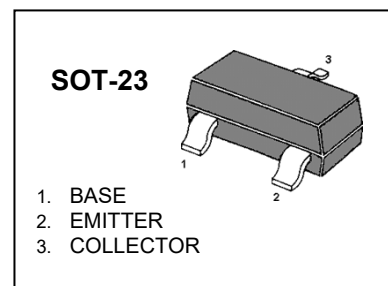


MMBT3906T TRANSISTOR (PNP)

FEATURES

- Complementary Type The NPN Transistor
- Epitaxial Planar Die Construction

MARKING: 2A



MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-400	mA
I_{CM}	Peak Collector Current	-800	mA
P_C	Total Device Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	625	$^\circ\text{C}/\text{W}$
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55 ~ +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	-40		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5		V
Collector cut-off current	I_{CBO}	$V_{CB}=-40\text{V}, I_E=0$		-0.1	μA
Collector cut-off current	I_{CEX}	$V_{CE}=-30\text{V}, V_{BE(off)}=-3\text{V}$		-50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0$		-0.1	μA
DC current gain	$h_{FE(1)}$	$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	100	300	
	$h_{FE(2)}$	$V_{CE}=-1\text{V}, I_C=-50\text{mA}$	60		
	$h_{FE(3)}$	$V_{CE}=-1\text{V}, I_C=-100\text{mA}$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$		-0.28	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$		-0.95	V
Transition frequency	f_T	$V_{CE}=-20\text{V}, I_C=-10\text{mA}, f=100\text{MHz}$	300		MHz
Delay Time	t_d	$V_{CC}=-3\text{V}, V_{BE}=-0.5\text{V}$		35	nS
Rise Time	t_r	$I_C=-10\text{mA}, I_{B1}=-I_{B2}=-1\text{mA}$		35	nS
Storage Time	t_s	$V_{CC}=-3\text{V}, I_C=-10\text{mA},$		225	nS
Fall Time	t_f	$I_{B1}=-I_{B2}=-1\text{mA}$		75	nS

Typical Characteristics

— $T_J = 25^\circ\text{C}$
 - - - $T_J = 125^\circ\text{C}$

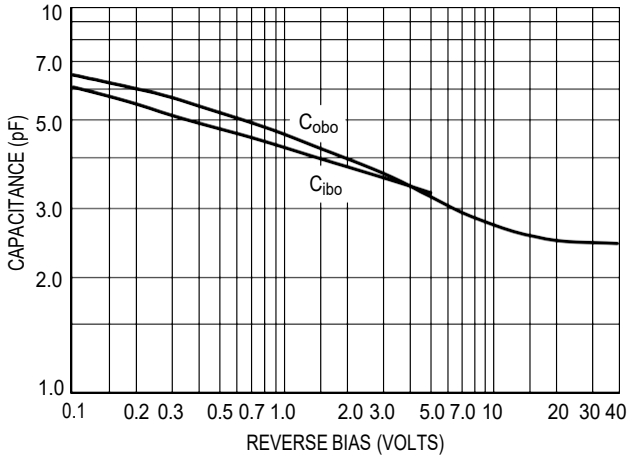


Figure 1. Capacitance

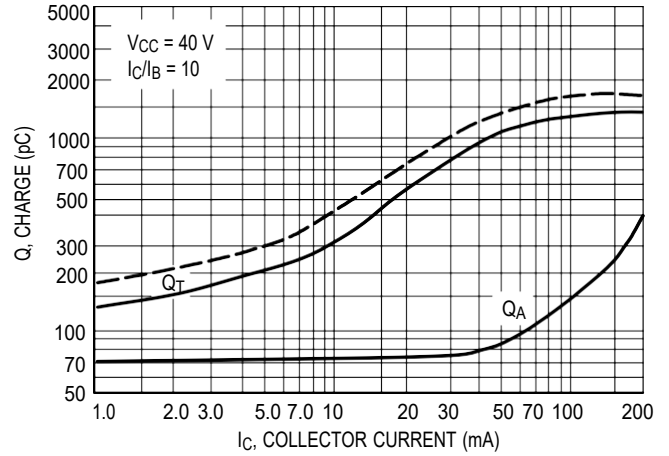


Figure 2. Charge Data

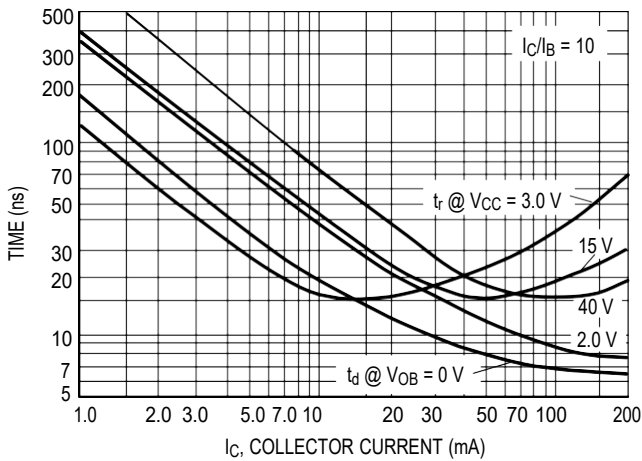


Figure 3. Turn-On Time

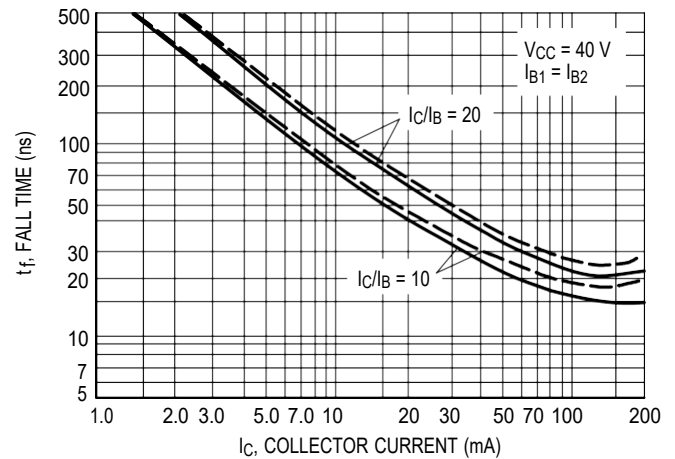


Figure 4. Fall Time

($V_{CE} = -5.0 \text{ Vdc}$, $T_A = 25^\circ\text{C}$, Bandwidth = 1.0 Hz)

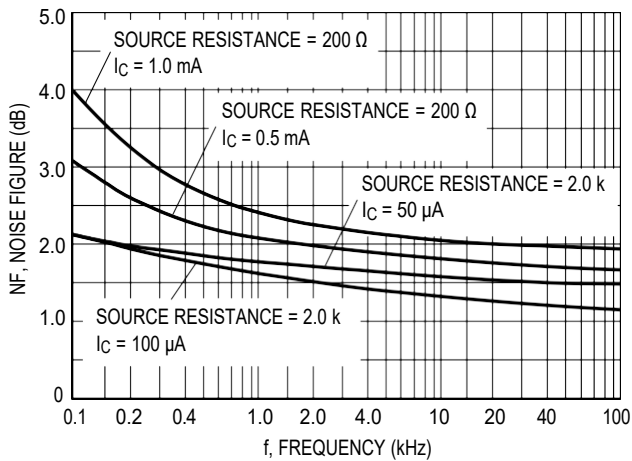


Figure 5.

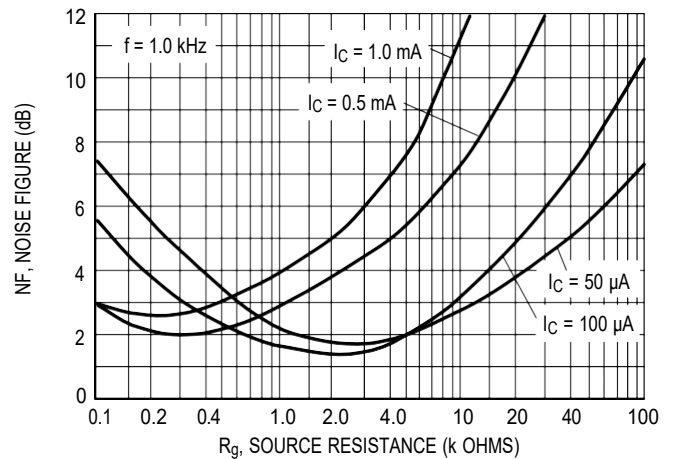


Figure 6.

Typical Characteristics

h PARAMETERS

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

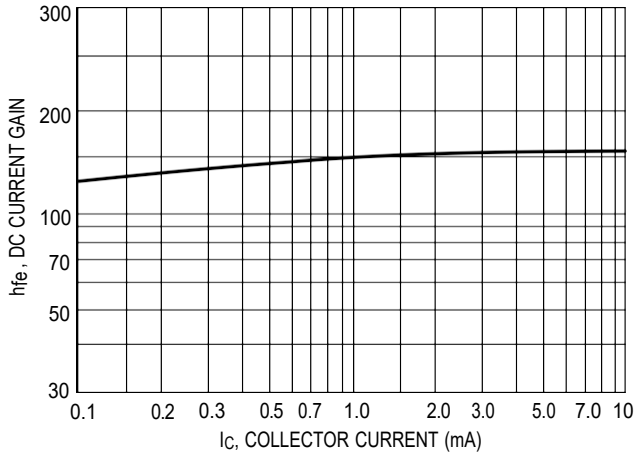


Figure 7. Current Gain

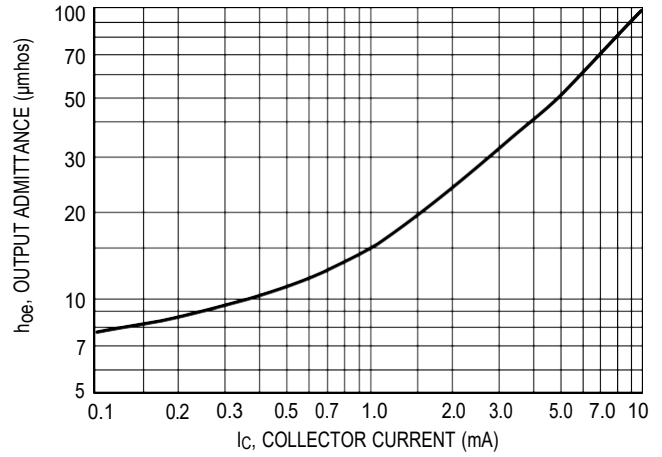


Figure 8. Output Admittance

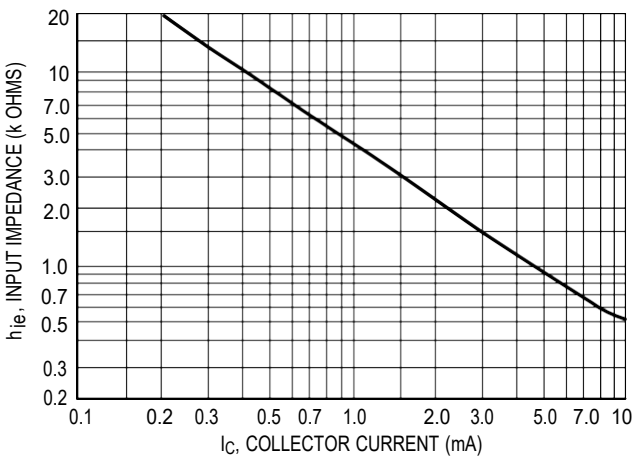


Figure 9. Input Impedance

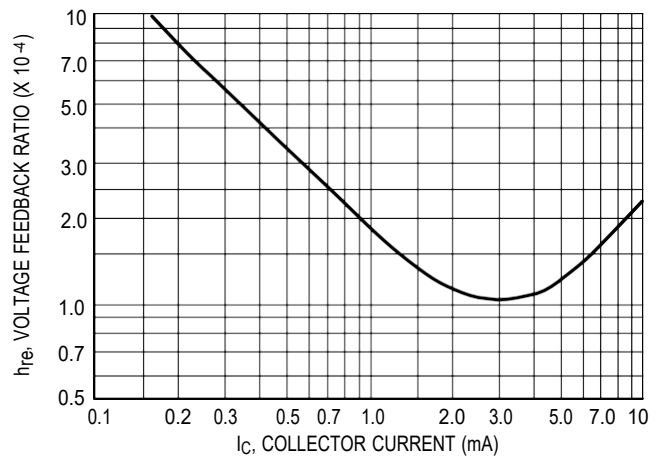


Figure 10. Voltage Feedback Ratio

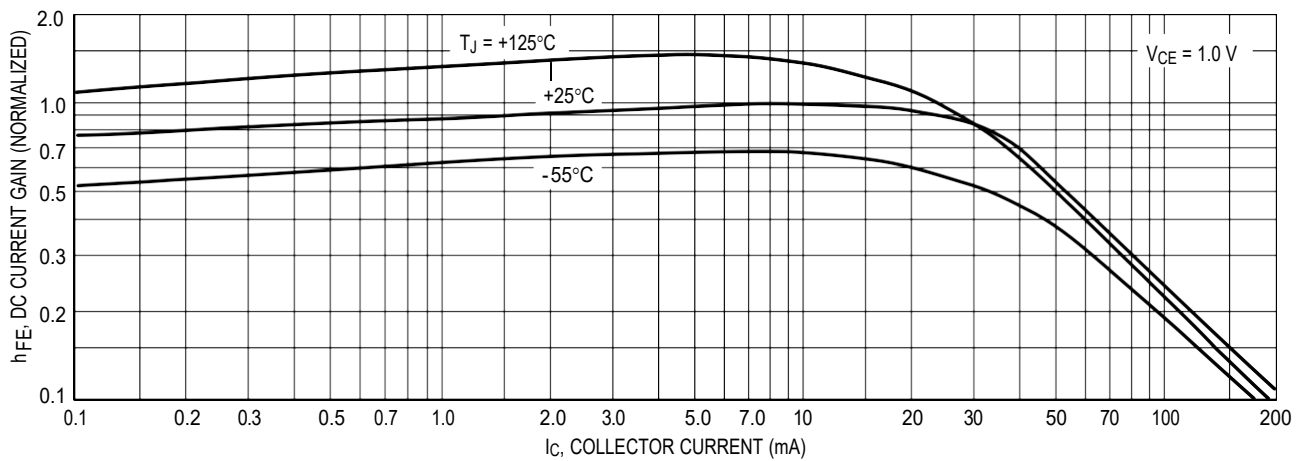


Figure 11. DC Current Gain

Typical Characteristics

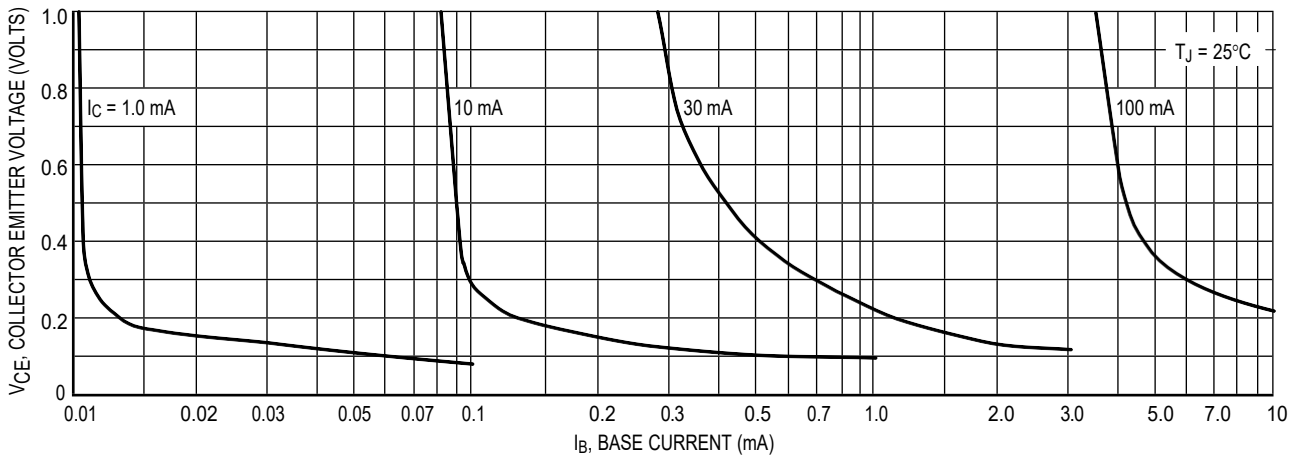


Figure 12. Collector Saturation Region

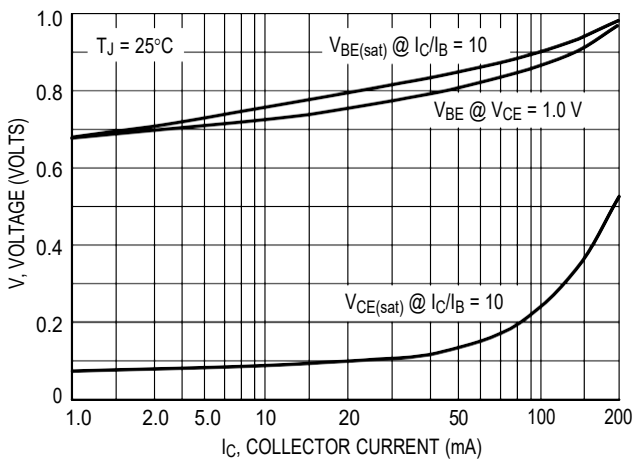


Figure 13. "ON" Voltages

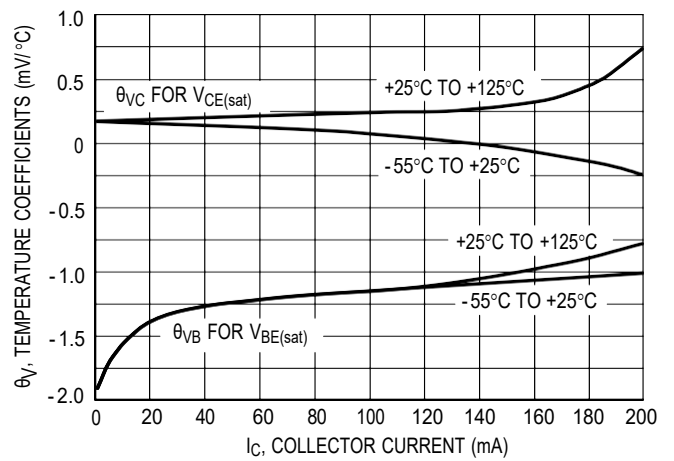


Figure 14. Temperature Coefficients

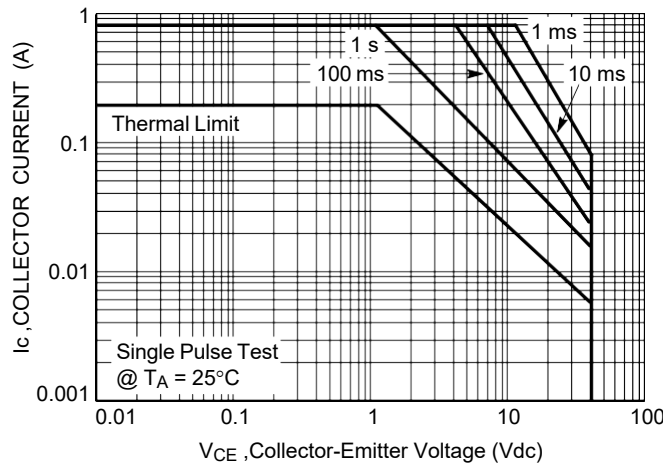
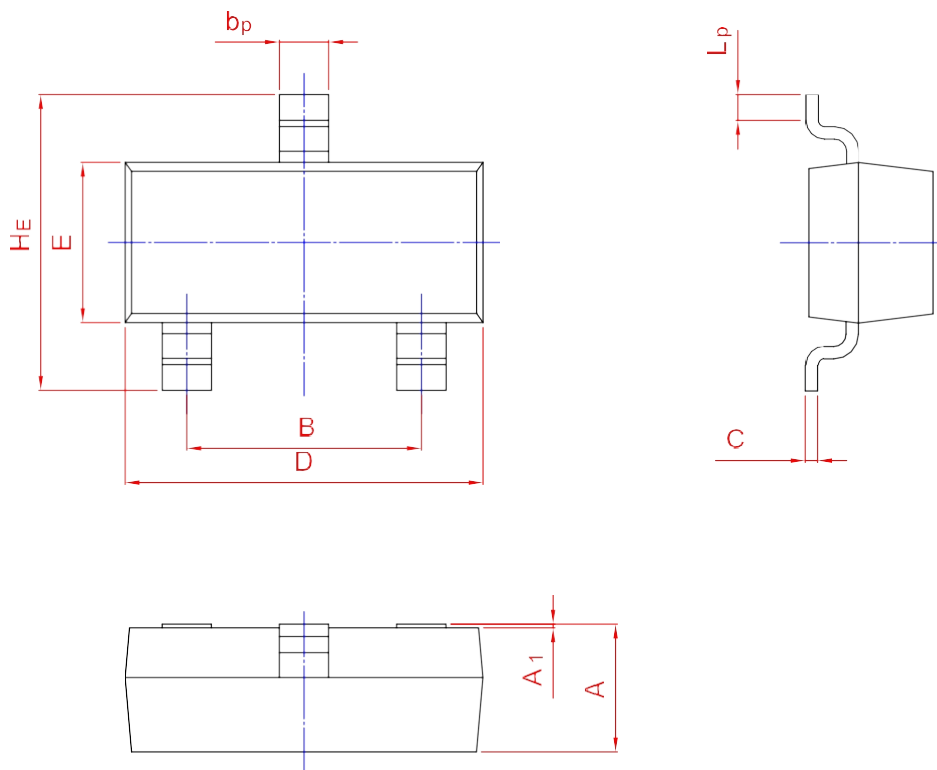
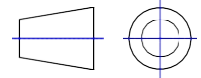


Figure 15. Safe Operating Area

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20