



Micro Commercial Components



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MMBT3906T

PNP General Purpose Transistor

Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Surface Mount SOT-523 Package
- Epitaxial Planar Die Construction
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking:3N
- Halogen free available upon request by adding suffix "-HF"

Maximum Ratings

Symbol	Rating	Rating	Unit
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{CBO}	Collector-Base Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
I_C	Collector Current	-200	mA
$R_{\theta JA}$	Typical Thermal Resistance Junction to Ambient	833	$^{\circ}\text{C}/\text{W}$
P_D	Power Dissipation	150	mW
T_J	Junction Temperature	-55 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics @ 25 $^{\circ}\text{C}$ Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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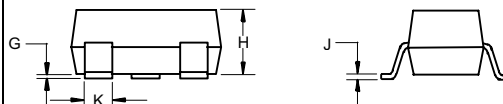
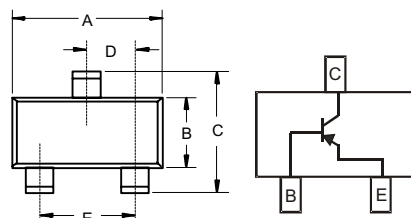
OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ($I_C = -1.0\text{mA}$, $I_B = 0$)	-40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C = -10\mu\text{A}$, $I_E = 0$)	-40		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E = -10\mu\text{A}$, $I_C = 0$)	-5.0		Vdc
I_{CBO}	Collector Cut-off Current ($V_{CB} = -30\text{Vdc}$, $I_E = 0$)		-50	nAdc
I_{EBO}	Emitter Cut-off Current ($V_{EB} = -5\text{Vdc}$, $I_C = 0$)		-50	nAdc

ON CHARACTERISTICS

h_{FE}	DC Current Gain* ($I_C = -0.1\text{mA}$, $V_{CE} = -1.0\text{Vdc}$) ($I_C = -1.0\text{mA}$, $V_{CE} = -1.0\text{Vdc}$) ($I_C = -10\text{mA}$, $V_{CE} = -1.0\text{Vdc}$) ($I_C = -50\text{mA}$, $V_{CE} = -1.0\text{Vdc}$) ($I_C = -100\text{mA}$, $V_{CE} = -1.0\text{Vdc}$)	60 80 100 60 30	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C = -10\text{mA}$, $I_B = -1.0\text{mA}$) ($I_C = -50\text{mA}$, $I_B = -5.0\text{mA}$)		-0.25 -0.4	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C = -10\text{mA}$, $I_B = -1.0\text{mA}$) ($I_C = -50\text{mA}$, $I_B = -5.0\text{mA}$)	-0.65	-0.85 -0.95	Vdc

SOT-523



DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.059	.067	1.50	1.70	
B	.030	.033	0.75	0.85	
C	.057	.069	1.45	1.75	
D	.020 Nominal		0.50 Nominal		
E	.035	.043	0.90	1.10	
G	.000	.004	.000	.100	
H	.028	.031	.70	0.80	
J	.004	.008	.100	.200	
K	.010	.014	.25	.35	

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SMALL-SIGNAL CHARACTERISTICS

Symbol	Parameter	Min	Max	Units
f_T	Current Gain-Bandwidth Product ($I_C=-10\text{mA}$ dc, $V_{CE}=-20\text{V}$ dc, $f=100\text{MHz}$)	250		MHz
C_{obo}	Output Capacitance ($V_{CB}=-5.0\text{V}$ dc, $I_E=0$, $f=1\text{MHz}$)		4.5	pF
C_{ibo}	Input Capacitance ($V_{BE}=-0.5\text{V}$ dc, $I_C=0$, $f=1\text{kHz}$)		10.0	pF
NF	Noise Figure ($I_C=-100\mu\text{A}$ dc, $V_{CE}=-5.0\text{V}$ dc, $R_S=1.0\text{k}\Omega$, $f=1\text{kHz}$)		4.0	dB

SWITCHING CHARACTERISTICS

t_d	Delay Time	$(V_{CC}=-3.0\text{V}$ dc, $V_{BE}=-0.5\text{V}$ dc, $I_C=-10\text{mA}$ dc, $I_{B1}=-1.0\text{mA}$ dc)	35	ns
t_r	Rise Time		35	ns
t_s	Storage Time	$(V_{CC}=-3.0\text{V}$ dc, $I_C=-10\text{mA}$ dc, $I_{B1}=I_{B2}=-1.0\text{mA}$ dc)	225	ns
t_f	Fall Time		75	ns

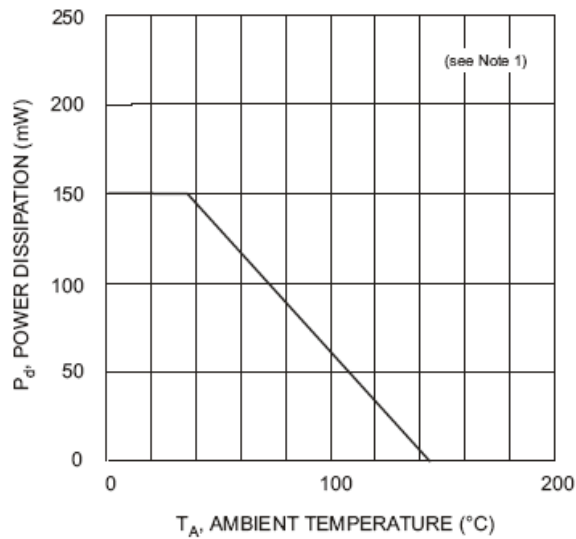


Fig. 1, Power Derating Curve

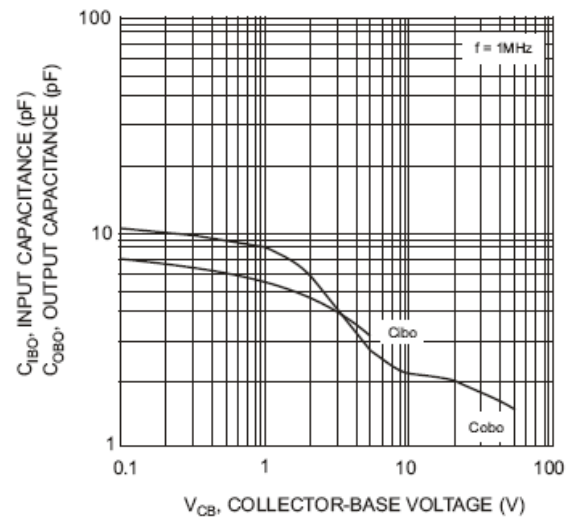


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

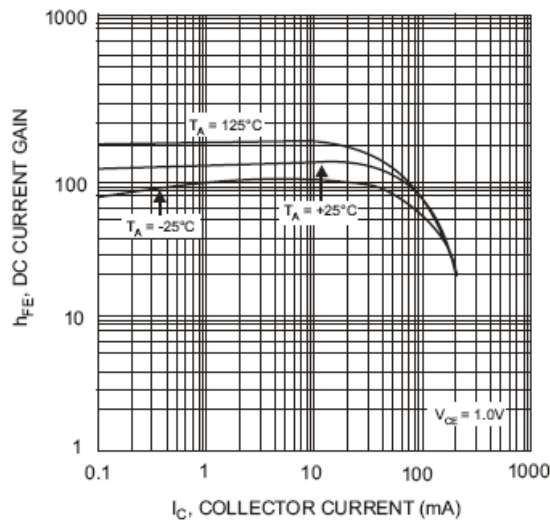


Fig. 3, Typical DC Current Gain vs Collector Current

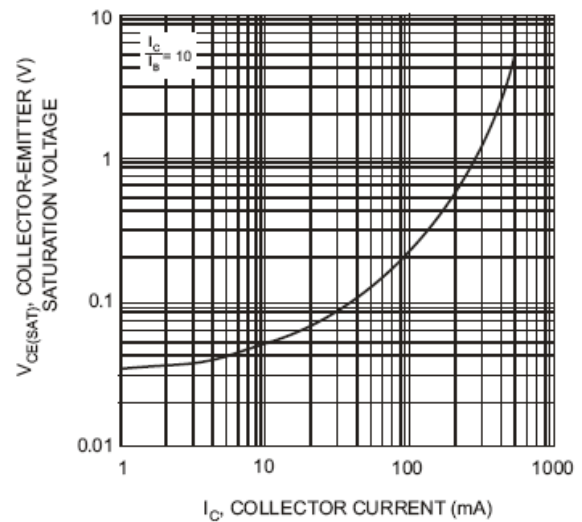


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

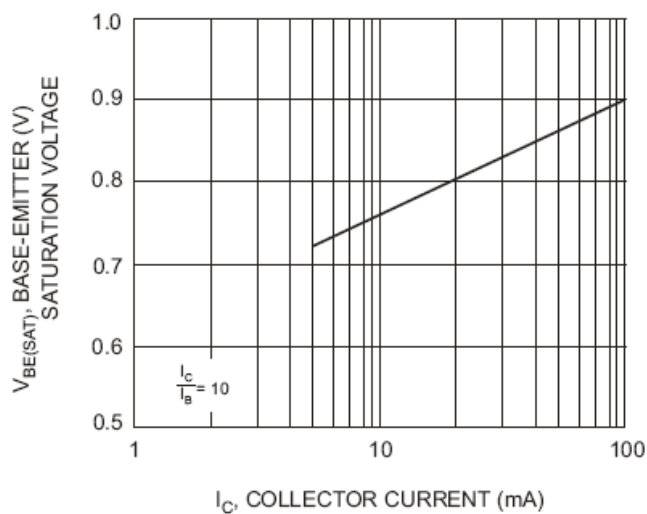


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel; 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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Электрон
Связь**

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