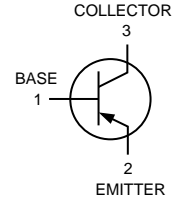
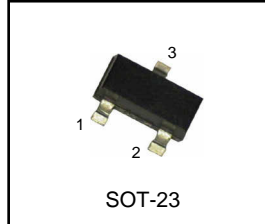


General Purpose Transistor

PNP Silicon

MMBT2907A



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	-60	V _d c
Collector-Base Voltage	V _{CBO}	-60	V _d c
Emitter-Base Voltage	V _{EBO}	-5.0	V _d c
Collector Current-Continuous	I _C	-600	mA _d c

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Total Device Dissipation FR-5 Board ⁽¹⁾ T _A =25°C Derate above 25°C	P _D	225 1.8	mW mW / °C
Thermal Resistance Junction to Ambient	R _{θJA}	556	°C / W
Total Device Dissipation Alumina Substrate, ⁽²⁾ T _A =25°C Derate above 25°C	P _D	300 2.4	mW mW / °C
Thermal Resistance Junction to Ambient	R _{θJA}	417	°C / W
Junction and Storage Temperature	T _J , T _{STG}	-55 to +150	°C

DEVICE MARKING

MMBT2907A=2F

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdowe Voltage ⁽³⁾ (I _C = -1.0mA _d c, I _B =0)	V _{(BR)CEO}	-60	-	V _d c
Collector-Base Breakdowe Voltage (I _C = -10uA _d c, I _E =0)	V _{(BR)CBO}	-60	-	V _d c
Emitter - Base Breakdowe Voltage (I _E = -10 uA _d c, I _C =0)	V _{(BR)EBO}	-5.0	-	V _d c
Collector Cutoff Current (V _{CE} = -30 V _d c, V _{BE (off)} = -0.5 V _d c)	I _C EX	-	-50	nA _d c
Collector Cutoff Current (V _{CB} = -50 V _d c, I _E =0) (V _{CB} = -50 V _d c, I _E =0, T _A =125°C)	I _C B0	- -	-0.010 -10	uA _d c
Base Cutoff Current (V _{CE} =60 V, V _{EB (off)} =3.0 V _d c)	I _B	-	-50	nA _d c

(1) FR-5=1.0 x 0.75 x 0.062in.

(2) Alumina=0.4 x 0.3 x 0.024in. 99.5% alumina.

(3) Pulse Test : Pulse Width ≤ 300 uS, Duty Cycle ≤ 2.0%.

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C = -0.1 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ($I_C = -1.0 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ($I_C = -10 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ($I_C = -150 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ⁽³⁾ ($I_C = -500 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ⁽³⁾	HFE	75 100 100 100 50	- - - 300 -	-
Collector-Emitter Saturation Voltage ⁽³⁾ ($I_C = -150 \text{ mA}_{dc}$, $I_B = -15 \text{ mA}_{dc}$) ($I_C = -500 \text{ mA}_{dc}$, $I_B = -50 \text{ mA}_{dc}$)	$V_{CE(sat)}$	- -	-0.4 -1.6	Vdc
Base-Emitter Saturation Voltage ⁽³⁾ ($I_C = -150 \text{ mA}_{dc}$, $I_B = -15 \text{ mA}_{dc}$) ($I_C = -500 \text{ mA}_{dc}$, $I_B = -50 \text{ mA}_{dc}$)	$V_{BE(sat)}$	- -	-1.3 -2.6	Vdc

SMALL-SIGNAL CHARACTERISTIC

Current-Gain-Bandwidth Product ^{(3),(4)} ($I_C = -50 \text{ mA}_{dc}$, $V_{CE} = -20 \text{ V}_{dc}$, $f = 100 \text{ MHz}$)	f_T	200	-	MHz
Output Capacitance ($V_{CB} = -10 \text{ V}_{dc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	-	8.0	pF
Input Capacitance ($V_{EB} = -2.0 \text{ V}_{dc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	-	30	pF

SWITCHING CHARACTERISTICS

Turn-On Time	($V_{CC} = -30 \text{ V}_{dc}$, $I_C = -150 \text{ mA}_{dc}$, $I_{B1} = -15 \text{ mA}_{dc}$)	t_{on}	-	45	nS
Delay Time		t_d	-	10	
Rise Time		t_r	-	40	
Turn-On Time	($V_{CC} = -6.0 \text{ V}_{dc}$, $I_C = -150 \text{ mA}_{dc}$, $I_{B1} = I_{B2} = -15 \text{ mA}_{dc}$)	t_{off}	-	100	nS
Storage Time		t_s	-	80	
Fall Time		t_f	-	30	

(3) Pulse Test : Pulse Width 300 μs , Duty Cycle 2.0%.

(2) f_T is defined as the frequency at which hfe extrapolates to unity.

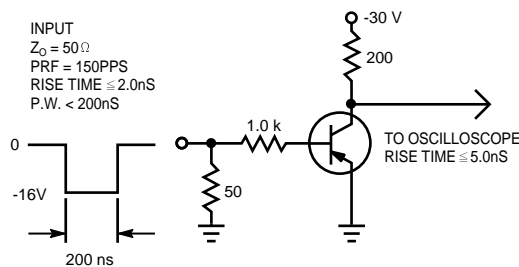


Figure 1. Delay and Rise Time Test Circuit

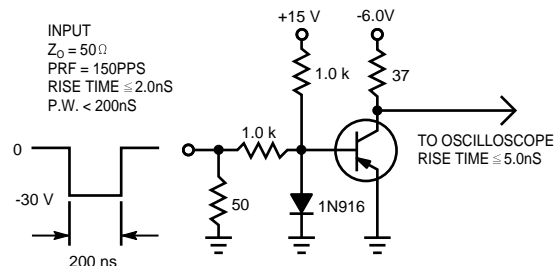


Figure 2. Storage and Fall Time Test Circuit

TYPICAL CHARACTERISTICS

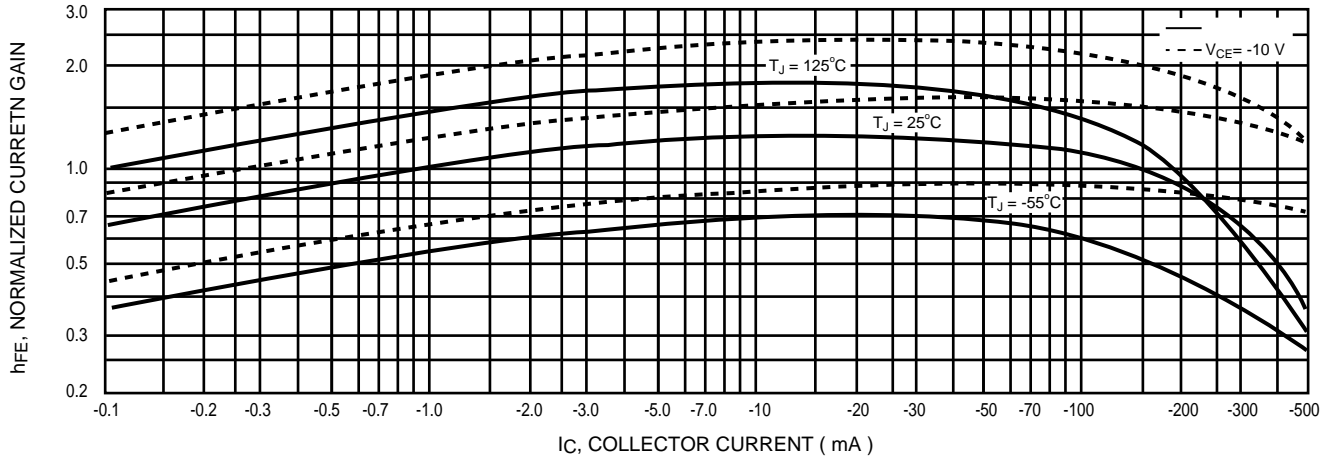


Figure 3. DC Current Gain

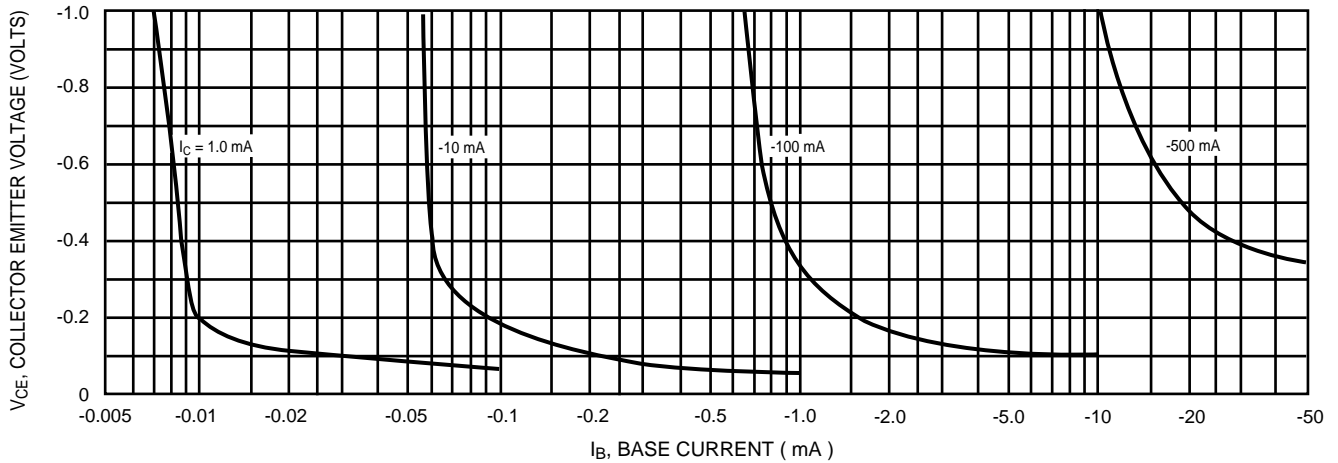


Figure 4. Collector Saturation Region

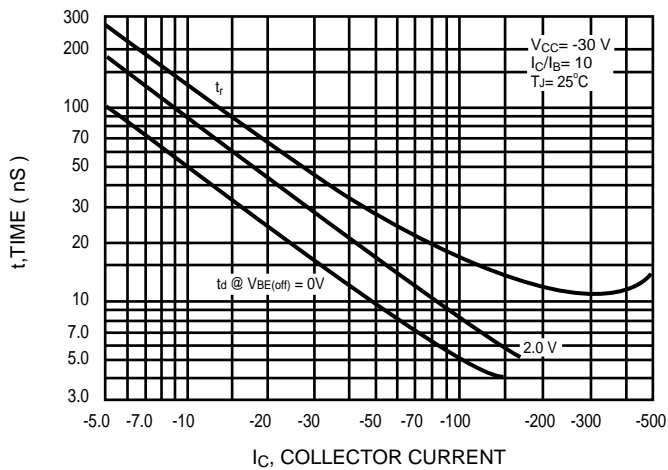


Figure 5. Turn - On Time

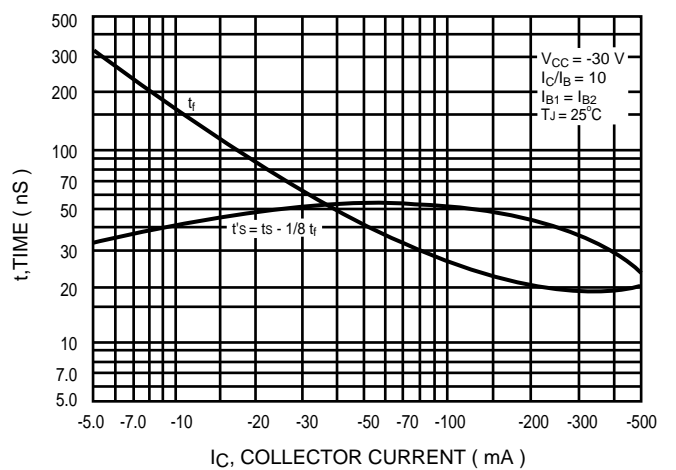


Figure 6. Turn - Off Time

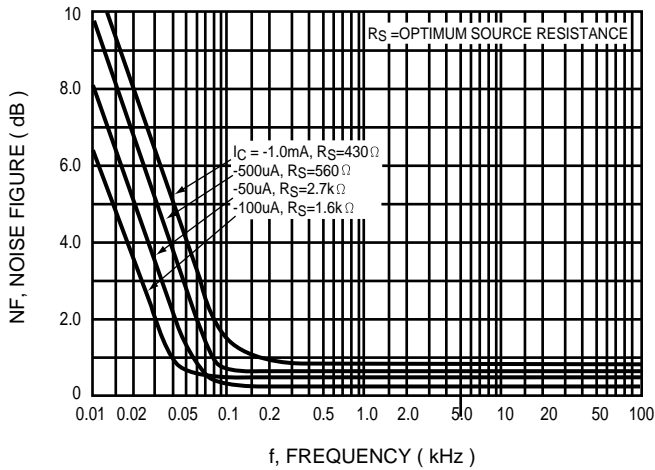


Figure 7. Frequency Effects

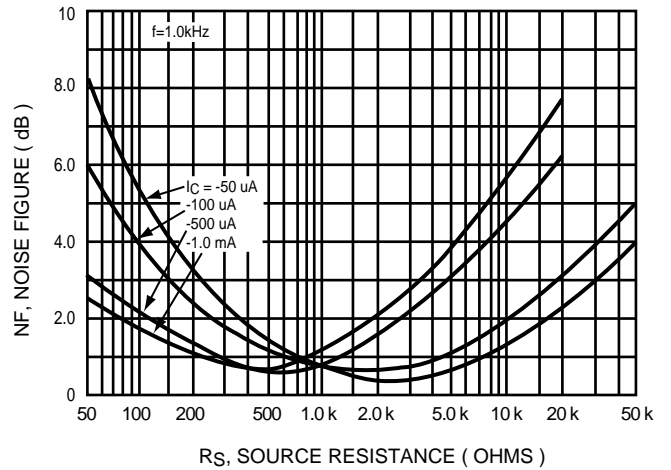


Figure 8. Source Resistance Effects

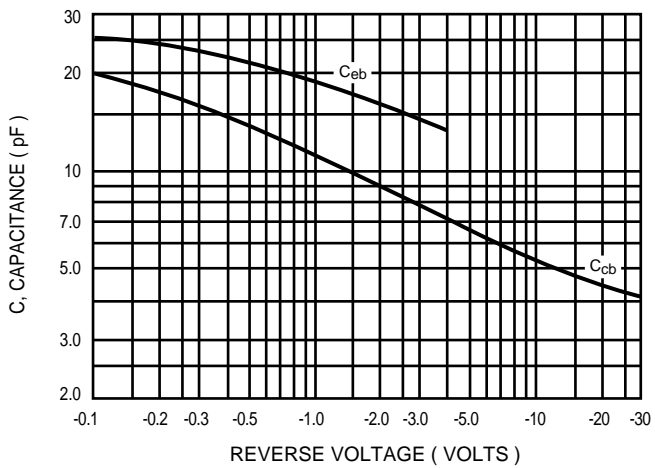


Figure 9. Capacitances

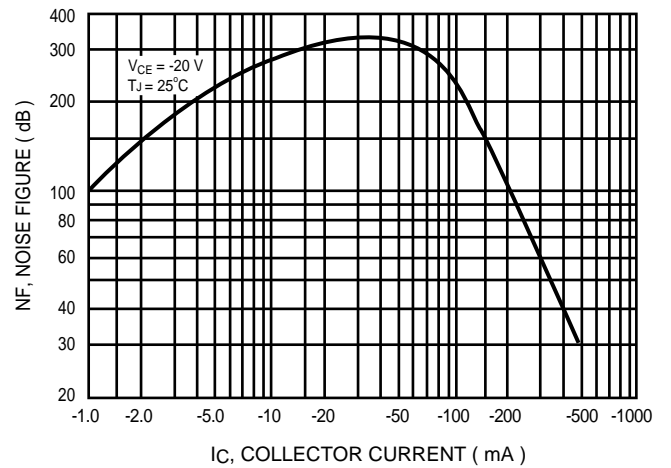


Figure 10. Current-Gain Bandwidth Product

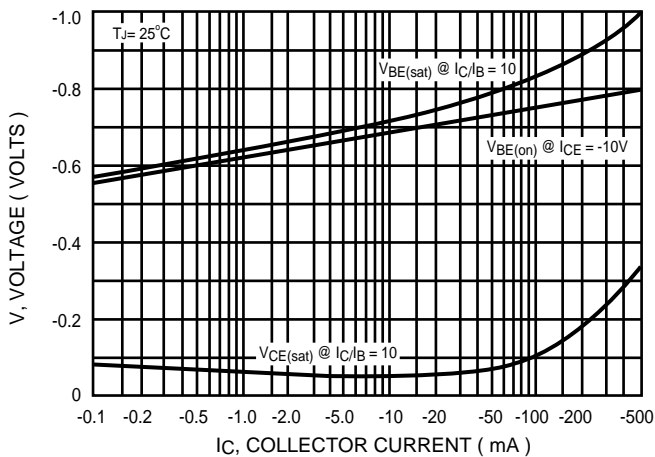


Figure 11. " On " Voltage

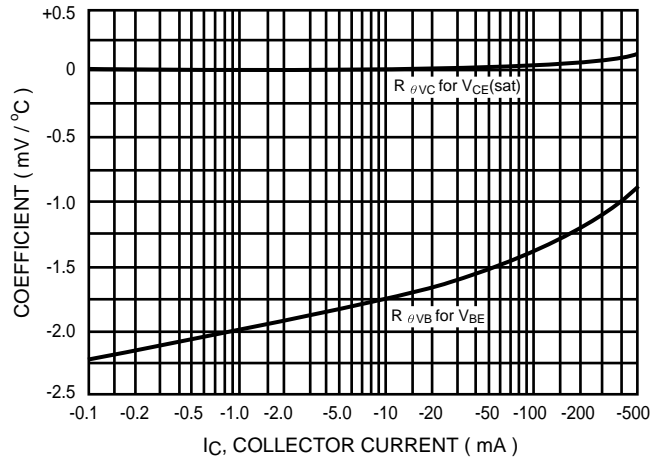


Figure 12. Temperature Coefficients