

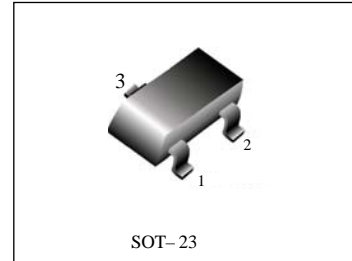
### General Purpose Transistor

#### PNP Silicon

These transistors are designed for general purpose amplifier applications. They are housed in the SOT-23 package which is designed for low power surface mount applications.

#### Features

- We declare that the material of product compliance with RoHS requirements.

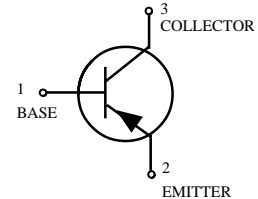


#### ORDERING INFORMATION

Device	Marking	Shipping
MMBT2907A	2F	3000 / Tape & Reel

#### MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Rating	Symbol	Max	Unit
Collector–Emitter Voltage	V <sub>CEO</sub>	-60	Vdc
Collector–Base Voltage	V <sub>CBO</sub>	-60	Vdc
Emitter–Base Voltage	V <sub>EBO</sub>	-5.0	Vdc
Collector Current – Continuous	I <sub>C</sub>	-600	mAdc



#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) T <sub>A</sub> = 25°C	P <sub>D</sub>	350	mW
Thermal Resistance, (Note 1) Junction–to–Ambient	R <sub>θJA</sub>	357	°C/W
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

#### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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#### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (Note 1) (I <sub>C</sub> = -1.0 mAdc, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	-60	-	Vdc
Collector–Base Breakdown Voltage (I <sub>C</sub> = -10μAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	-60	-	Vdc
Emitter–Base Breakdown Voltage (I <sub>E</sub> = -10μAdc, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	-5.0	-	Vdc
Base Current (V <sub>CE</sub> = -30 Vdc, V <sub>EB</sub> = -0.5 Vdc)	I <sub>B</sub>	-	-50	nAdc
Collector Cutoff Current (V <sub>CE</sub> = -30 Vdc, V <sub>EB</sub> = -0.5 Vdc)	I <sub>CEX</sub>	-	-50	nAdc

## ON CHARACTERISTICS

DC Current Gain ( $I_C = -0.1$ mA, $V_{CE} = -10$ Vdc) ( $I_C = -1.0$ mA, $V_{CE} = -10$ Vdc) ( $I_C = -10$ mA, $V_{CE} = -10$ Vdc) ( $I_C = -150$ mA, $V_{CE} = -10$ Vdc) ( $I_C = -500$ mA, $V_{CE} = -10$ Vdc)	$H_{FE}$	75 100 100 100 50	- - - 300 -	-
Collector-Emmitter Saturation Voltage ( $I_C = -150$ mA, $I_B = -15$ mA) ( $I_C = -500$ mA, $I_B = -50$ mA)	$V_{CE(sat)}$	- -	-0.4 -1.6	Vdc
Base-Emmitter Saturation Voltage ( $I_C = -150$ mA, $I_B = -15$ mA) ( $I_C = -500$ mA, $I_B = -50$ mA)	$V_{BE(sat)}$	- -	-1.3 -2.6	Vdc

## SMALL-SIGNAL CHARACTERISTICS

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

## SWITCHING CHARACTERISTICS

Delay Time	( $V_{CC} = -30$ Vdc, $V_{BE} = -0.5$ Vdc, $I_C = -150$ mA, $I_{B1} = -15$ mA)	$t_d$	-	10	ns
Rise Time		$t_r$	-	40	
Storage Time	( $V_{CC} = -30$ Vdc, $I_C = -150$ mA, $I_{B1} = I_{B2} = 15$ mA)	$t_s$	-	80	ns
Fall Time		$t_f$	-	30	

1. Device mounted on FR-4 PCB 16\*16\*0.6mm or on 99.5% alumina 10\*8\*0.6mm
2. Pulse Test: Pulse Width  $\leq 300$   $\mu$ s, Duty Cycle  $\leq 2.0\%$ .

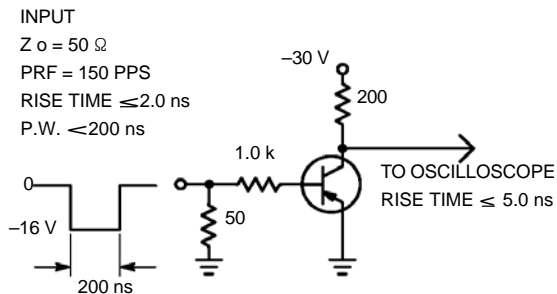


Figure 1. Delay and Rise Time Test Circuit

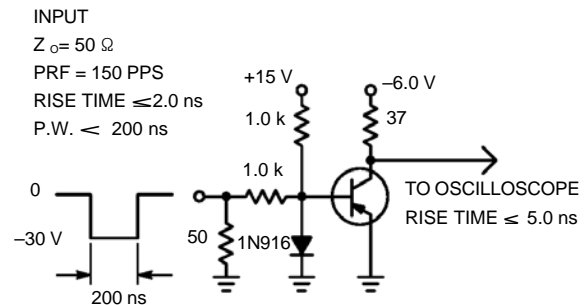


Figure 2. Storage and Fall Time Test Circuit

## TYPICAL CHARACTERISTICS

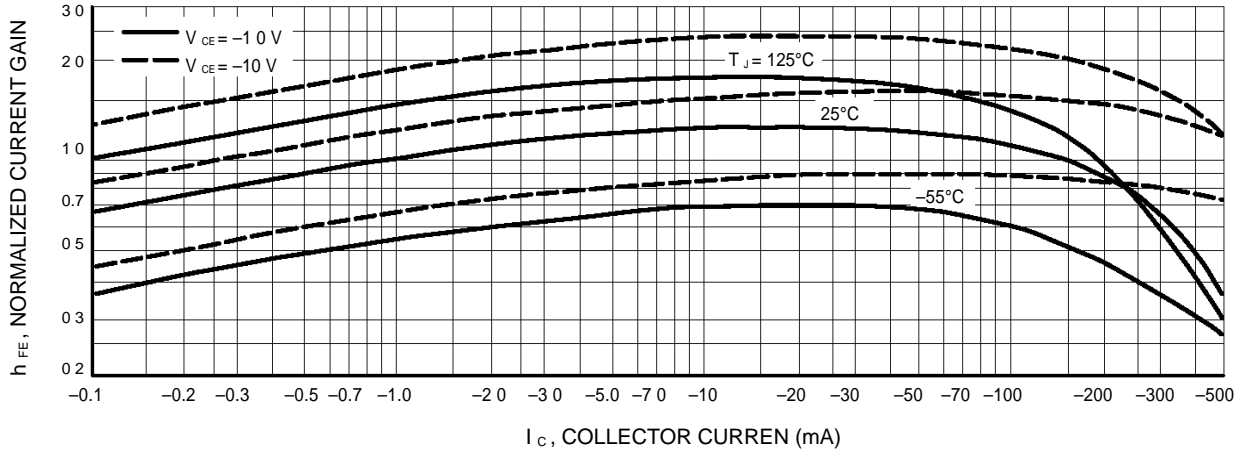


Figure 3. DC Current Gain

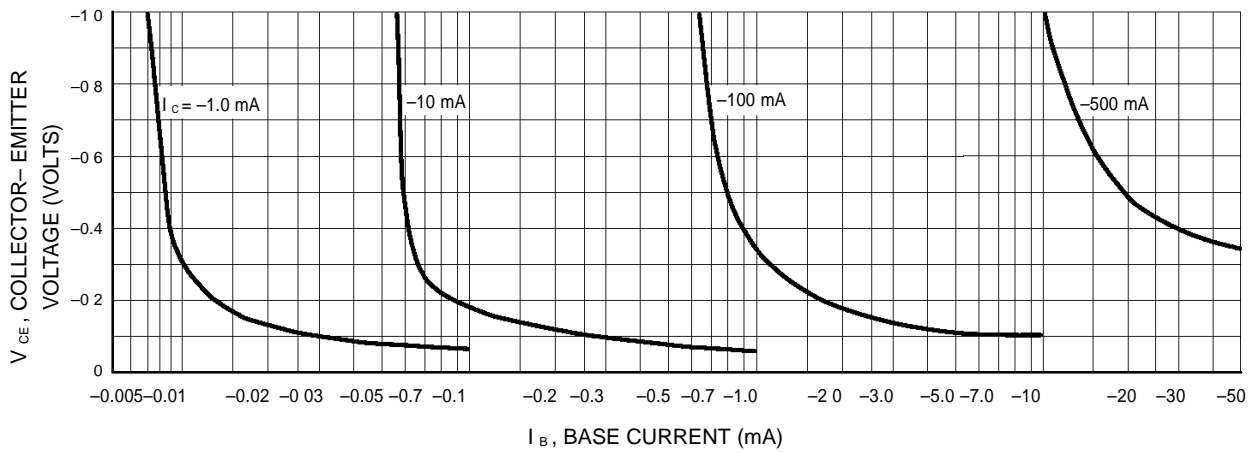


Figure 4. Collector Saturation Region

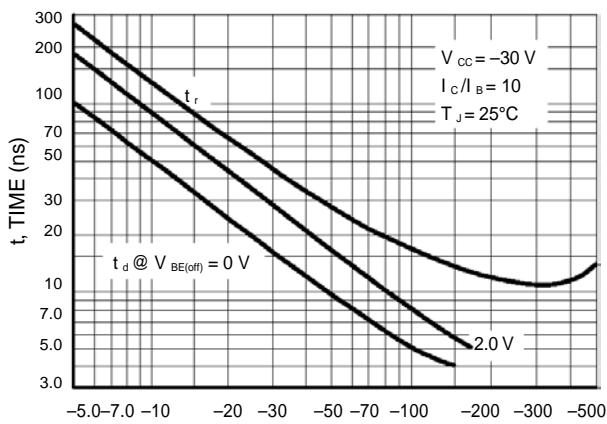


Figure 5. Turn-On Time

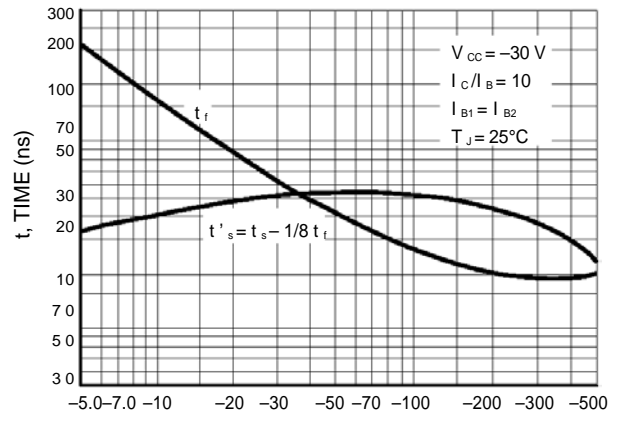


Figure 6. Turn-Off Time

## TYPICAL SMALL-SIGNAL CHARACTERISTICS

### NOISE FIGURE

$V_{CE} = 10 \text{ Vdc}$ ,  $T_A = 25^\circ\text{C}$

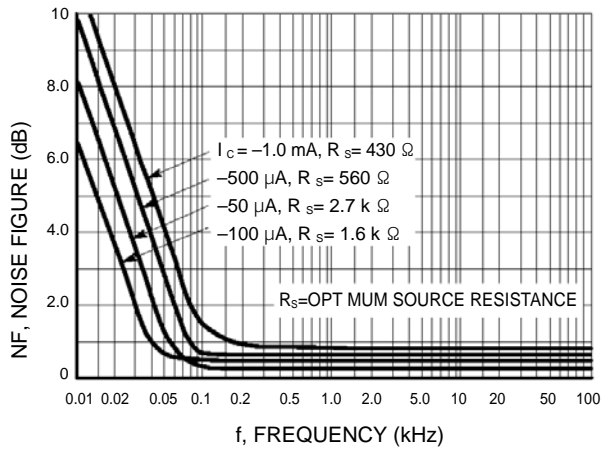


Figure 7. Frequency Effects

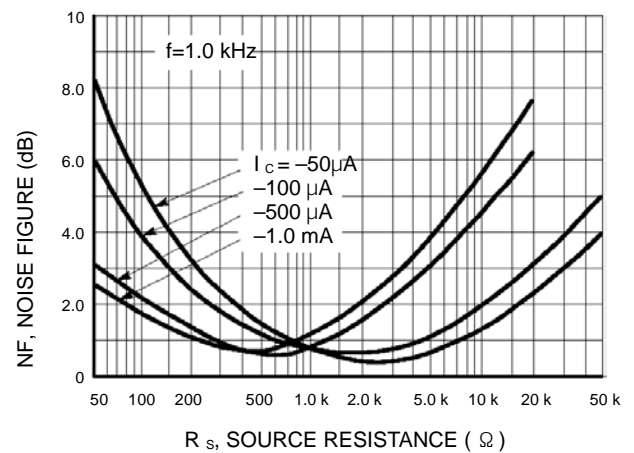


Figure 8. Source Resistance Effects

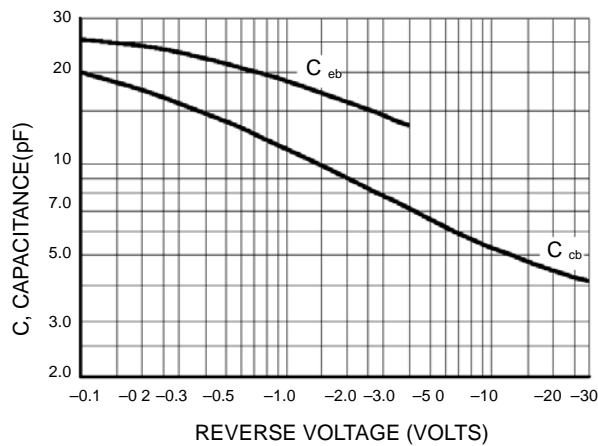


Figure 9. Capacitances

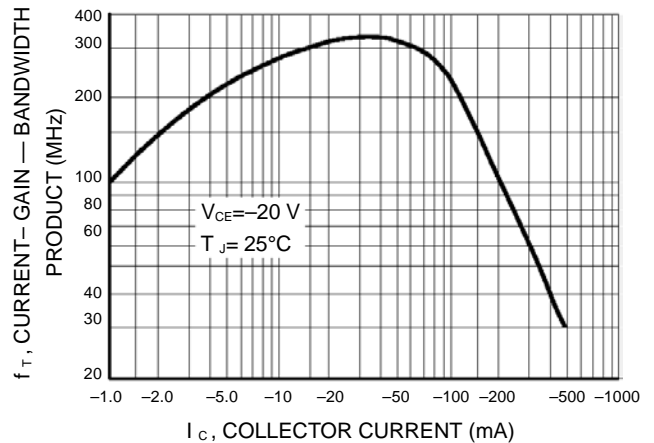


Figure 10. Current-Gain — Bandwidth Product

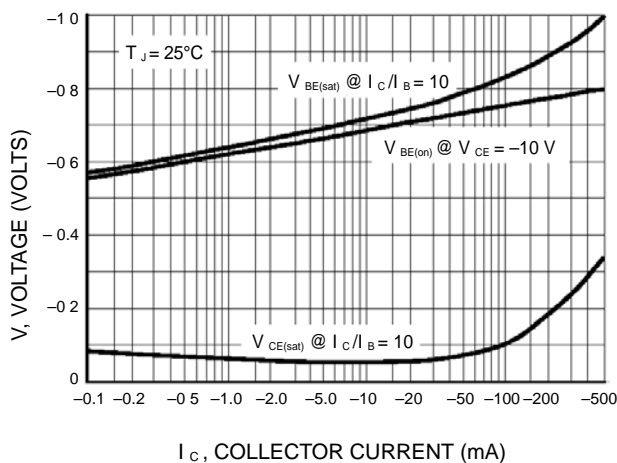


Figure 11. "On" Voltage

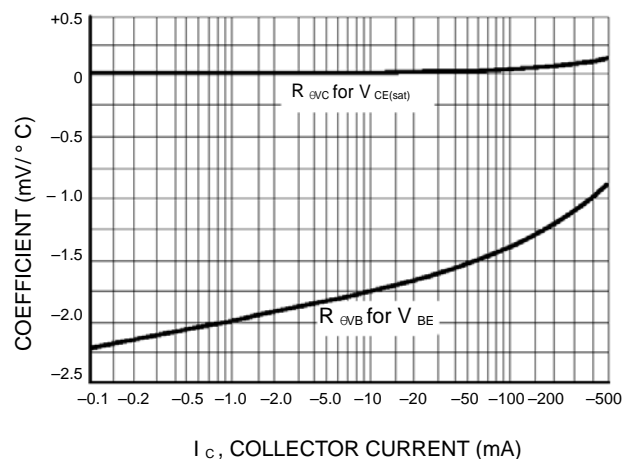
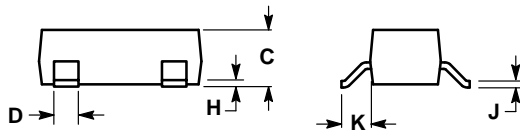
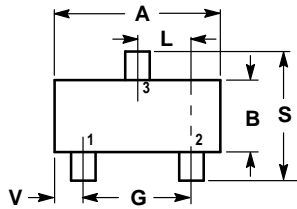


Figure 12. Temperature Coefficients



# MMBT2907A

## SOT-23 (TO-236AB)



### NOTES

1. CONTROLLING DIMENSION: MILLIMETERS
2. LEAD THICKNESS SPECIFIED PER L / F DRAWING WITH SOLDER PLATING.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0180	0.0236	0.45	0.60
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.0984	2.10	2.50
V	0.0177	0.0236	0.45	0.60

- STYLE1 1:  
 PIN 1. ANODE  
 2. NO CONNECTION  
 3. CATHODE

