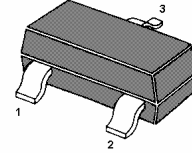


MMBT3906

PNP Silicon General Purpose Transistor

for switching and amplifier applications.

As complementary types the NPN transistors MMBT3904 is recommended.



1. Base 2. Emitter 3. Collector

SOT-23 Plastic Package

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	6	V
Collector Current Continuous	$-I_C$	200	mA
Total Device Dissipation FR-5 Board ¹⁾	P_{tot}	200	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_s	-55 to +150	$^\circ\text{C}$

¹⁾ FR-5=1×0.75×0.062 in.



CHANGZHOU GUANGDA ELECTRONIC CO. LTD

Dated : 12/06/2009

MMBT3906

Characteristics at $T_{amb} = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $-V_{CE} = 1\text{ V}$, $-I_C = 0.1\text{ mA}$	h_{FE}	60	-	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 1\text{ mA}$	h_{FE}	80	-	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 10\text{ mA}$	h_{FE}	100	300	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 50\text{ mA}$	h_{FE}	60	-	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 100\text{ mA}$	h_{FE}	30	-	-
Collector Emitter Saturation Voltage				
at $-I_C = 10\text{ mA}$, $-I_B = 1\text{ mA}$	$-V_{CEsat}$	-	0.25	V
at $-I_C = 50\text{ mA}$, $-I_B = 5\text{ mA}$	$-V_{CEsat}$	-	0.4	V
Base Emitter Saturation Voltage				
at $-I_C = 10\text{ mA}$, $-I_B = 1\text{ mA}$	$-V_{BEsat}$	0.65	0.85	V
at $-I_C = 50\text{ mA}$, $-I_B = 5\text{ mA}$	$-V_{BEsat}$	-	0.95	V
Collector Cutoff Current				
at $-V_{CB} = 30\text{ V}$	$-I_{CBO}$	-	50	nA
Base Cutoff Current				
at $-V_{EB} = 6\text{ V}$	$-I_{EBO}$	-	50	nA
Collector Base Breakdown Voltage				
at $-I_C = 10\text{ }\mu\text{A}$	$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage				
at $-I_C = 1\text{ mA}$	$-V_{(BR)CEO}$	40	-	V
Emitter - Base Breakdown Voltage				
at $-I_E = 10\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	6	-	V
Current Gain Bandwidth Product				
at $-V_{CE} = 20\text{ V}$, $-I_C = 10\text{ mA}$, $f = 100\text{ MHz}$	f_T	250	-	MHz
Output Capacitance				
at $-V_{CB} = 5\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	C_{obo}	-	4.5	pF
Input Capacitance				
at $-V_{EB} = 0.5\text{ V}$, $I_C = 0$, $f = 1\text{ MHz}$	C_{ibo}	-	10	pF
Input Impedance				
at $-I_C = 1\text{ mA}$, $-V_{CE} = 10\text{ V}$, $f = 1\text{ KHz}$	h_{ie}	2	12	K Ω
Voltage Feedback Ratio				
at $-I_C = 1\text{ mA}$, $-V_{CE} = 10\text{ V}$, $f = 1\text{ KHz}$	h_{re}	0.1	10	$\times 10^{-4}$
Small Signal Current Gain				
at $-I_C = 1\text{ mA}$, $-V_{CE} = 10\text{ V}$, $f = 1\text{ KHz}$	h_{fe}	100	400	-



CHANGZHOU GUANGDA ELECTRONIC CO. LTD

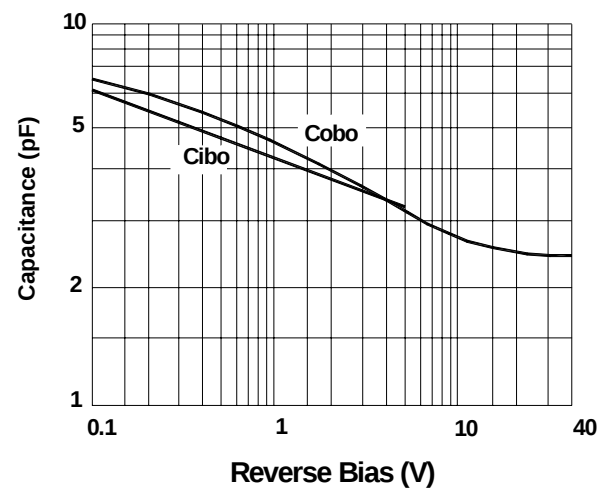
Dated : 12/06/2009

MMBT3906

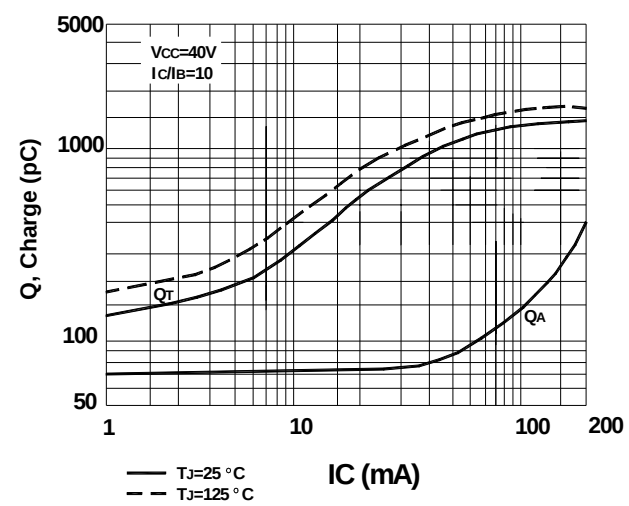
Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

Output Admittance at $-I_C = 1\text{ mA}$, $-V_{CE} = 10\text{ V}$, $f = 1\text{ KHz}$		h_{oe}	3	60	μmhos
Noise Figure at $-I_C = 100\text{ }\mu\text{A}$, $-V_{CE} = 5\text{ V}$, $R_S = 1\text{ K}\Omega$, $f = 1\text{ KHz}$		NF	-	4	dB
Delay Time	at $-V_{CC} = 3\text{ V}$, $V_{BE} = 0.5\text{ V}$,	t_d	-	35	ns
Rise Time	$-I_C = 10\text{ mA}$, $-I_{B1} = 1\text{ mA}$	t_r	-	35	ns
Storage Time	at $-V_{CC} = 3\text{ V}$, $-I_C = 10\text{ mA}$,	t_s	-	225	ns
Fall Time	$-I_{B1} = -I_{B2} = 1\text{ mA}$	t_f	-	75	ns

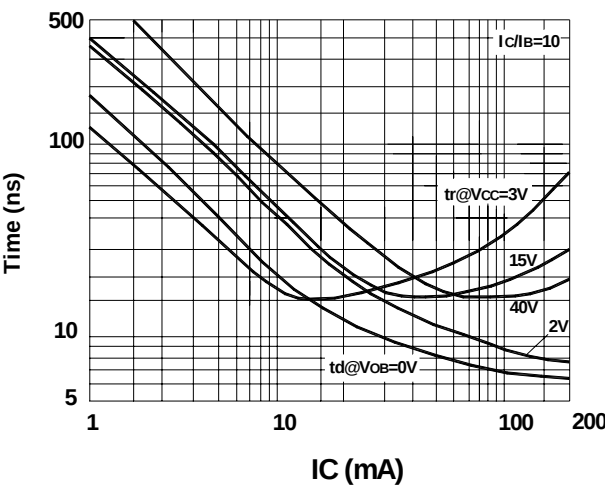
Capacitance



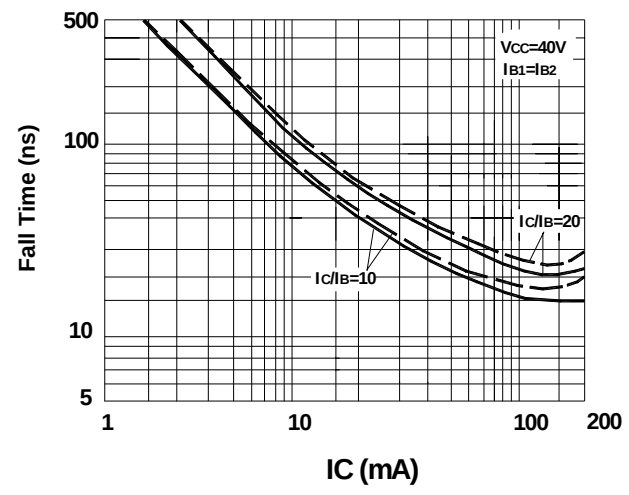
Charge Data



Turn-On Time

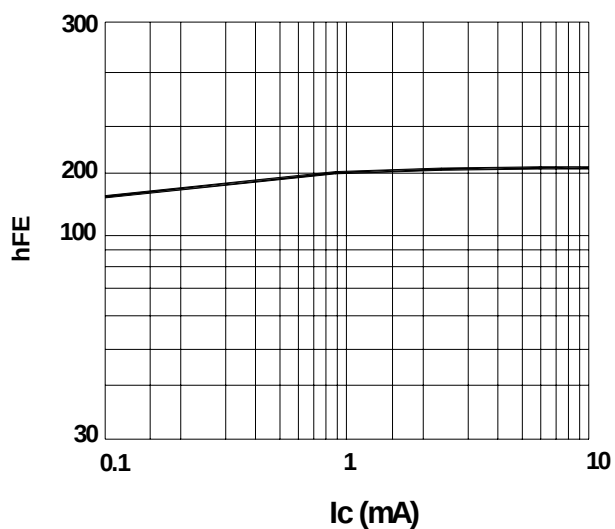


Fall Time

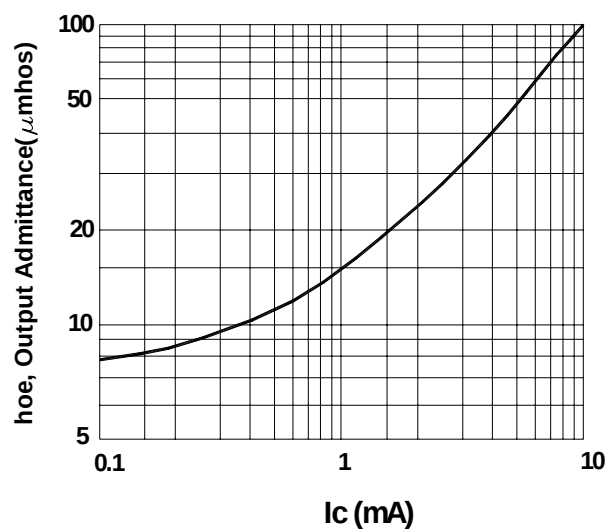


h Parameters ($V_{CE}=10V$, $T_a=25^\circ C$, $f=1kHz$)

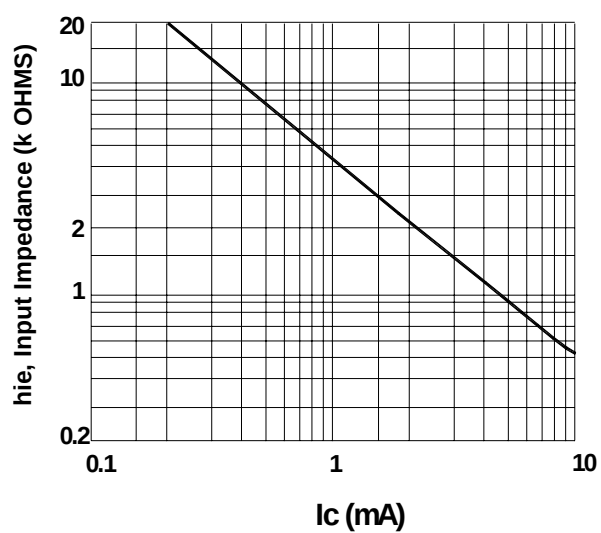
Current Gain



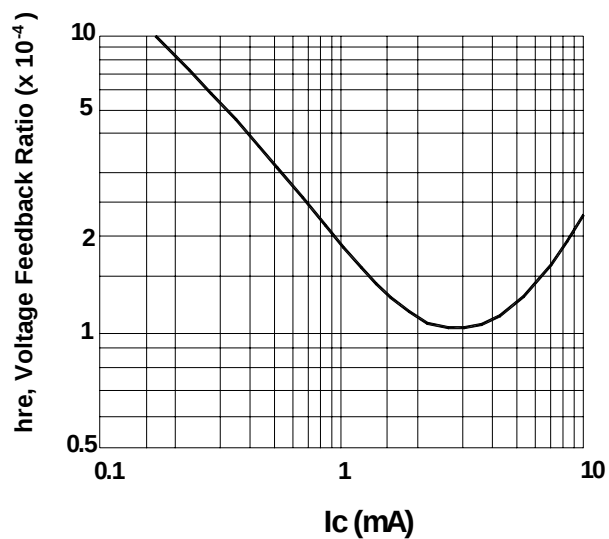
Output Amittance



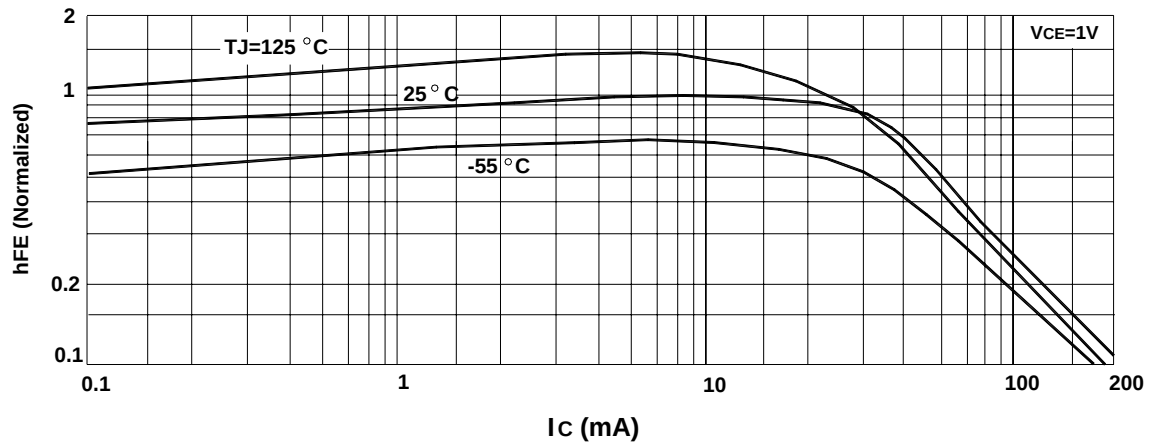
Input Impedance



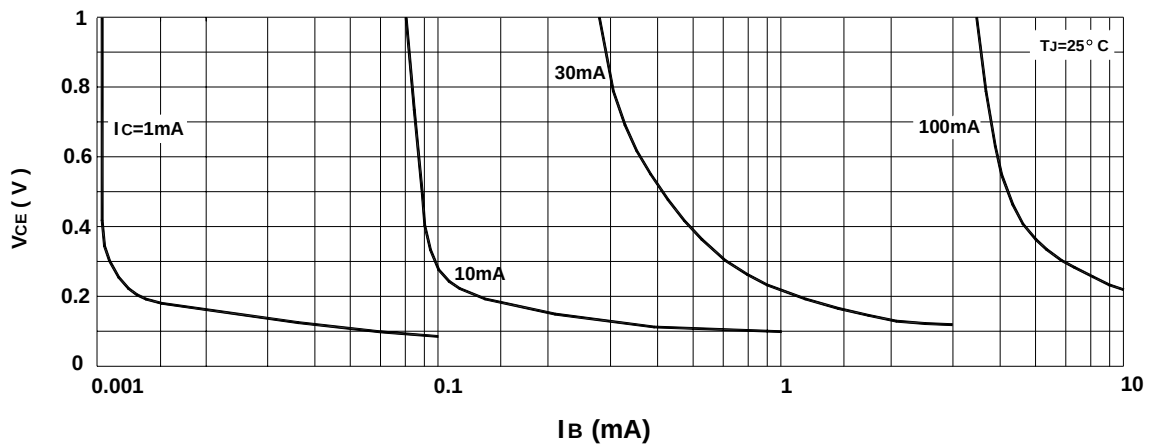
Voltage Feedback Ratio



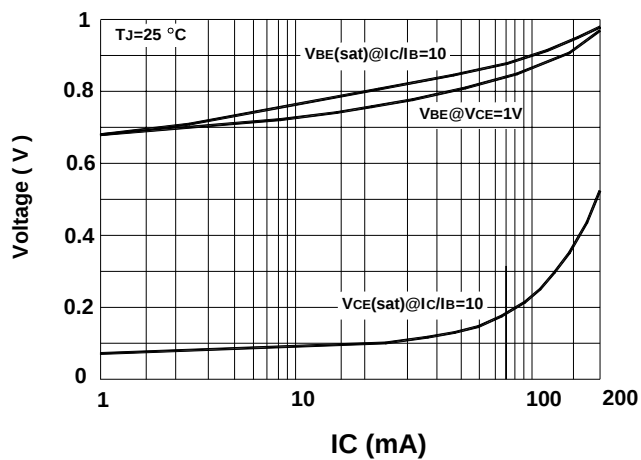
DC Current Gain



Collector Saturation Region



"On" Voltages



Temperature Coefficients

