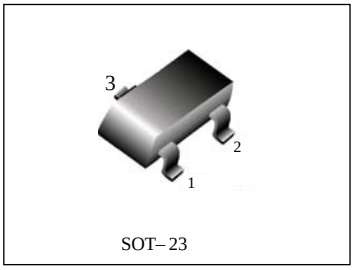
General Purpose Transistor

PNP Silicon



SOT– 23

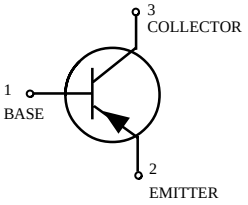
These transistors are designed for general purpose amplifier applications. They are housed in the SOT-23 package which is designed for low power surface mount applications.

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_A = 25℃)

Rating	Symbol	Max	Unit
Collector−Emitter Voltage	V_{CEO}	-60	Vdc
Collector−Base Voltage	V_{CBO}	-60	Vdc
Emitter−Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current − Continuous	I_C	-600	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) T_A = 25℃	P_D	350	mW
Thermal Resistance, (Note 1) Junction−to−Ambient	$R_{\theta JA}$	357	℃/W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	℃

ELECTRICAL CHARACTERISTICS (T_A = 25℃ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Breakdown Voltage (Note 1) (I_C = -1.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	-60	−	Vdc
Collector−Base Breakdown Voltage (I_C = -10μAdc, I_E = 0)	$V_{(BR)CBO}$	-60	−	Vdc
Emitter−Base Breakdown Voltage (I_E = -10μAdc, I_C = 0)	$V_{(BR)EBO}$	-5.0	−	Vdc
Base Current (V_{CE} = -30 Vdc, V_{EB} = -0.5 Vdc)	I_B	−	-50	nAdc
Collector Cutoff Current (V_{CE} = -30 Vdc, V_{EB} = -0.5 Vdc)	I_{CEX}	−	-50	nAdc

ON CHARACTERISTICS

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

SMALL−SIGNAL CHARACTERISTICS

Current−Gain − Bandwidth Product (I_C = -50 mAdc, 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 mAdc, I_{B1} = -15 mAdc)	t_d	–	10	ns
Rise Time		t_r	–	40	
Storage Time	(V_{CC} = -30 Vdc, I_C = -150 mAdc, I_{B1} = I_{B2} = 15 mAdc)	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 ≤300 μs, Duty Cycle ≤2.0%.

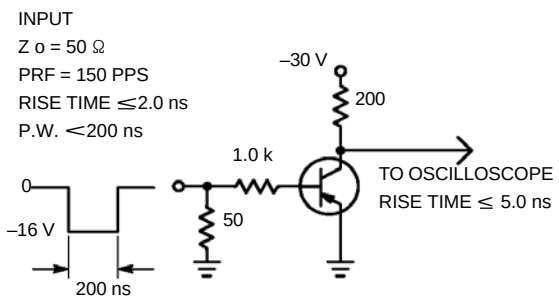


Figure 1. Delay and Rise Time Test Circuit

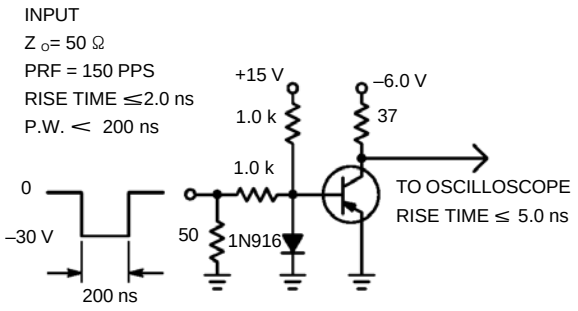


Figure 2. Storage and Fall Time Test Circuit

TYPICAL CHARACTERISTICS

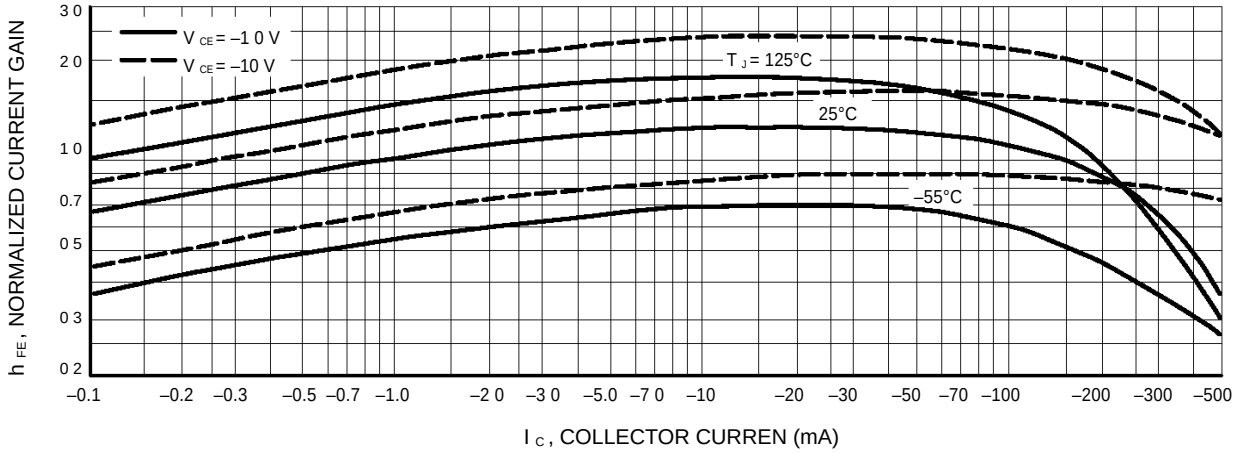


Figure 3. DC Current Gain

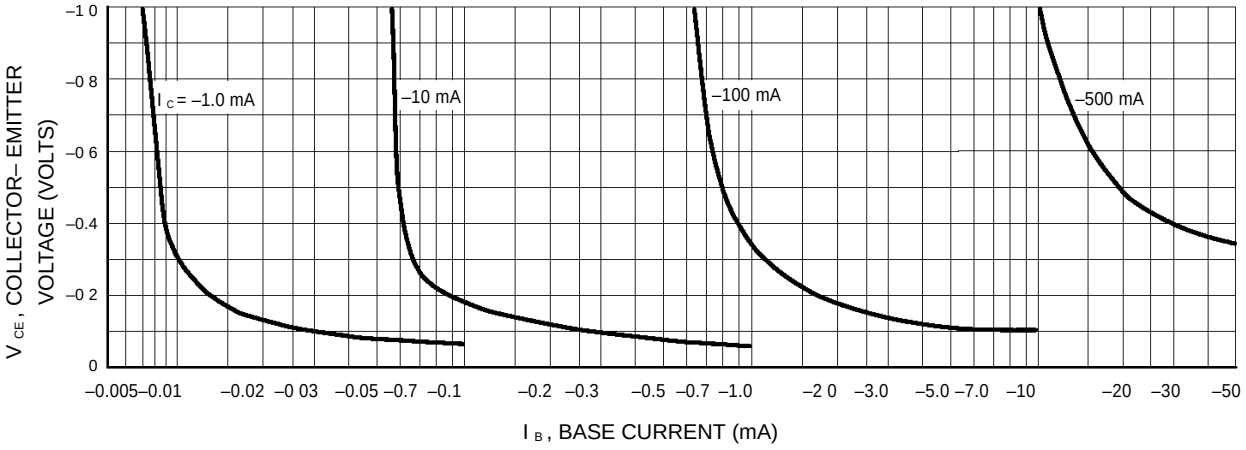


Figure 4. Collector Saturation Region

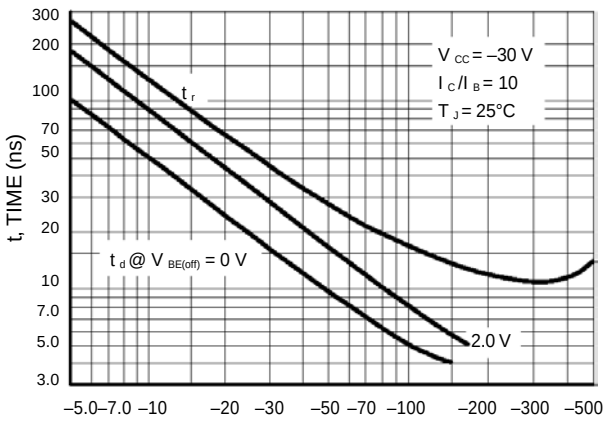


Figure 5. Turn–On Time

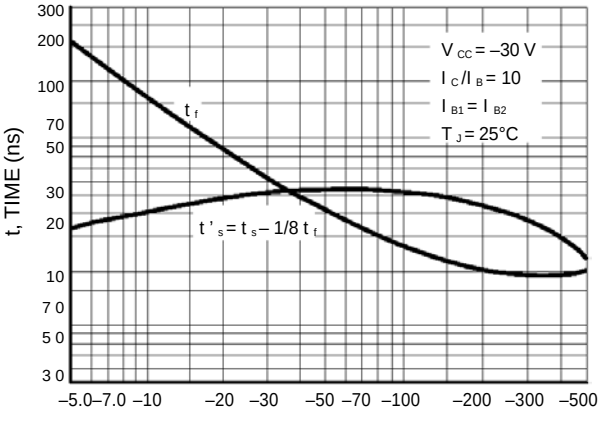


Figure 6. Turn–Off Time

TYPICAL SMALL–SIGNAL CHARACTERISTICS

NOISE FIGURE

V_{CE} = 10 Vdc, T_A = 25°C

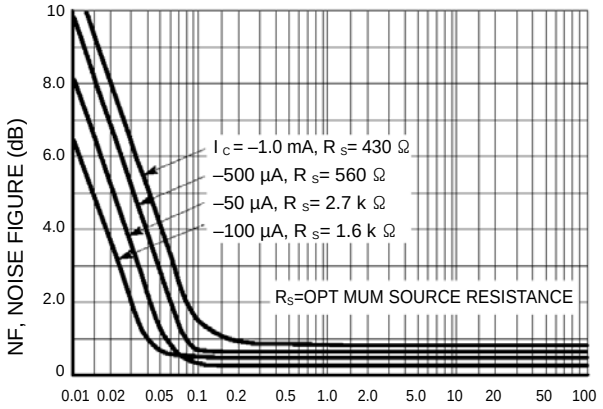


Figure 7. Frequency Effects

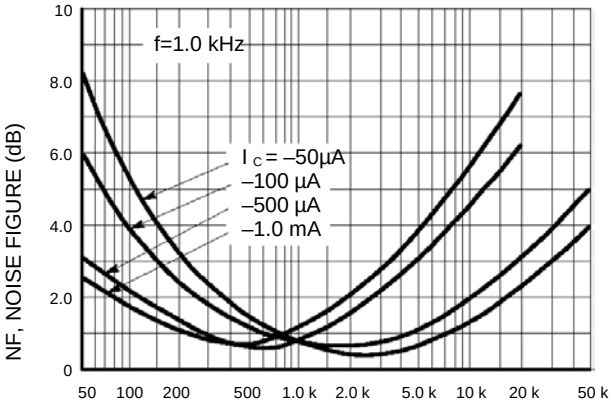


Figure 8. Source Resistance Effects

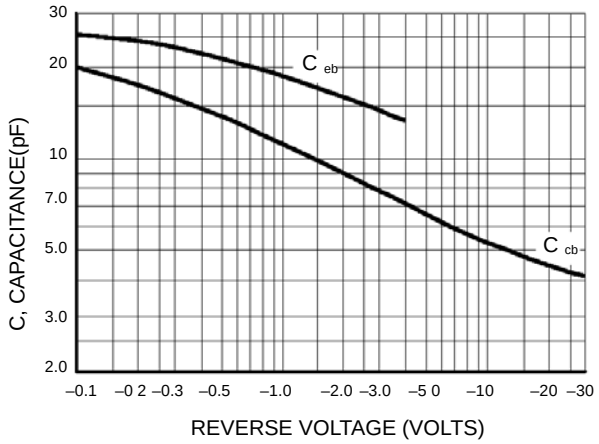


Figure 9. Capacitances

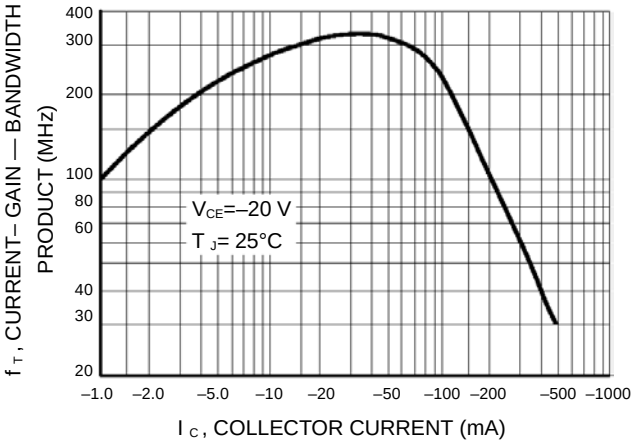


Figure 10. Current–Gain — Bandwidth Product

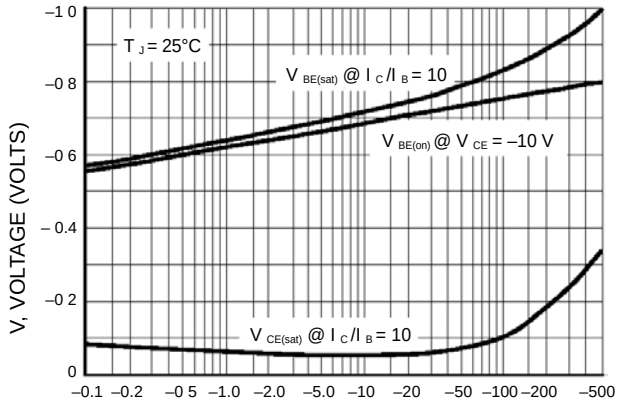


Figure 11. “On” Voltage

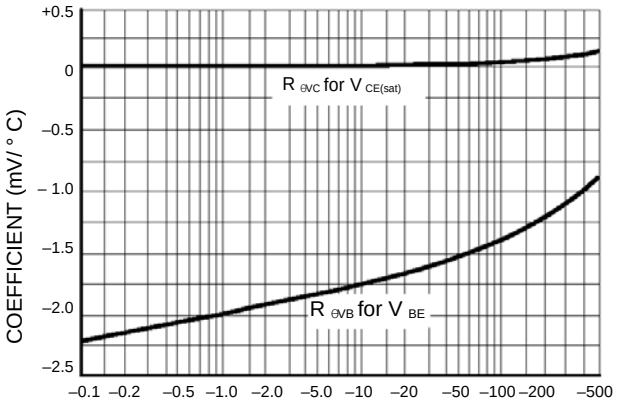
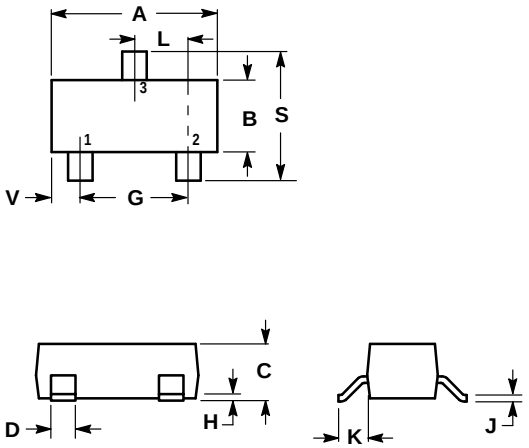


Figure 12. Temperature Coefficients

SOT−23 (TO−236AB)



NOTES:

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

	INCHES		MILLIMETERS	
DIM	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