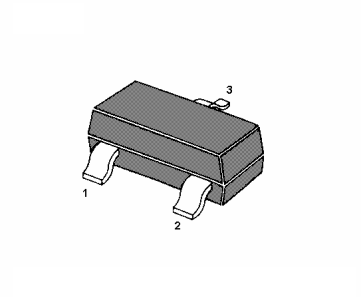
MMBT3906

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 °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/ °C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature Range	T_J, T_s	-55 to +150	°C

[1)] FR-5=1×0.75×0.062 in.

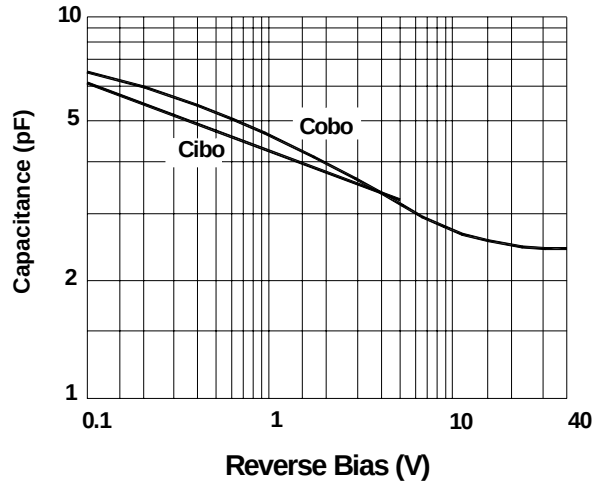
Characteristics at T_{amb} = 25 °C

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

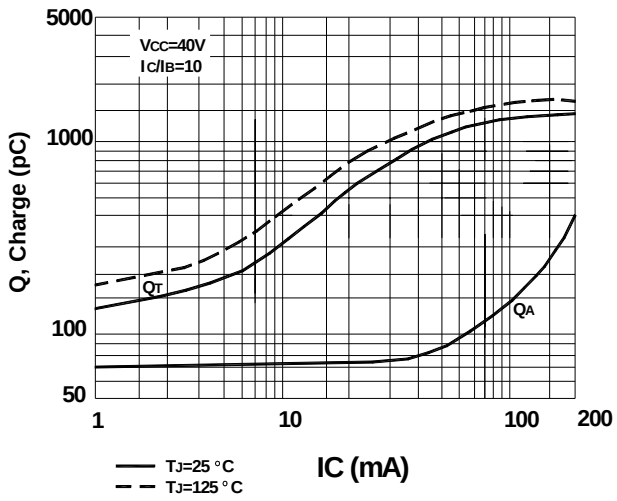
Characteristics at T_{amb}=25 °C

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

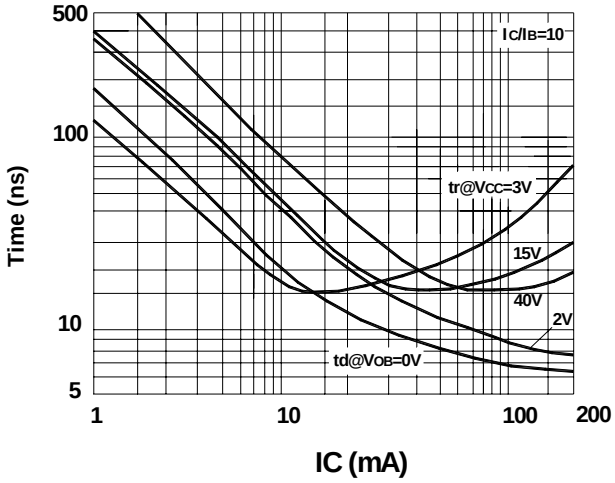
Capacitance



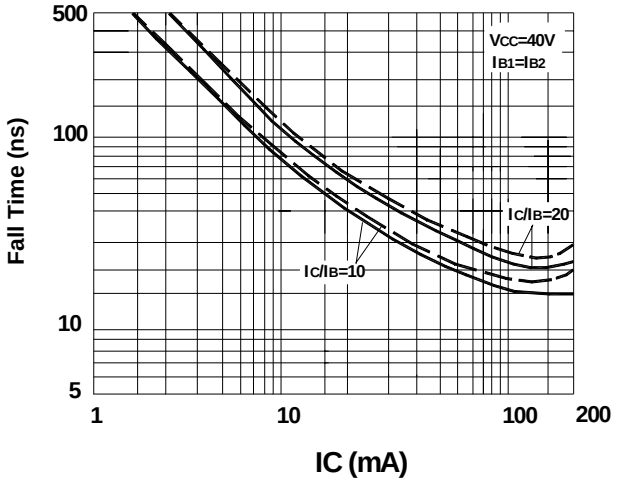
Charge Data



Turn-On Time

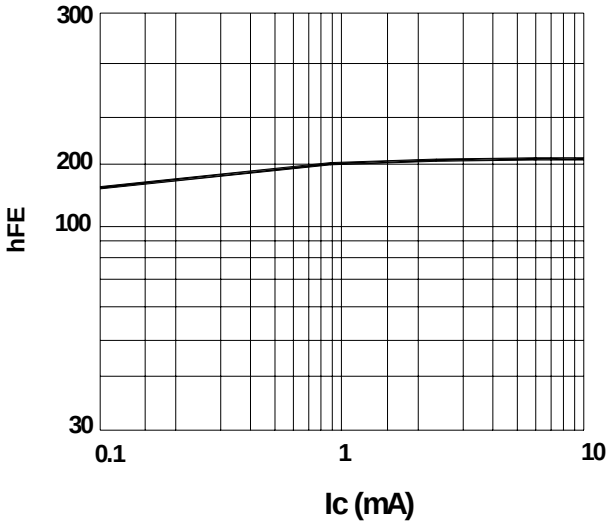


Fall Time

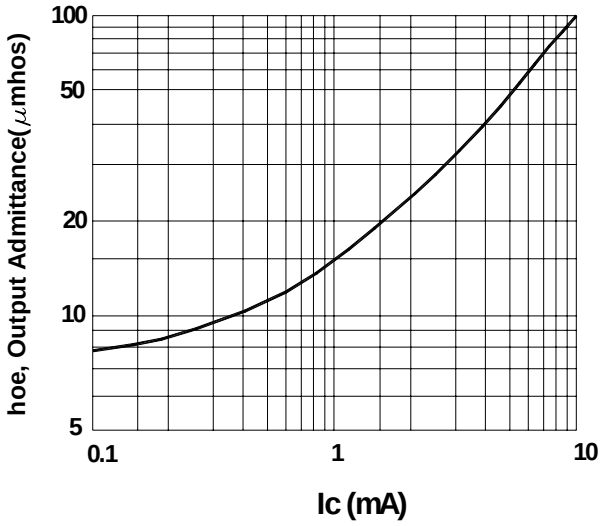


h Parameters (V_{CE}=-10V, Ta=25 °C, f=1kHz)

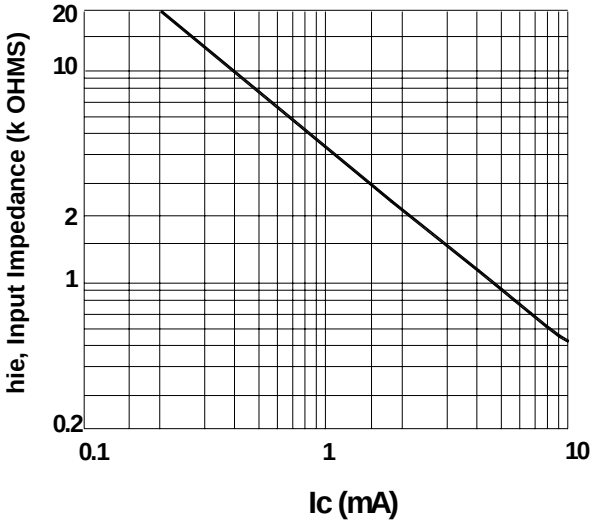
Current Gain



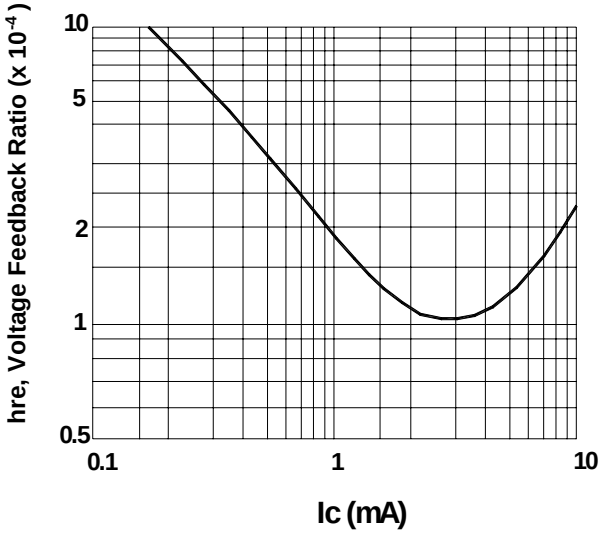
Output Amittance



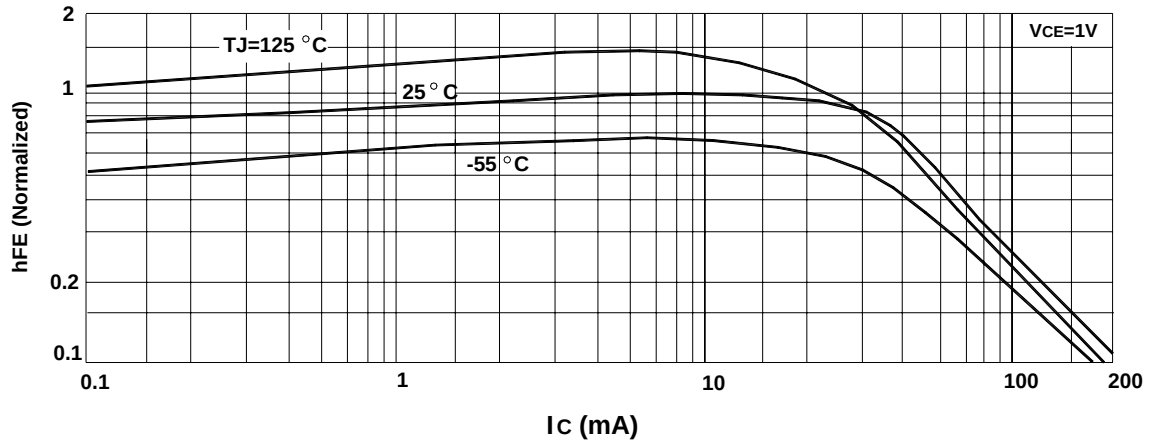
Input Impedance



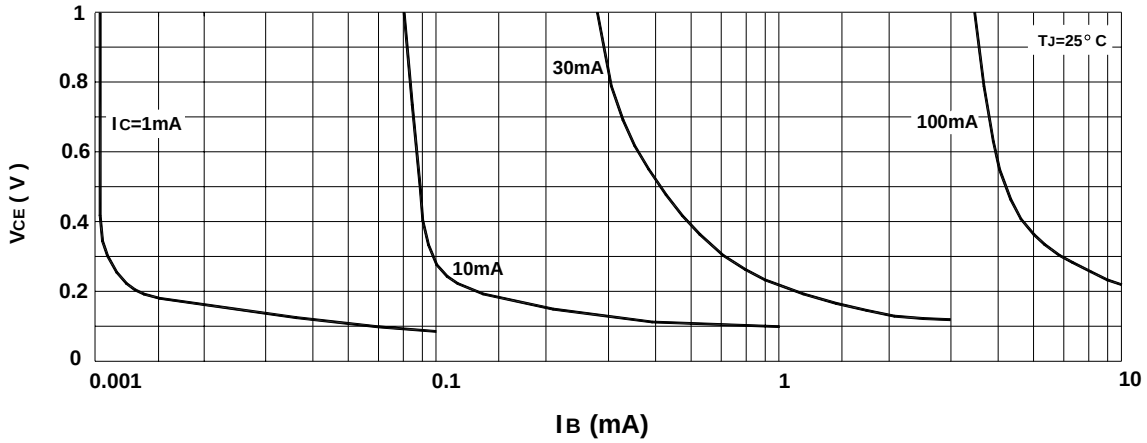
Voltage Feedback Ratio



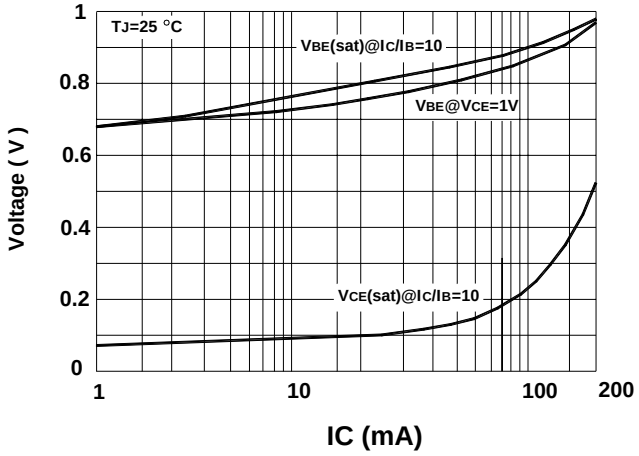
DC Current Gain



Collector Saturation Region



"On" Voltages



Temperature Coefficients