

MMBT3906D-HF (PNP+PNP)

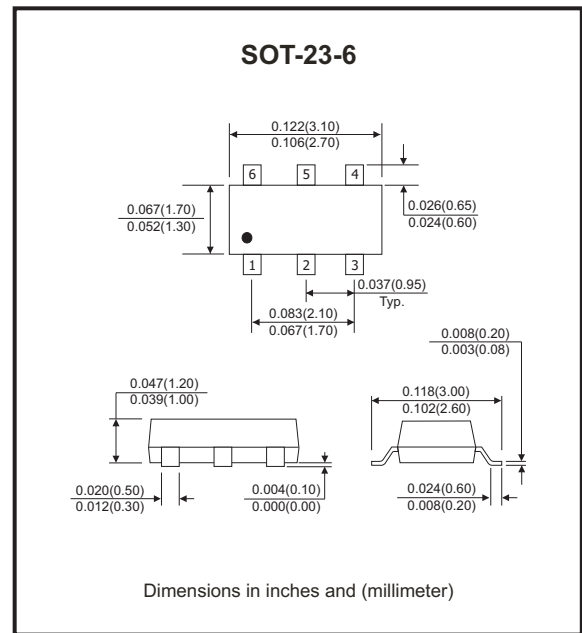
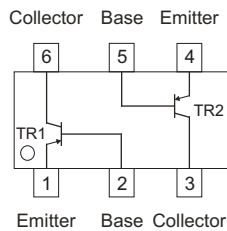
RoHS Device
Halogen Free



Features

- For switching and amplifier applications.
- Case: Molded plastic, SOT-23-6
- Marking: .3E

Circuit diagram



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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-6.0	V
Collector Current	I_C	-200	mA
Power Dissipation	P_D	350	mW
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

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

Parameter	Conditions	Symbol	Min.	Max.	Unit
Collector-Emitter Breakdown Voltage	$I_C = -1\text{mA}$	$V_{(BR)CEO}$	-40	-	V
Collector-Base Breakdown Voltage	$I_C = -10\mu\text{A}$	$V_{(BR)CBO}$	-40	-	V
Emitter-Base Breakdown Voltage	$I_E = -10\mu\text{A}$	$V_{(BR)EBO}$	-6	-	V
Collector-Base Cut-off Current	$V_{CB} = -30\text{V}$	I_{CBO}	-	-50	nA
Emitter-Base Cut-off Current	$V_{EB} = -6\text{V}$	I_{EBO}	-	-50	nA
DC Current Gain	$V_{CE} = -1\text{V}, I_C = -0.1\text{mA}$	h_{FE}	60	-	
	$V_{CE} = -1\text{V}, I_C = -1.0\text{mA}$		80	-	
	$V_{CE} = -1\text{V}, I_C = -10\text{mA}$		100	300	
	$V_{CE} = -1\text{V}, I_C = -50\text{mA}$		60	-	
	$V_{CE} = -1\text{V}, I_C = -100\text{mA}$		30	-	
Collector-Emitter Saturation Voltage	$I_C = -10\text{mA}, I_B = -1.0\text{mA}$	$V_{CE(sat)}$	-	-0.25	V
	$I_C = -50\text{mA}, I_B = -5.0\text{mA}$		-	-0.4	
Base-Emitter Saturation Voltage	$I_C = -10\text{mA}, I_B = -1.0\text{mA}$	$V_{BE(sat)}$	-0.65	-0.85	V
	$I_C = -50\text{mA}, I_B = -5\text{mA}$		-	-0.95	
Current Gain Bandwidth Product	$V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$	f_r	250	-	MHZ
Collector Output Capacitance	$V_{CB} = -5.0\text{V}, I_E = 0, f = 1.0\text{MHz}$	C_{ob}	-	4.5	pF
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	$V_{CC} = -3.0\text{V},$	t_s	-	225	nS
Fall Time	$I_C = -10\text{mA}, -I_{B1} = I_{B2} = 1.0\text{mA}$	t_f	-	75	nS

Rating and Characteristics Curves (MMBT3906D-HF)

Fig.1 - Power Dissipation vs. Ambient Temperature

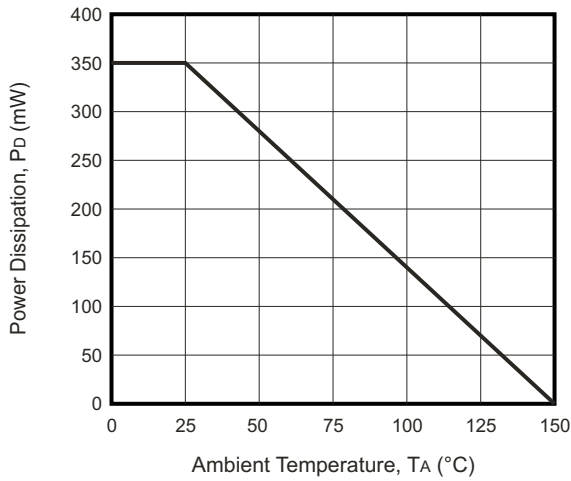


Fig.2 - Output Capacitance vs. Collector-Base Voltage

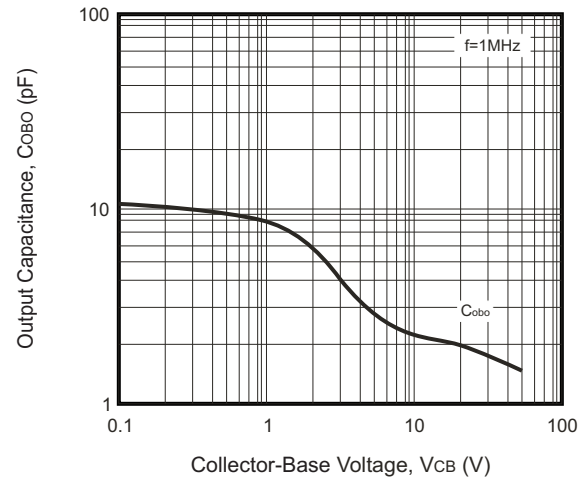


Fig.3 - Typical DC Current Gain vs. Collector Current

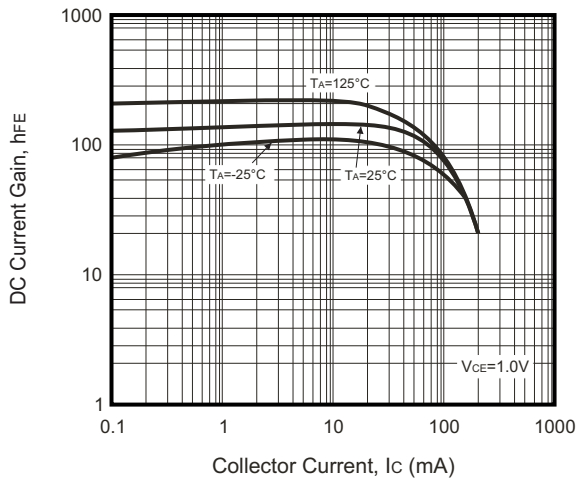


Fig.4 - Typical Collector-Emitter Saturation Voltage vs. Collector Current

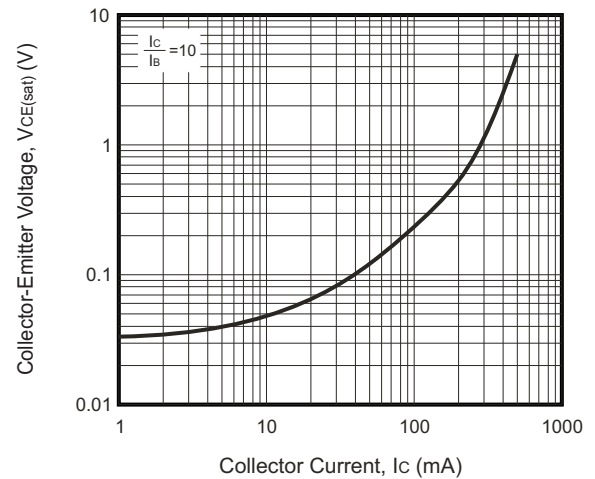
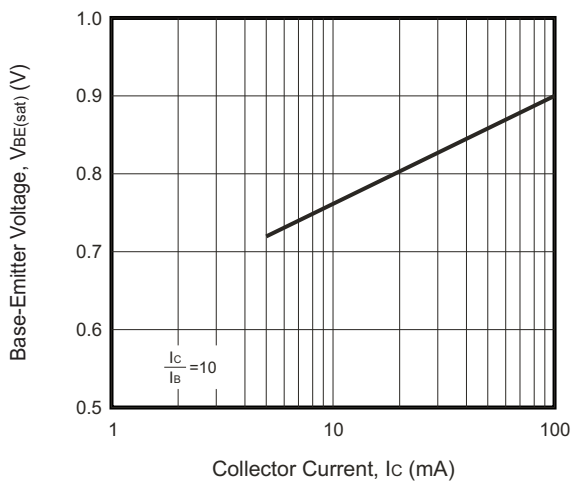
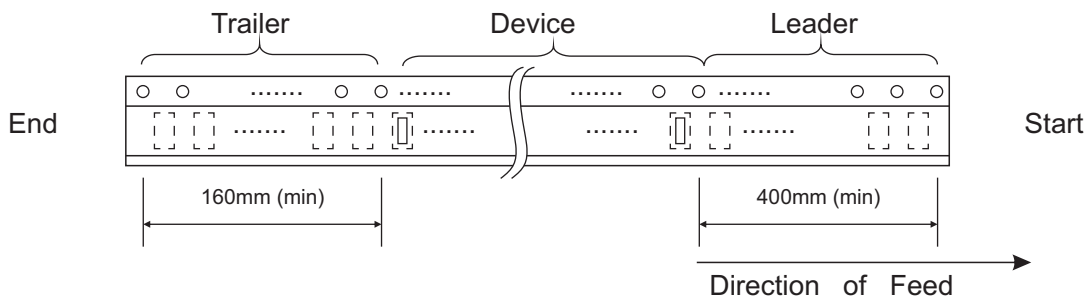
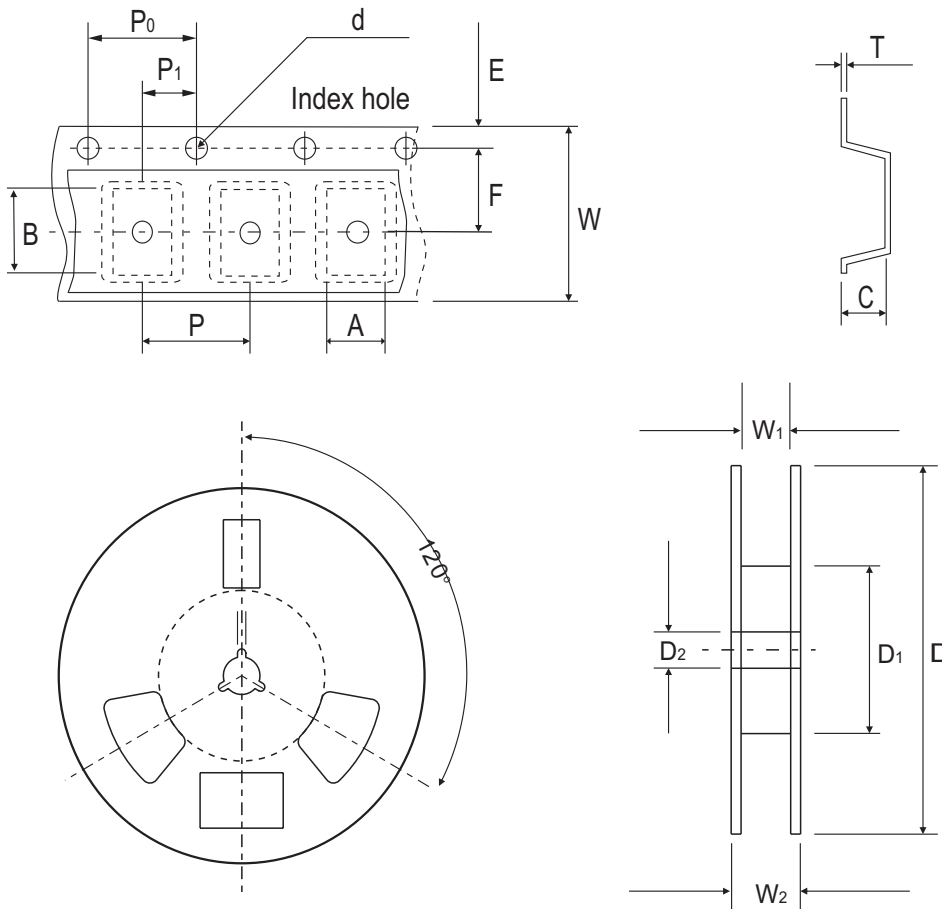


Fig.5 - Typical Base-Emitter Saturation Voltage vs. Collector Current



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

Reel Taping Specification



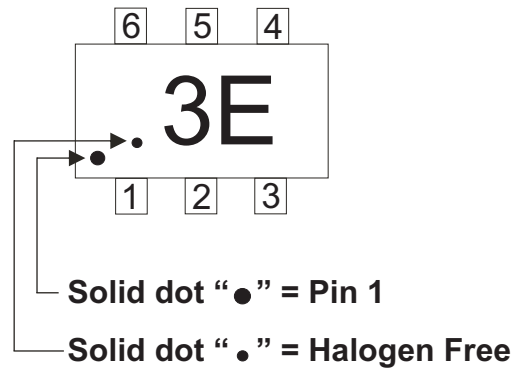
SOT-23-6	SYMBOL	A	B	C	d	T	D	D ₁	D ₂
	(mm)	3.30 ± 0.10	3.20 ± 0.10	1.50 ± 0.10	1.50 ± 0.10	0.25 ± 0.05	177.80 Max.	57.00 Max.	13.50 Max.
	(inch)	0.130 ± 0.004	0.126 ± 0.004	0.059 ± 0.004	0.059 ± 0.004	0.010 ± 0.002	7.000 Max.	2.244 Max.	0.531 Max.

SOT-23-6	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁	W ₂
	(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	9.00 Max.	11.00 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	0.354 Max.	0.433 Max.

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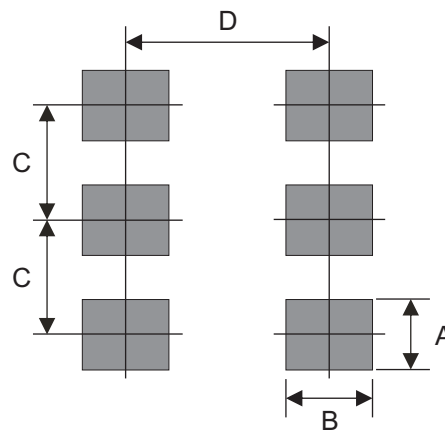
Marking Code

Part Number	Marking Code
MMBT3906D-HF	.3E



Suggested PAD Layout

SIZE	SOT-23-6	
	(mm)	(inch)
A	0.70	0.028
B	1.00	0.039
C	0.95	0.037
D	2.40	0.094



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23-6	3,000	7