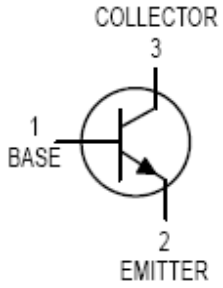
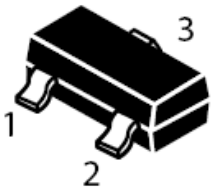
LITE-ON SEMICONDUCTORS

MMST3906

PNP General Purpose Transistor





FEATURES

- Ideal for Medium Power Amplification and Switching
- Complementary NPN Type available(MMST3904)

MECHANICAL DATA

- Case: SOT-323 Plastic
- Case material: “Green” molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead Free in RoHS 2002/95/EC Compliant

Maximum Ratings @ T_A = 25℃

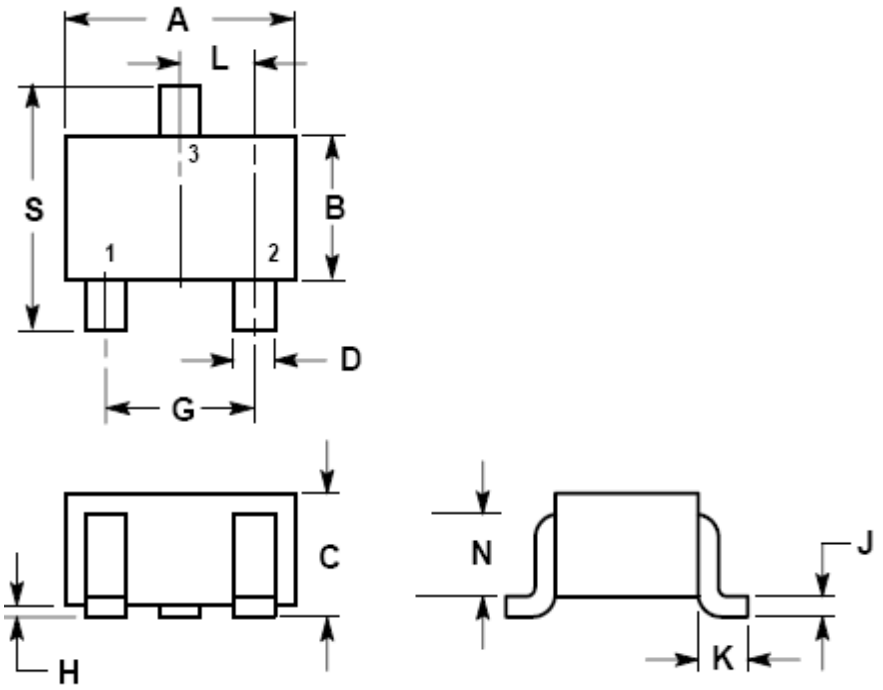
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current -Continuous	I_C	-200	mA
Total Power Dissipation FR-4 board	P_D	150	mW
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55~+150	℃

Electrical Characteristics @ T_A = 25℃ unless otherwise specified

Characteristic	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	I_C=-10μA,I_E=0	V_{CBO}	-40			V
Collector-emitter breakdown voltage	I_C=-1mA,I_B=0	V_{CEO}	-40			V
Emitter-base breakdown voltage	I_E=-10μA,I_C=0	V_{EBO}	-5			V
Collector-emitter cut-off current	V_{CE}=-30V,$V_{BE(off)}$=-3V	I_{CEX}			-0.05	uA
DC current gain	V_{CE}=-1V,I_C=0.1mA	h_{FE1}	60			
	V_{CE}=-1V,I_C=-1mA	h_{FE2}	80			
	V_{CE}=-1V,I_C=-10mA	h_{FE3}	100		300	
	V_{CE}=-1V,I_C=-50mA	h_{FE4}	60			
	V_{CE}=-1V,I_C=-100mA	h_{FE5}	30			
Collector-emitter saturation voltage	I_C=-10mA,I_B=-1mA	V_{CE}(sat)1			-0.25	V
	I_C=-50mA,I_B=-5mA	V_{CE}(sat)2			-0.4	V
Base-emitter saturation voltage	I_C=-10mA,I_B=-1mA	V_{BE}(sat)1	-0.65		-0.85	V
	I_C=-50mA,I_B=-5mA	V_{BE}(sat)2			-0.95	V
Transition frequency	V_{CE}=-20V,I_C=-10mA, f=100MHz	f_T	250			MHz
Output Capacitance	V_{CB}=-5V,I_E=0,f=1MHz	Cob			4.5	pF
Delay time	V_{CC}=-3V, $V_{BE(off)}$=-0.5V I_C=-10mA , I_{B1}= -1mA	T_d			35	nS
Rise time		T_r			35	nS
Storage time	V_{CC}=-3.0V, I_C=-10mA I_{B1}=-I_{B2}=-1mA	T_s			225	nS
Fall time		T_f			75	nS

REV.0, Jan-2013, KSNR21

SOT-323 Outline Dimension



Symbol	Dimension In Millimeters	
	Min	Max.
A	1.80	2.20
B	1.15	1.35
C	0.80	1.00
D	0.30	0.40
G	1.20	1.40
H	0.00	0.10
J	0.10	0.25
K	0.425 REF	
L	0.650 BSC	
N	0.700 REF	
S	2.00	2.40

Device Marking :

Device P/N	Marking code
MMST3906	2A

Electrical characteristic curves

Fig.1 Turn–On Time

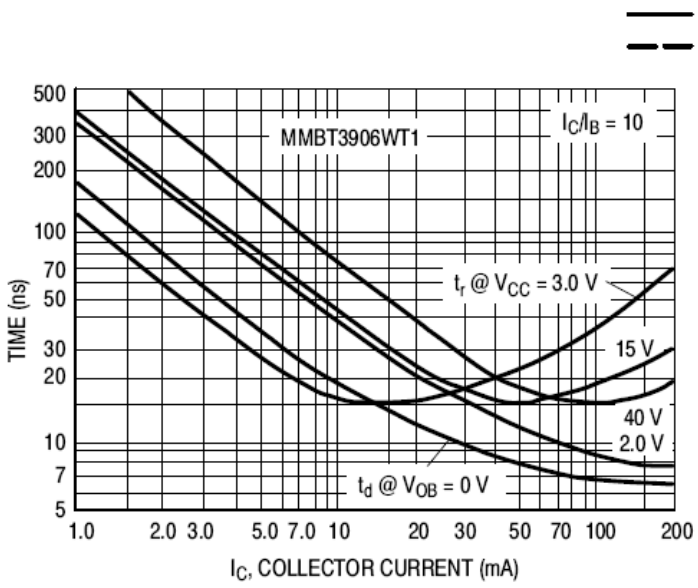


Fig.2 Fall Time

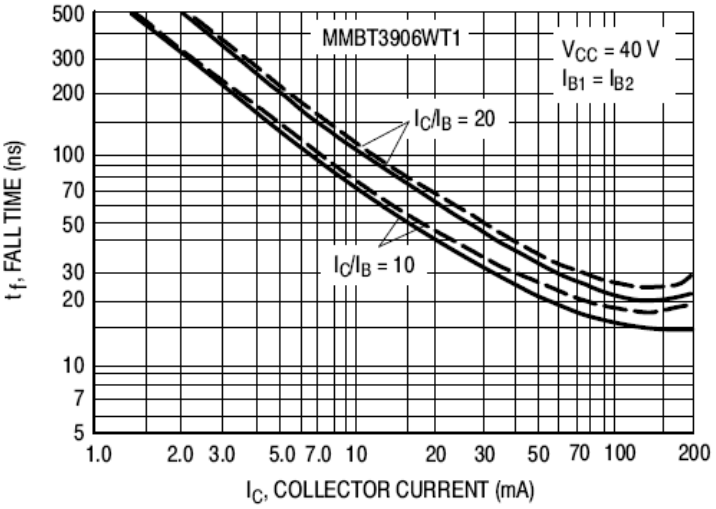


Fig.3 Noise Figure

(V_{CE} = −5.0 Vdc, T_A = 25°C, Bandwidth = 1.0 Hz)

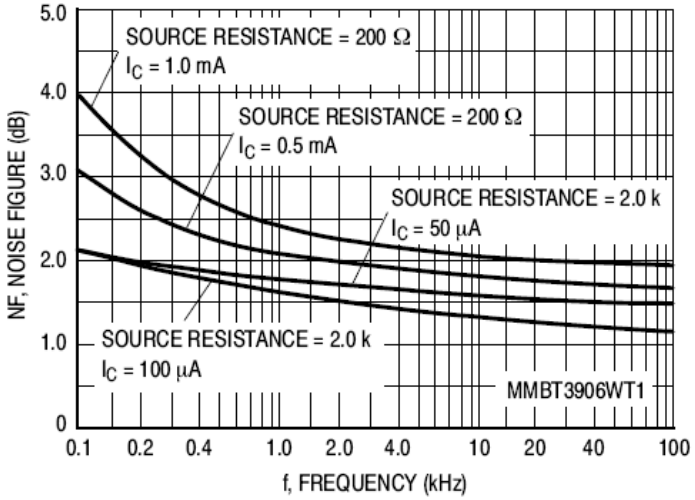
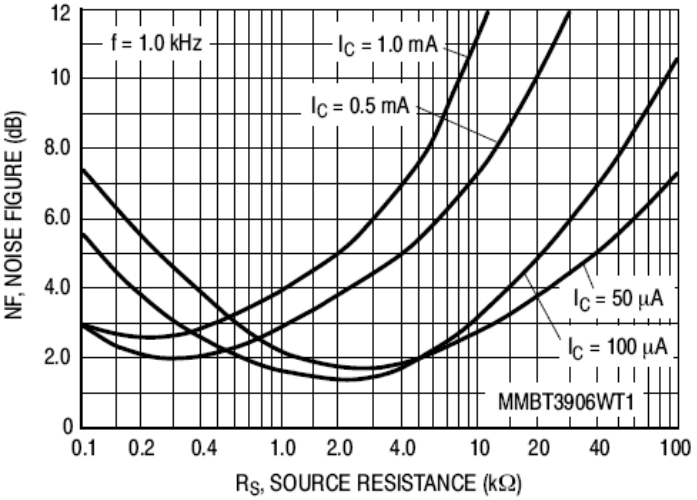


Fig.4 Noise Figure



Electrical characteristic curves

Fig.5 Current Gain

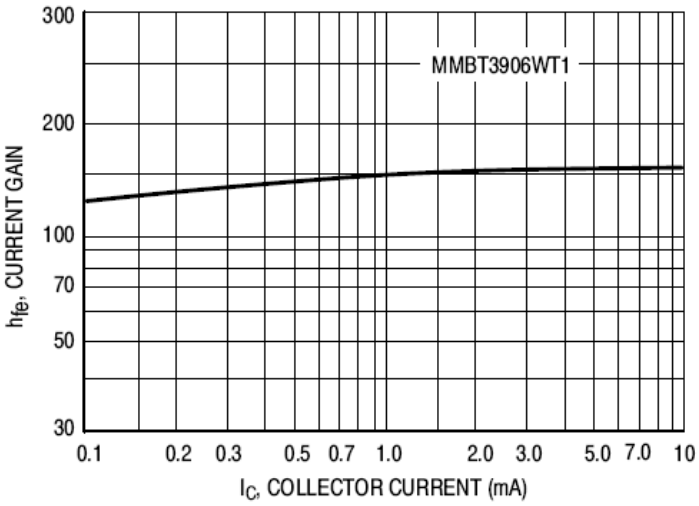


Fig.6 Output Admittance

(V_{CE} = −10 Vdc, f = 1.0 kHz, T_A = 25°C)

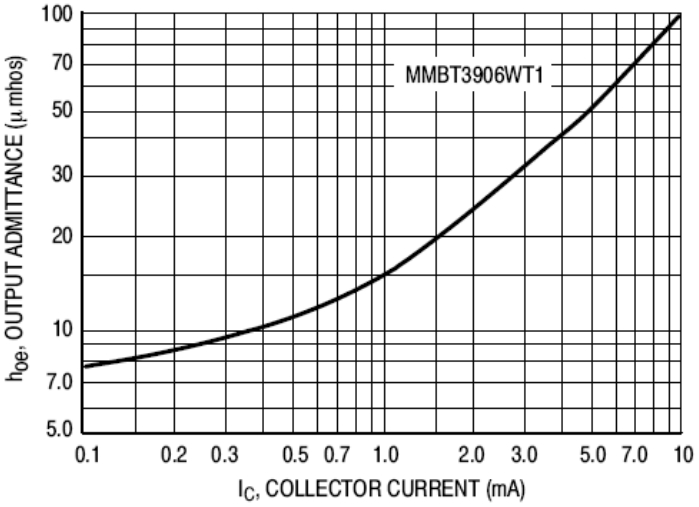


Fig.7Input Impedance

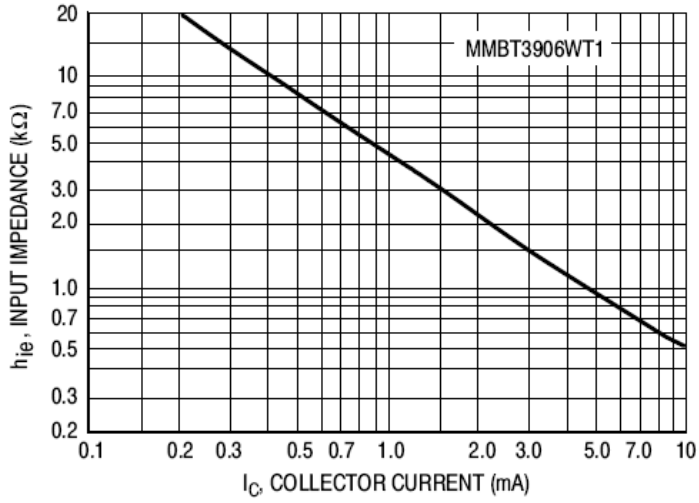


Fig.8 Voltage Feedback Ratio

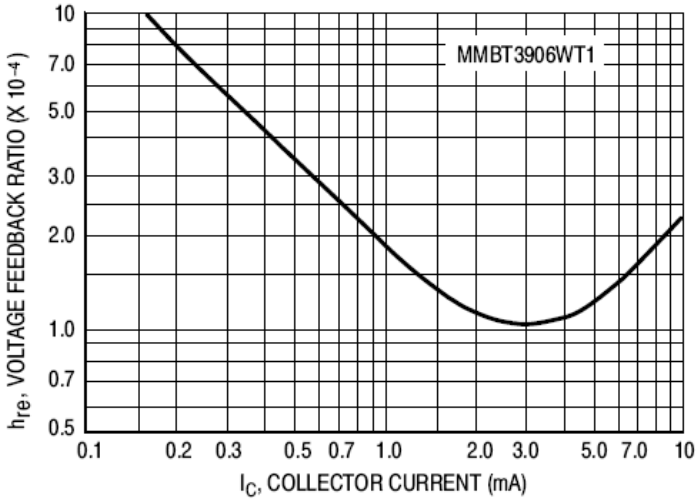
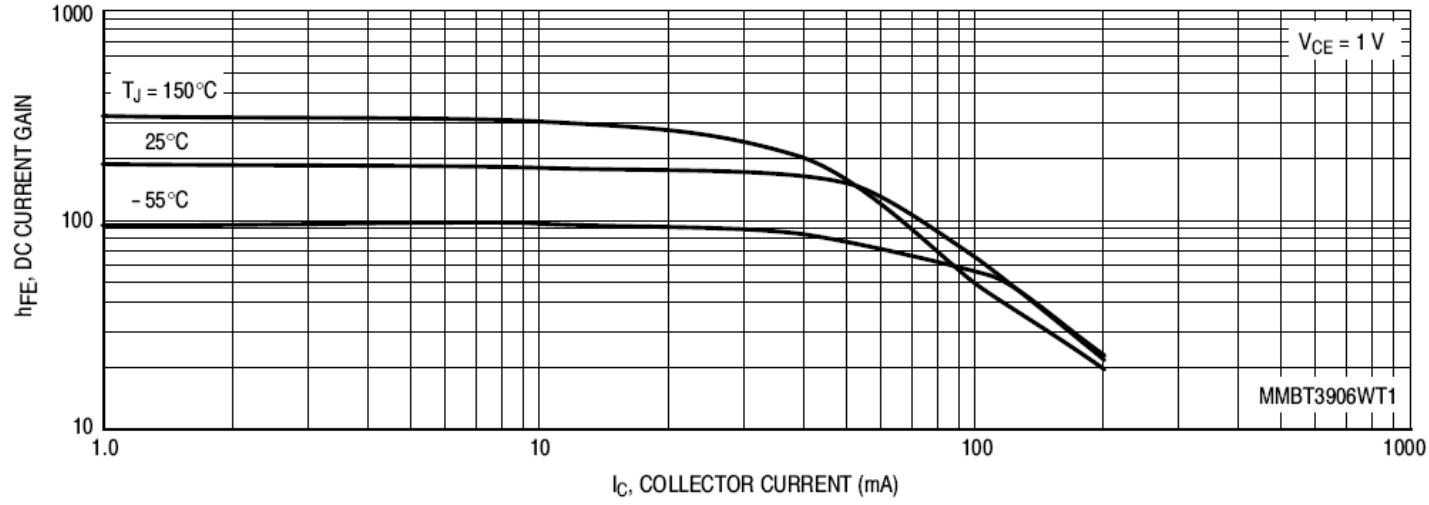


Fig.9 DC Current Gain



Electrical characteristic curves

Fig.10 Collector Saturation Region

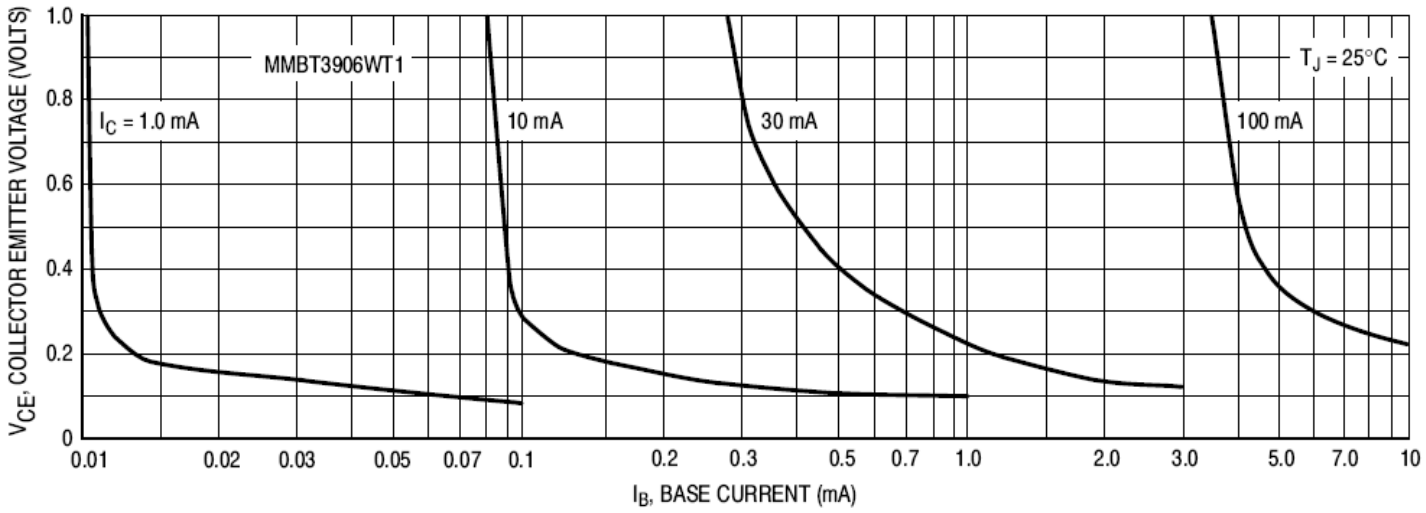


Fig.11 Collector Emitter Saturation Voltage vs. Collector Current

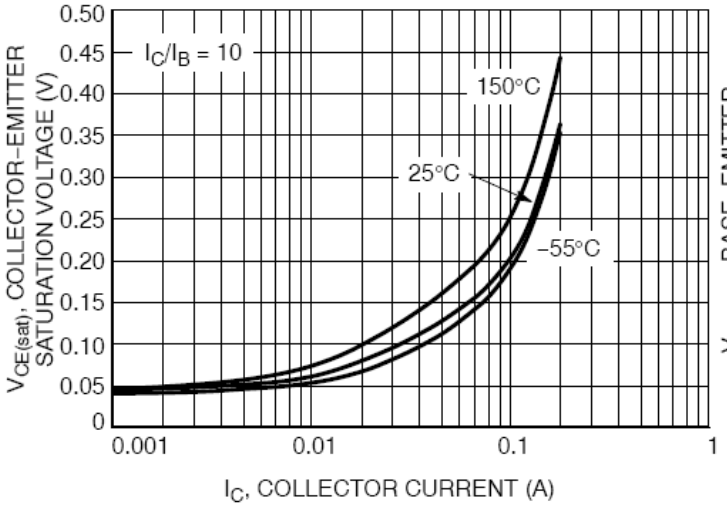


Fig.12 Base Emitter Saturation Voltage Vs. Collector Current

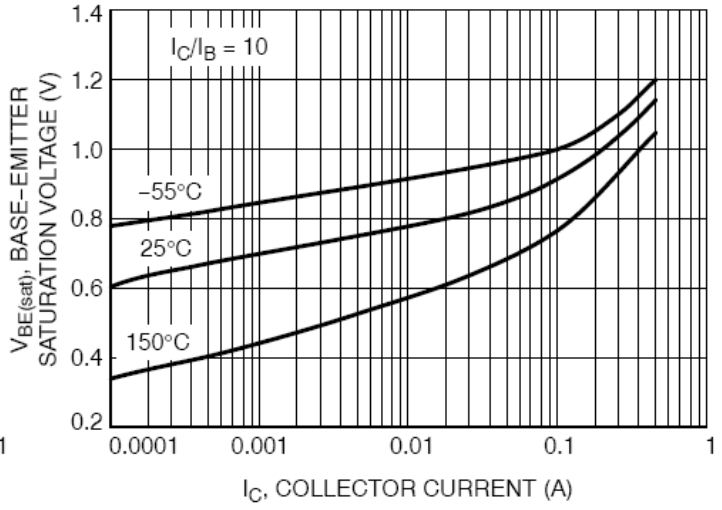
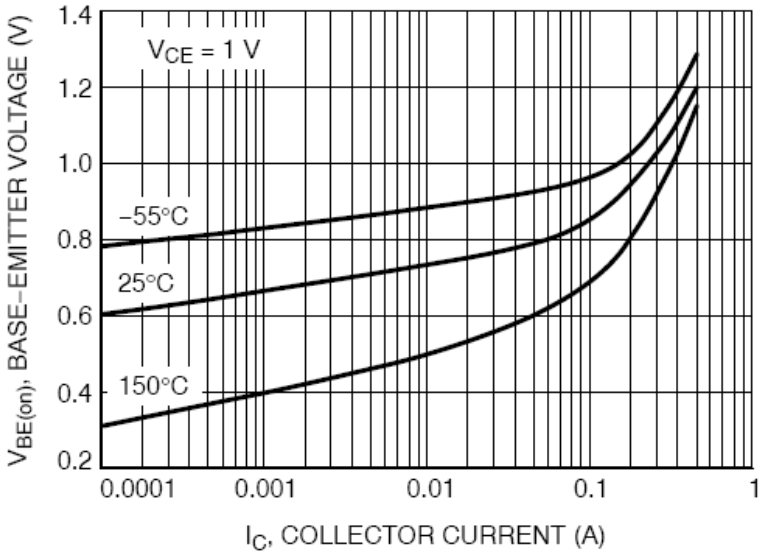


Fig.13 Base Emitter Voltage vs. Collector Current



Electrical characteristic curves

Fig.14 Temperature Coefficients

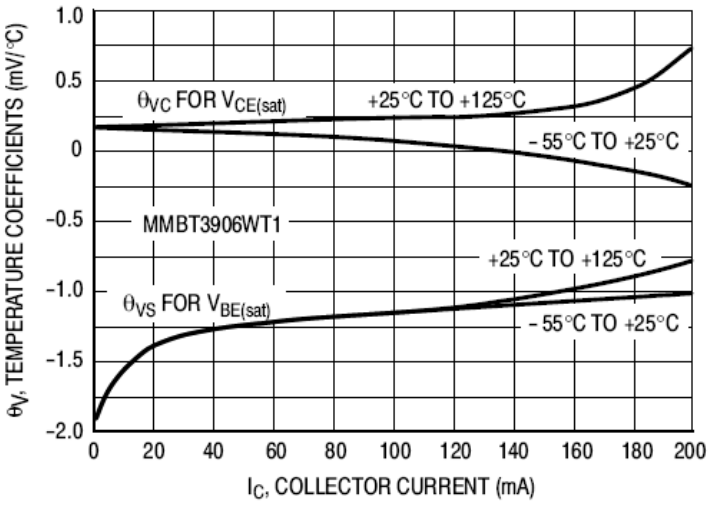


Fig.15 Capacitance

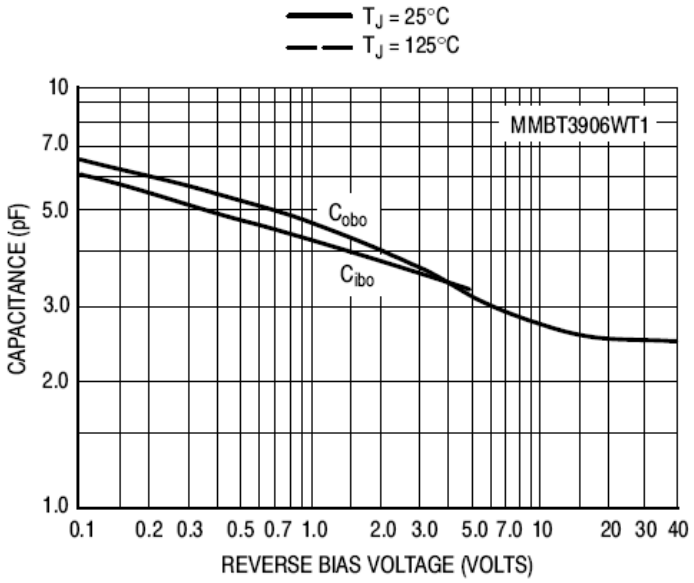


Fig.16 Current Gain Bandwidth Product Vs. Collector Current

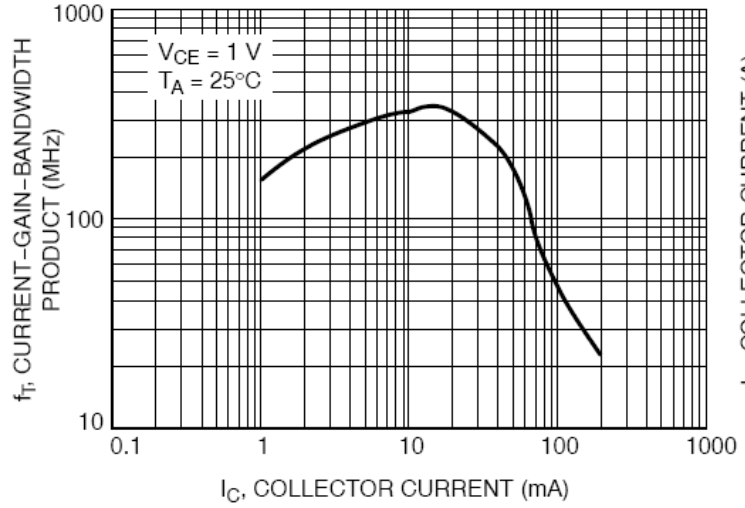
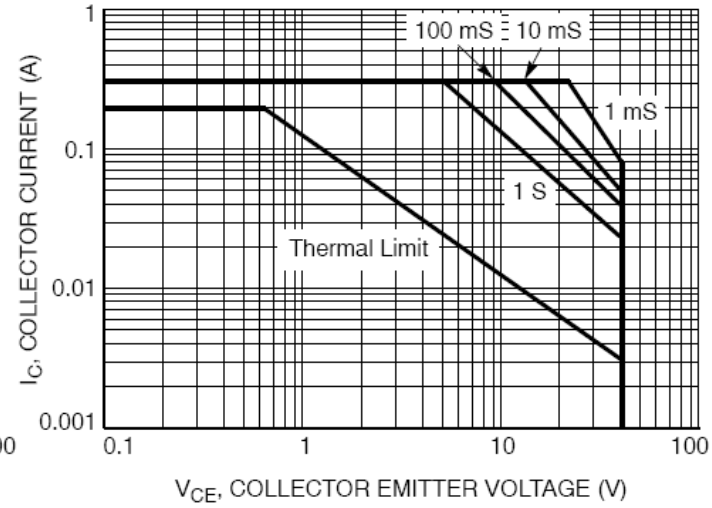


Fig.17 Safe Operation Area



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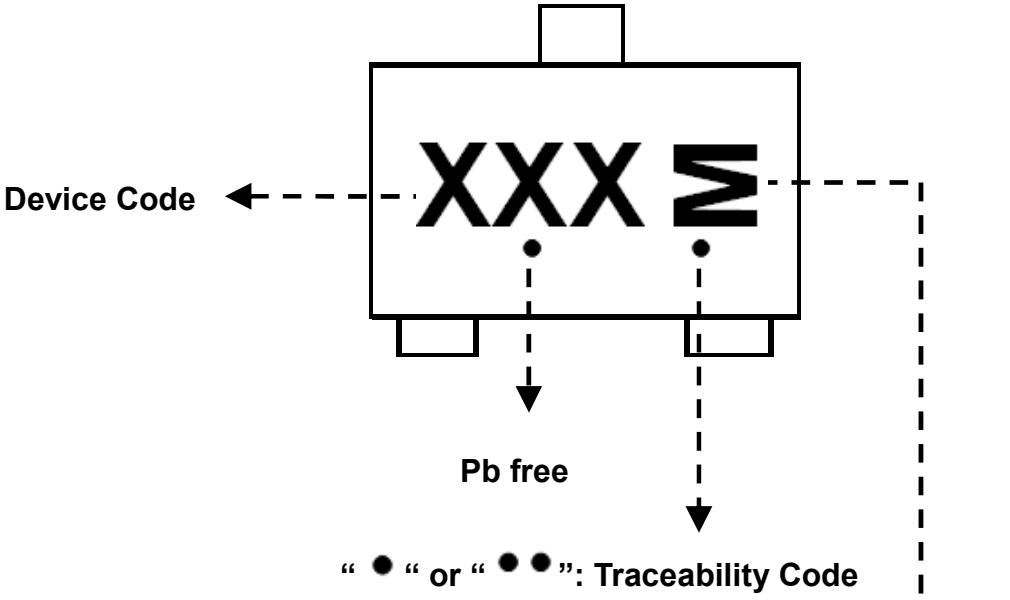
New Marking Rule Notification

Range: In order to have well management in process control, the new marking rule is applied to small signal device including Switching Diode, Transistor and Schottky Diode.

Package: SOT-23 / SOT-323 / SOT-523



Odd Year	Even Year
1	E
2	F
3	H
4	J
5	K
6	L
7	N
8	P
9	U
T	X
V	Y
C	Z