

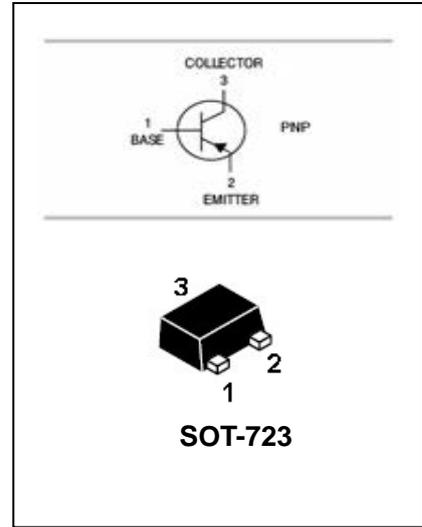
PNP General Purpose Transistor

MMBT3906M

FEATURES

- Epitaxial planar die construction.
- Complementary NPN type available (MMBT3904M).
- Collector Current Capability $I_{CM} = -200\text{mA}$.
- Low Voltage (Max: -40V).

HF



APPLICATIONS

- Ideal for medium power amplification and switching.

ORDERING INFORMATION

Type No.	Marking	Package Code
MMBT3906M	2A	SOT-723

MAXIMUM RATING @ $T_a=25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	Value	UNIT
V_{CBO}	collector-base voltage	-40	V
V_{CEO}	collector-emitter voltage	-40	V
V_{EBO}	emitter-base voltage	-6	V
I_C	collector current (DC)	-100	mA
I_{CM}	peak collector current	-200	mA
I_{BM}	peak base current	-100	mA
P_{tot}	Total power dissipation	250	mW
T_{STG}	storage temperature	-65 to +150	$^\circ\text{C}$
T_J	junction temperature	150	$^\circ\text{C}$

Note: Transistor mounted on an FR4 printed-circuit board.

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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

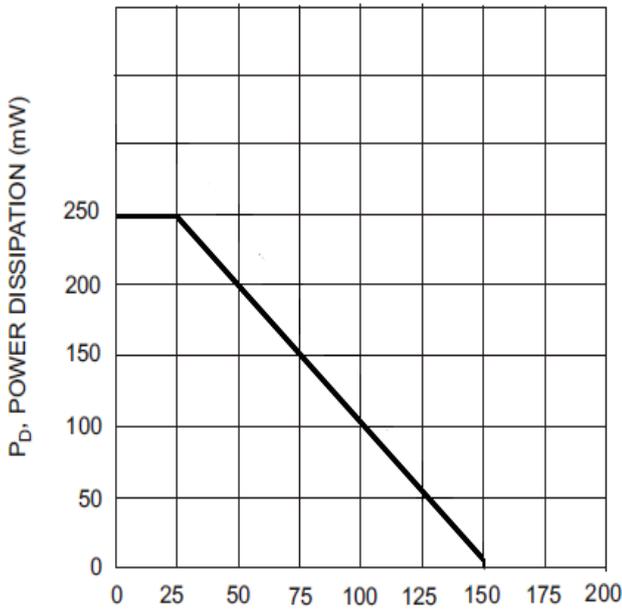
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = -30 V$	-	-50	nA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 6 V$	-	-50	nA
h_{FE}	DC current gain	$V_{CE} = -1V;$ $I_C = -0.1mA$ $I_C = -1mA$ $I_C = -10mA$ $I_C = -50mA$ $I_C = -100mA$	60 80 100 60 30	- - 300 - -	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10mA; I_B = 1mA$	-	-200	mV
		$I_C = -50mA; I_B = -5mA$	-	-300	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = -10mA; I_B = -1mA$	-	-850	mV
		$I_C = -50mA; I_B = -5mA$	-	-950	mV
C_c	collector capacitance	$I_E = I_e = 0; V_{CB} = -5 V;$ $f = 1 MHz$	-	4.5	pF
C_e	emitter capacitance	$I_C = I_e = 0; V_{EB} = -500 mV;$ $f = 1 MHz$	-	10	pF
f_T	transition frequency	$I_C = -10mA; V_{CE} = -20 V;$ $f = 100MHz$	250	-	MHz
NF	noise figure	$I_C = -100\mu A; V_{CE} = -5V;$ $R_S = 1 k\Omega; f = 10Hz to 15.7 kHz$	-	4	dB
Switching times (between 10% and 90% levels);					
t_{on}	Turn-on time	$I_{Con} = -10mA; I_{Bon} = -1mA;$ $I_{Boff} = -1mA$	-	65	ns
t_d	delay time		-	35	ns
t_r	rise time		-	35	ns
t_{off}	turn-off time		-	300	ns
t_s	storage time		-	225	ns
t_f	fall time		-	75	ns

Note: Pulse test: $t_p \leq 300 ms; d \leq 0.02.$

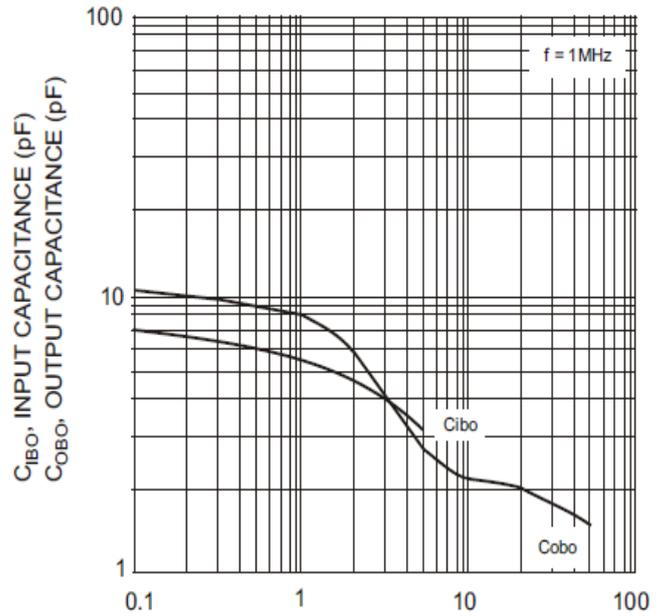
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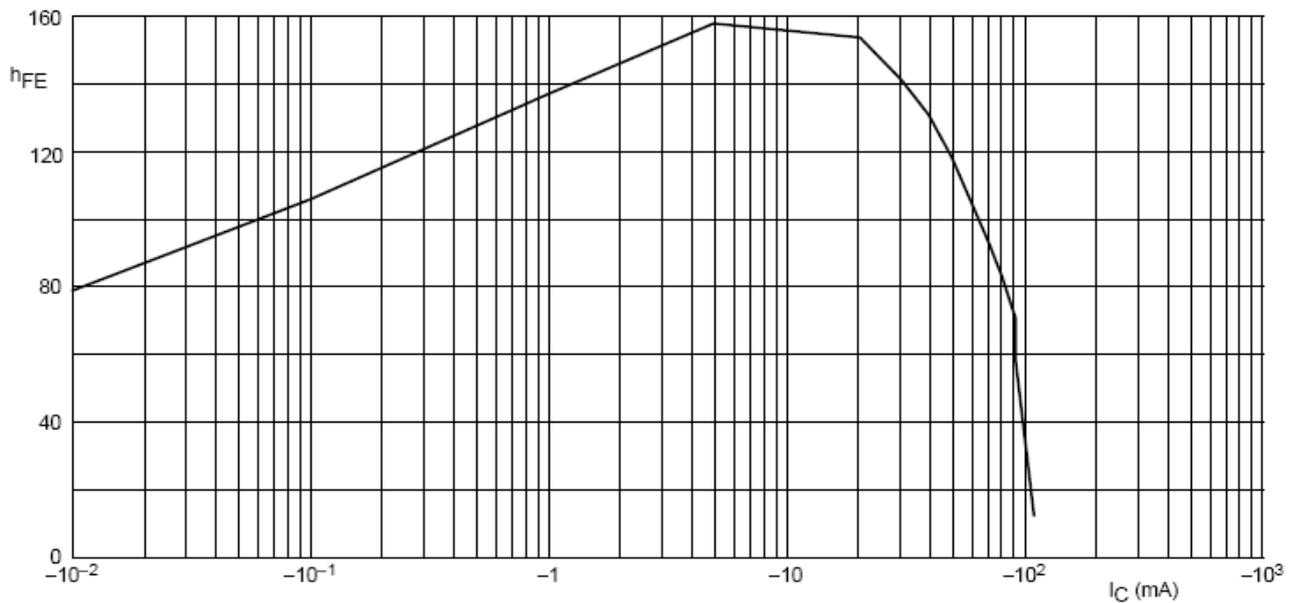
TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



T_A , AMBIENT TEMPERATURE ($^\circ\text{C}$)
 Fig. 1, Max Power Dissipation vs Ambient Temperature



V_{CB} , COLLECTOR-BASE VOLTAGE (V)
 Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage



$V_{CE} = -1\text{ V}$.

Fig. 3, Typical DC Current Gain vs Collector Current

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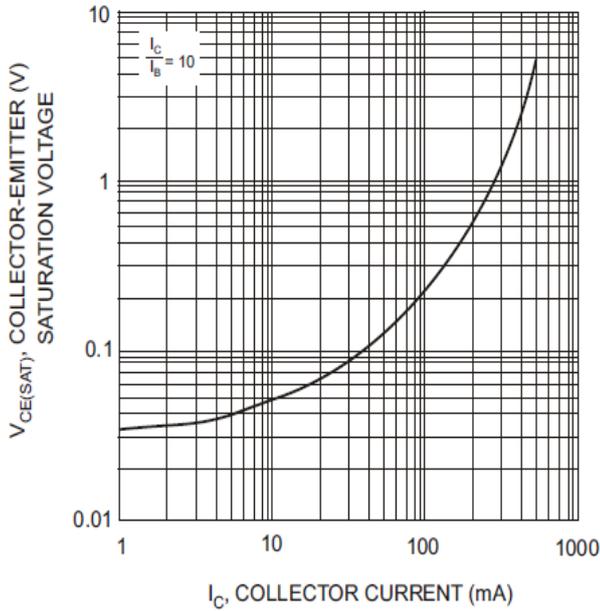


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

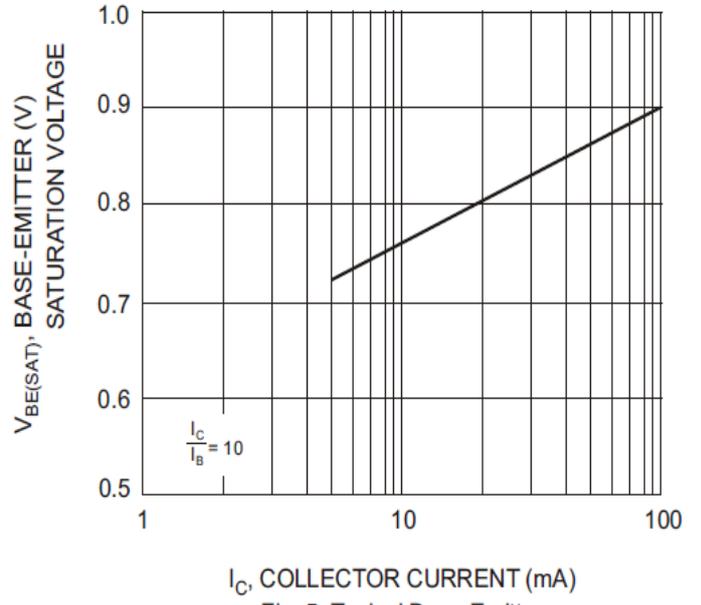


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

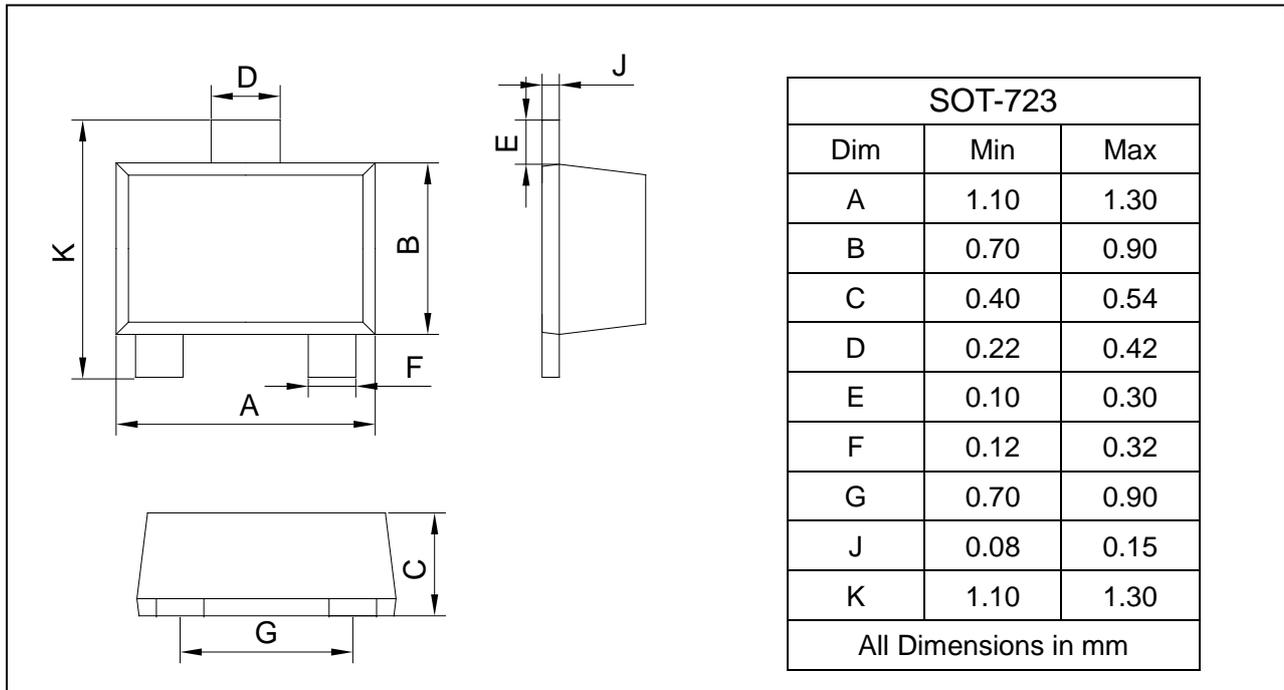
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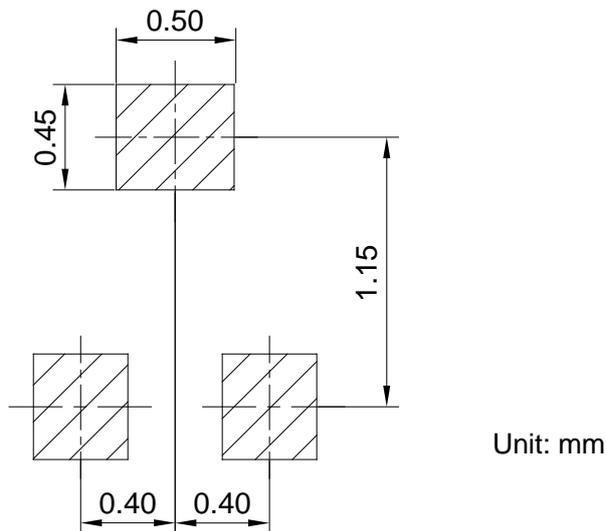
PACKAGE OUTLINE

Plastic surface mounted package

SOT-723



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
MMBT3906M	SOT-723	10000pcs / Tape & Reel