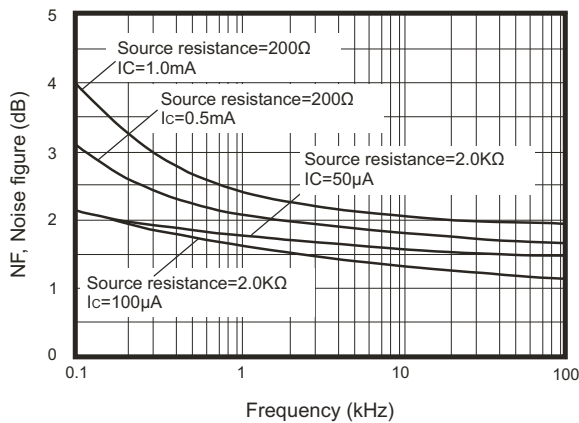
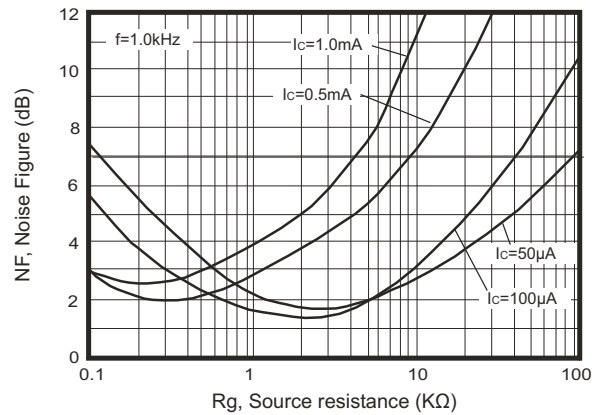


Figure 6



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

Fig.7 Current gain

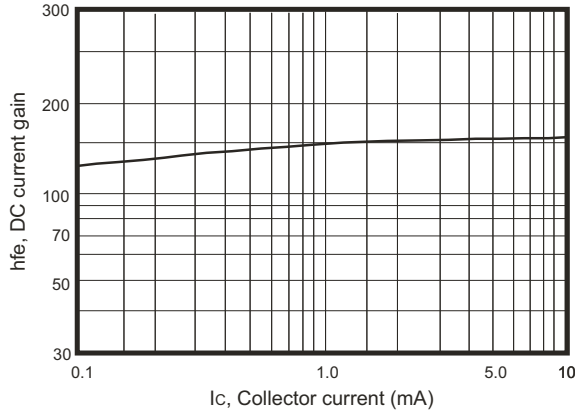


Fig. 8 - Output Admittance

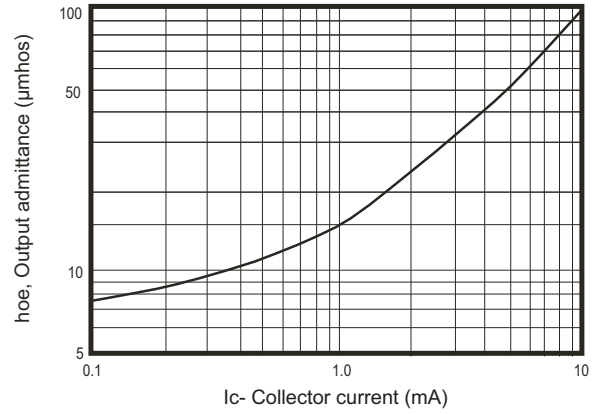


Fig. 9- Input impedance

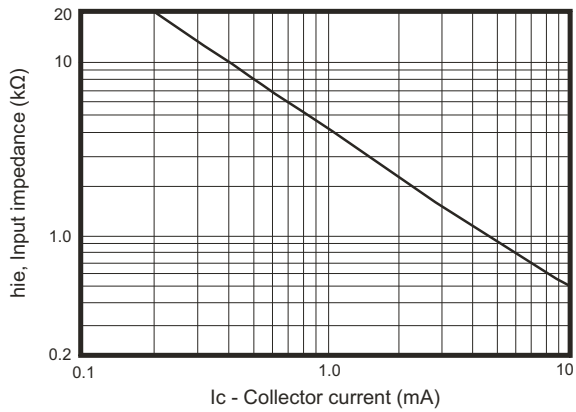


Fig. 10- Voltage feedback ratio

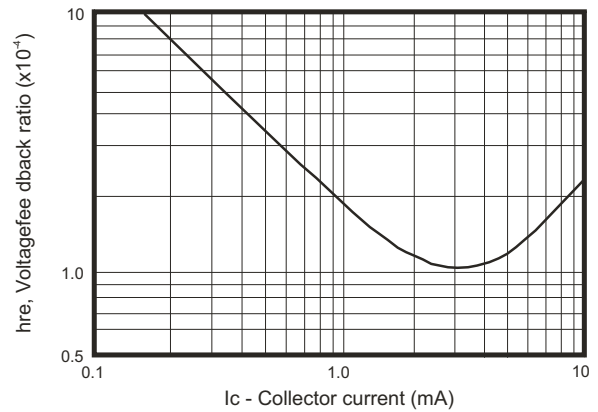


Fig. 11- "ON" voltages

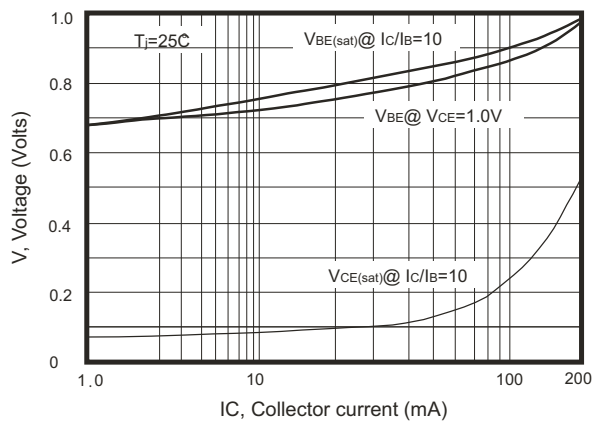
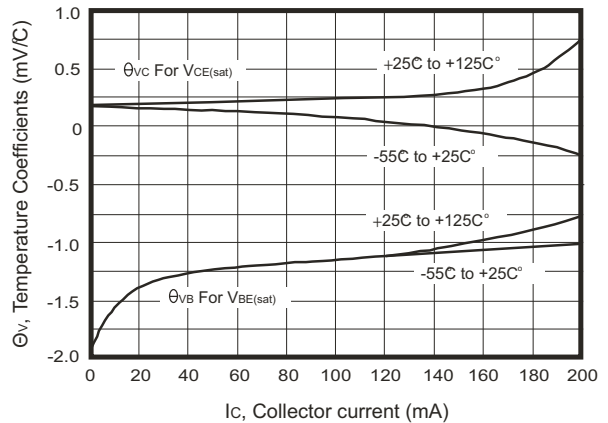
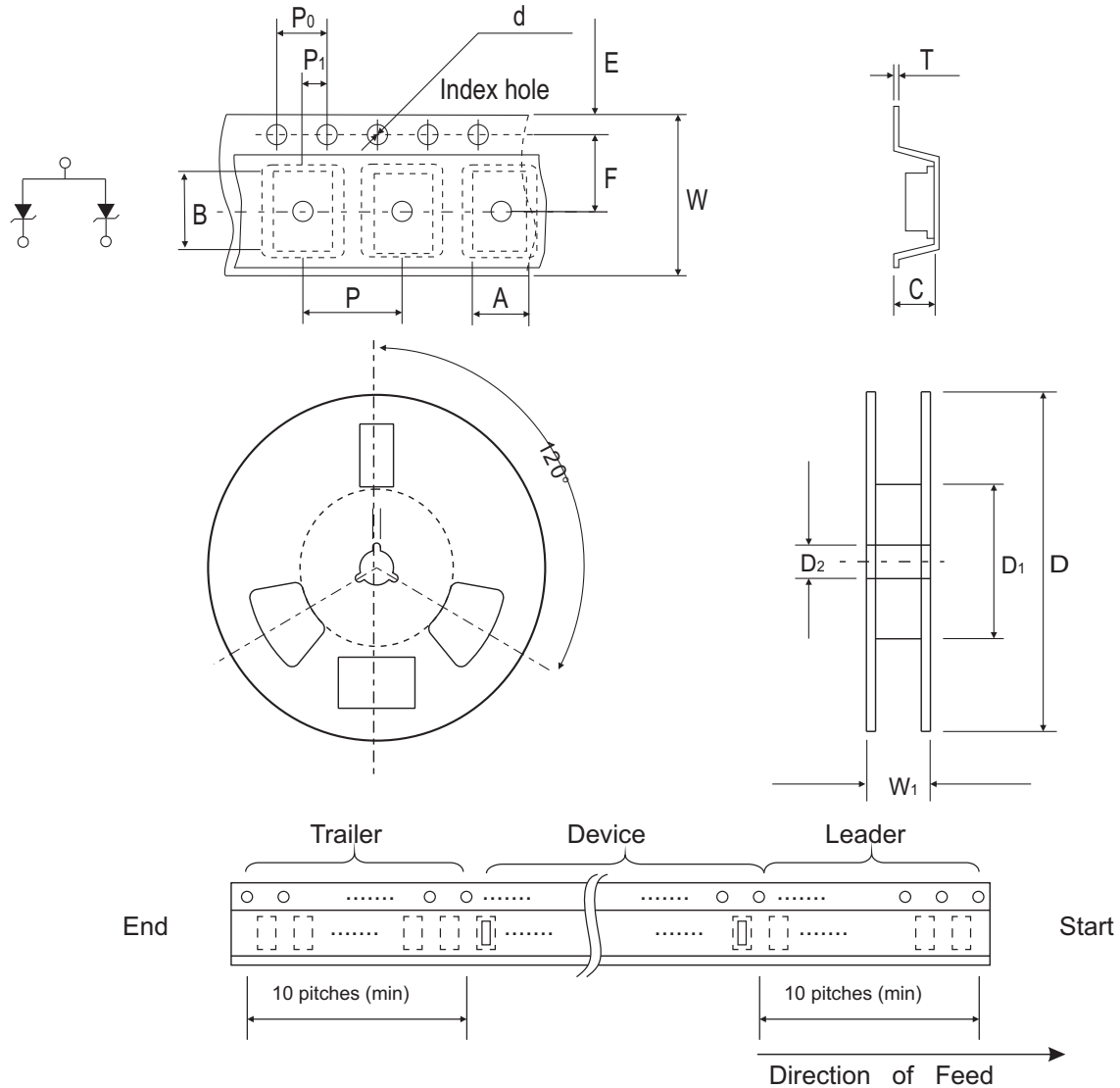


Fig. 12- Temperature coefficients



Reel Taping Specification

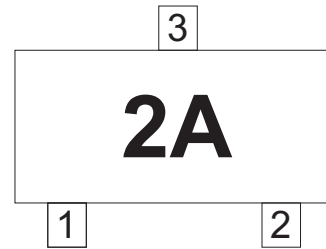


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.10 ± 0.10	2.85 ± 0.10	1.40 ± 0.10	1.55 ± 0.10	178 ± 1	50.0 MIN.	13.0 ± 0.20
	(inch)	0.122 ± 0.004	0.112 ± 0.004	0.035 ± 0.004	0.061 ± 0.004	7.008 ± 0.040	1.969 MIN.	0.512 ± 0.008

SOT-23	SYMBOL	E	F	P	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	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.

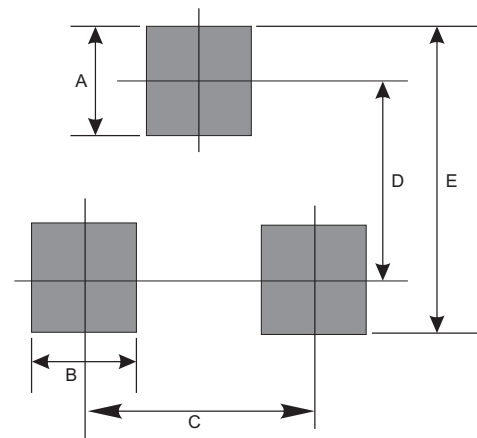
Marking Code

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