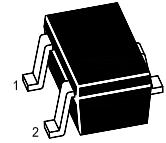


# MMBT3906W

## PNP Silicon Epitaxial Planar Transistor

for switching and amplifier applications

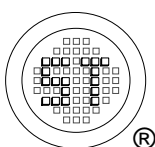


1.Base 2.Emitter 3.Collector  
SOT-323 Plastic Package

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	200	mA
Total Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to +150	$^\circ\text{C}$

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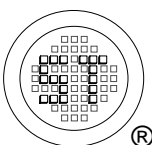


Dated: 24/03/2012 Rev: 01

# MMBT3906W

## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

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 Cutoff Current at $-V_{CE} = 30\text{ V}$	$-I_{CES}$	-	50	nA
Emitter Base Cutoff Current at $-V_{EB} = 3\text{ V}$	$-I_{EBO}$	-	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 $-I_E = 10\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C = 10\text{ mA}$ , $-I_B = 1\text{ mA}$	$-V_{CE(sat)}$	-	0.25	V
at $-I_C = 50\text{ mA}$ , $-I_B = 5\text{ mA}$		-	0.4	
Base Emitter Saturation Voltage at $-I_C = 10\text{ mA}$ , $-I_B = 1\text{ mA}$	$-V_{BE(sat)}$	0.65	0.85	V
at $-I_C = 50\text{ mA}$ , $-I_B = 5\text{ mA}$		-	0.95	
Transition Frequency at $-V_{CE} = 20\text{ V}$ , $I_E = 10\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	250	-	MHz
Collector Output Capacitance at $-V_{CB} = 10\text{ V}$ , $f = 100\text{ KHz}$	$C_{ob}$	-	4.5	pF
Delay Time at $-V_{CC} = 3\text{ V}$ , $-V_{BE(OFF)} = 0.5\text{ V}$ , $-I_C = 10\text{ mA}$ , $-I_{B1} = 1\text{ mA}$	$t_d$	-	35	ns
Rise Time at $-V_{CC} = 3\text{ V}$ , $-V_{BE(OFF)} = 0.5\text{ V}$ , $-I_C = 10\text{ mA}$ , $-I_{B1} = 1\text{ mA}$	$t_r$	-	35	ns
Storage Time at $-V_{CC} = 3\text{ V}$ , $-I_C = 10\text{ mA}$ , $I_{B1} = -I_{B2} = -1\text{ mA}$	$t_{stg}$	-	225	ns
Fall Time at $-V_{CC} = 3\text{ V}$ , $-I_C = 10\text{ mA}$ , $I_{B1} = -I_{B2} = -1\text{ mA}$	$t_f$	-	75	ns



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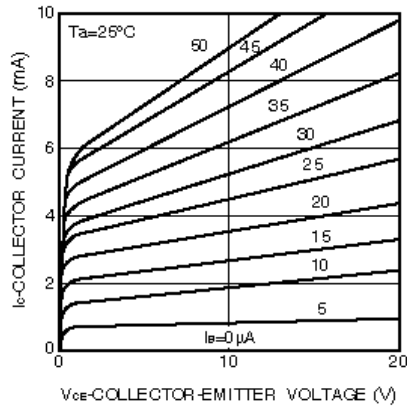


Fig.1 Grounded emitter output characteristics

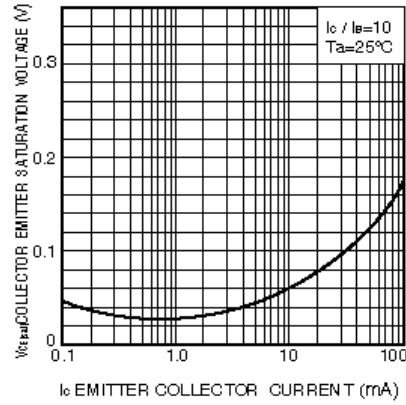


Fig.2 Collector-emitter saturation voltage vs. collector current

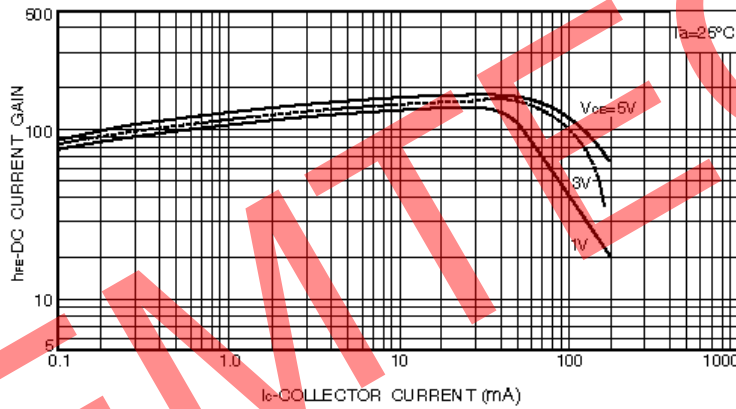


Fig.3 DC current gain vs. collector current (I)

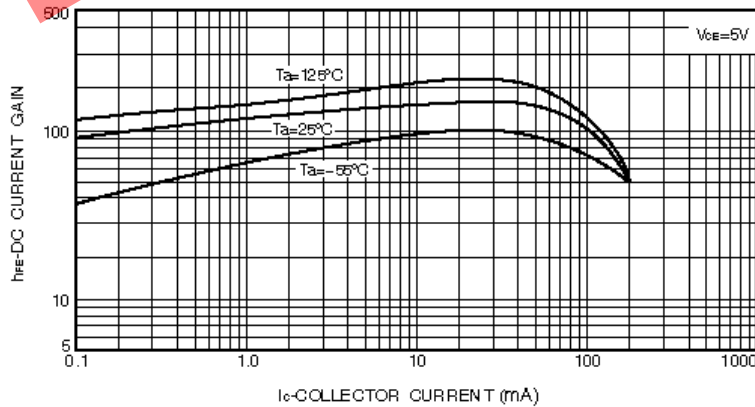
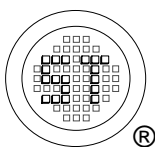


Fig.4 DC current gain vs. collector current (II)



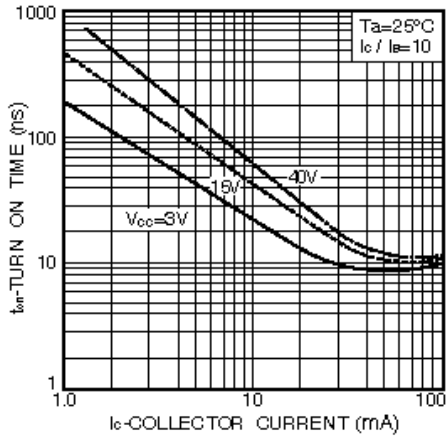


Fig.8 Turn-on time vs. collector current

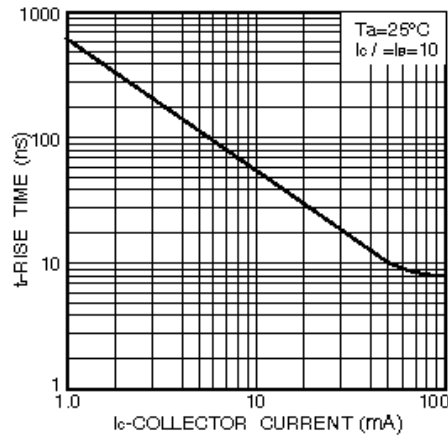


Fig.9 Rise time vs. collector current

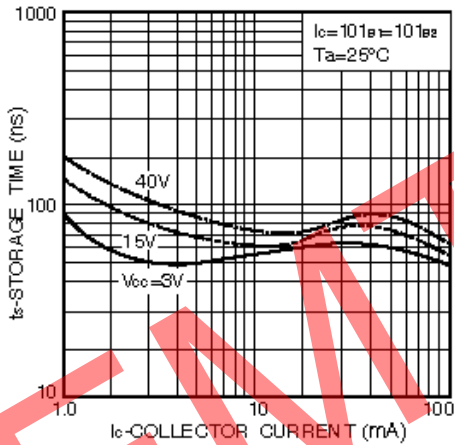


Fig.10 Storage time vs. collector current

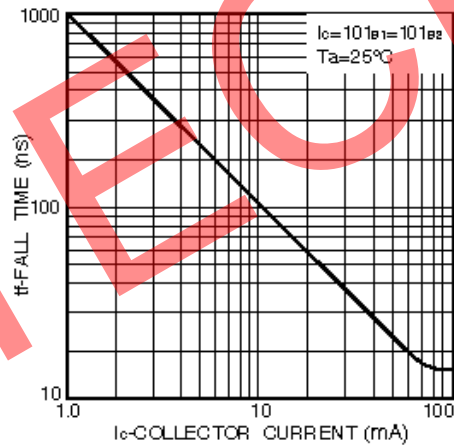


Fig.11 Fall time vs. collector current

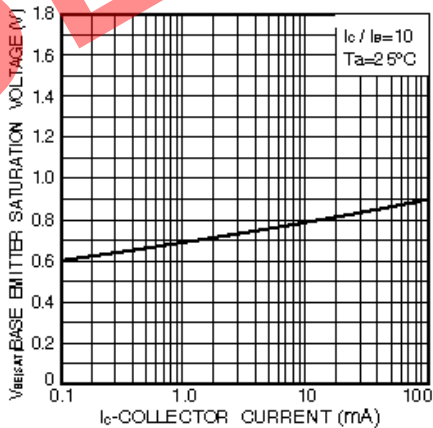


Fig.6 Base-emitter saturation voltage vs. collector current

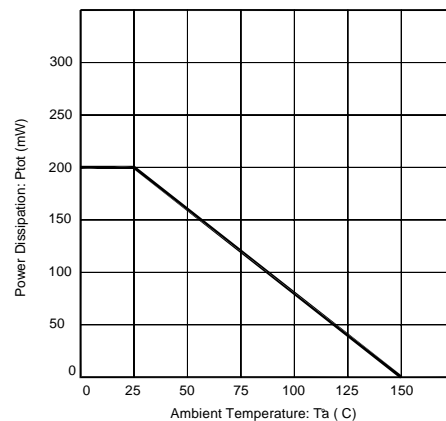


Fig.10 Power Dissipation vs Ambient Temperature

