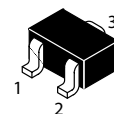
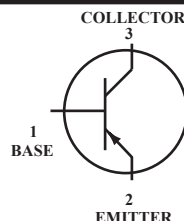


PNP General Purpose Transistors

 Lead(Pb)-Free



SOT-323(SC-70)

MAXIMUM RATINGS

Rating	Symbol	Value	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

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) $T_A=25^{\circ}\text{C}$	P_D	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Junction and Storage, Temperature	T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$

DEVICE MARKING

MMBT2907AW=20

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = -10 \text{ mAdc}$, $I_E = 0$) ⁽²⁾	$V_{(BR)CEO}$	-60	-	Vdc
Collector-Base Breakdown Voltage ($I_C = -10 \text{ } \mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CBO}$	-60	-	Vdc
Emitter-Base Breakdown Voltage ($I_E = -10 \text{ } \mu\text{Adc}$, $I_C = 0$)	$V_{(BR)EBO}$	-5.0	-	Vdc
Collector Cutoff Current ($V_{CE} = -30 \text{ Vdc}$, $V_{EB}(\text{off}) = -0.5 \text{ Vdc}$)	I_{CEX}		-50	nAdc
Collector Cutoff Current ($V_{CB} = -50 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = -50 \text{ Vdc}$, $I_E = 0$, $T_A = 125^{\circ}\text{C}$)	I_{CBO}	-	-0.010 -10	nAdc
Base Cutoff Current ($V_{CE} = -30 \text{ Vdc}$, $V_{EB}(\text{off}) = -0.5 \text{ Vdc}$)	I_{BL}	-	-50	nAdc

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

2. Pulse Test:Pulse Width=300 us, Duty Cycle $\leq$ 2.0%

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

Characteristics	Symbol	Min	Max	Unit
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ON CHARACTERISTICS⁽¹⁾

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

SMALL-SIGNAL CHARACTERISTICS

Current-Gain-Bandwidth Product (1) ($I_C = -50 \text{ mAdc}$, $V_{CE} = -20 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	200	-	MHz
Output Capacitance ($V_{CB} = -10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	-	8.0	pF
Input Capacitance ($V_{EB} = -2.0 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	-	30	pF

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

Characteristics	Symbol	Min	Max	Unit
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SWITCHING CHARACTERISTICS

Turn-On Time	(V _{CC} = -30 Vdc, I _C = -150 mAdc, I _{B1} = -15 mAdc)	t _{on}	-	45	ns
Delay Time		t _d	-	10	
Rise Time		t _r	-	40	
Turn-Off Time	(V _{CC} = -60 Vdc, I _C = -150 mAdc, I _{B1} = I _{B2} = -15 mAdc)	t _{off}	-	100	
Storage Time		t _s	-	80	
Fall Time		t _f	-	30	

TYPICAL CHARACTERISTICS

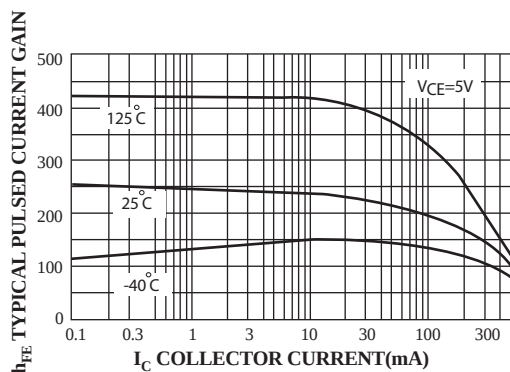


FIG.1 Typical Pulsed Current Gain vs Collector Current

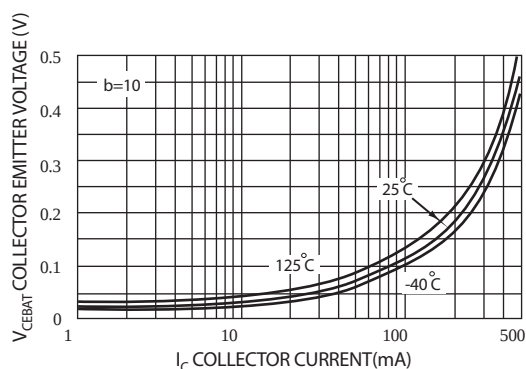


FIG.2 Collector-Emitter Saturation Voltage vs collector Current

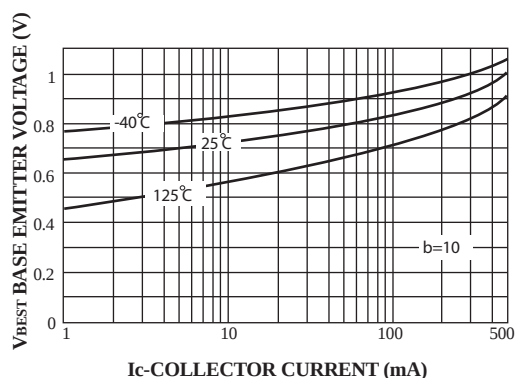


FIG.3 Base-Emitter Saturation Voltage vs Collector Current

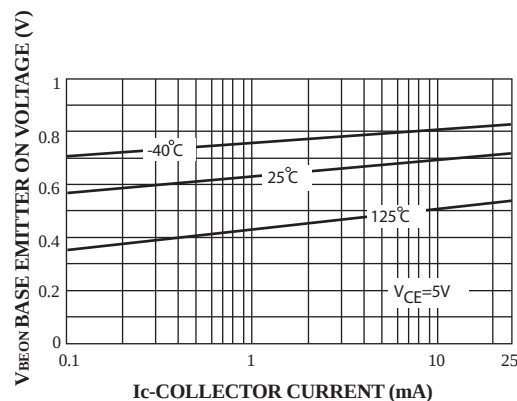


FIG.4 Base Emitter ON Voltage vs Collector Current

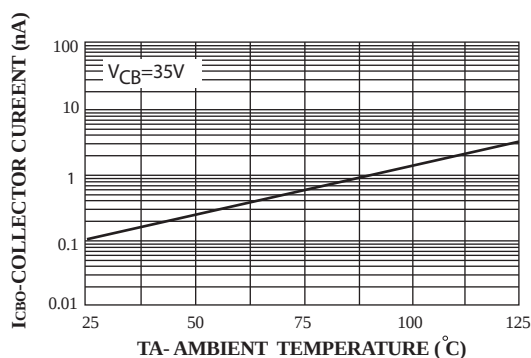


FIG.5 Collector-Cutoff Current vs. Ambient Temperature

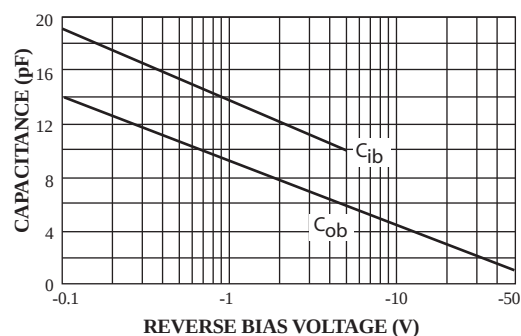
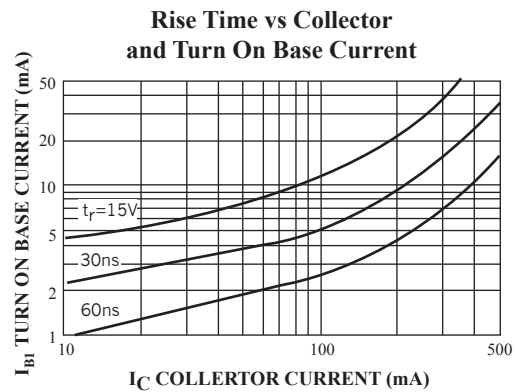
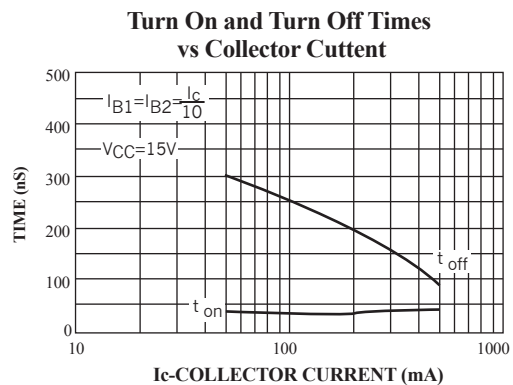
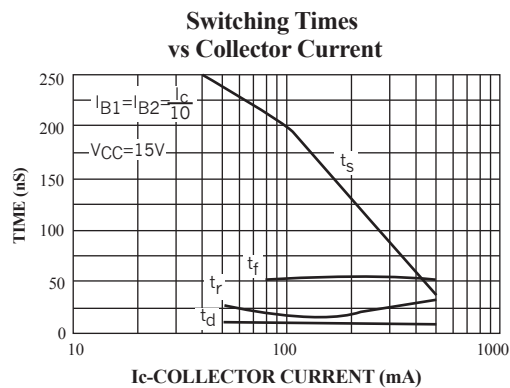
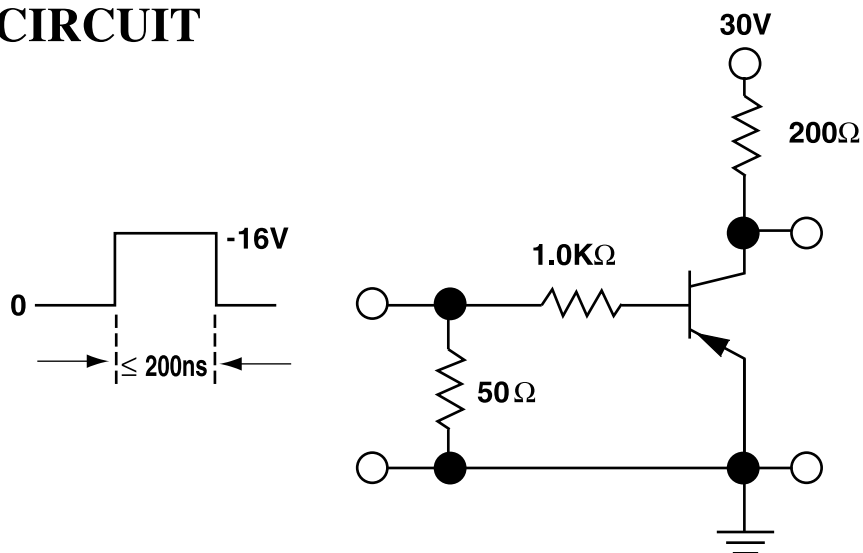


FIG.6 Input and Output Capacitance vs Reverse Bias Voltage

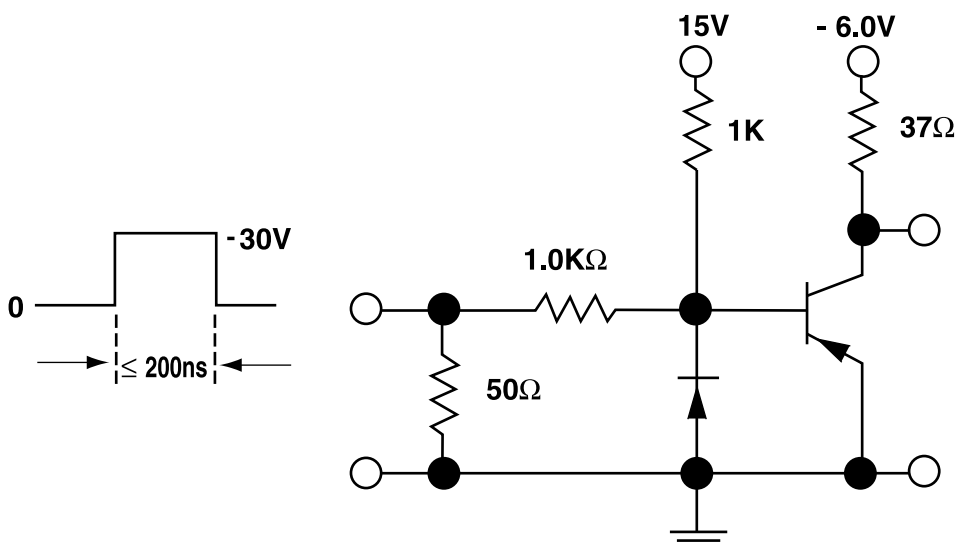
TYPICAL CHARACTERISTICS (CONTINUED)



TEST CIRCUIT



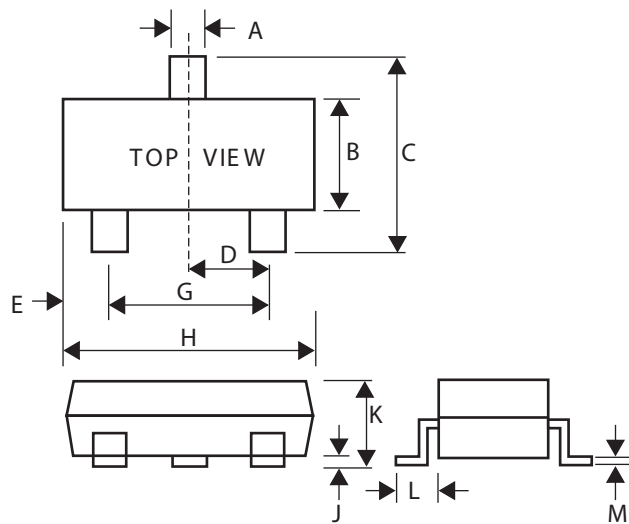
FIGURT 1: Saturated Turn-On Switching Time



FIGURT 2: Saturated Turn-Off Switching Time

SOT-323 Package Outline Dimensions

Unit:mm



SOT-323		
Dim	Min	Max
A	0.30	0.40
B	1.15	1.35
C	2.00	2.40
D	-	0.65
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.00	0.10
K	0.80	1.00
L	0.42	0.53
M	0.10	0.25