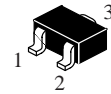
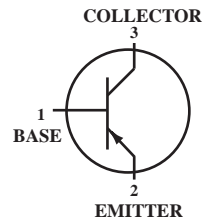


### PNP General Purpose Transistors

 Lead(Pb)-Free



SOT-523(SC-75)

#### MAXIMUM RATINGS

Rating	Symbol	Value	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

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board <sup>(1)</sup> T <sub>A</sub> =25 °C	P <sub>D</sub>	150	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	833	°C/W
Junction and Storage, Temperature	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

#### DEVICE MARKING

MMBT2907AT=2F

#### ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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#### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (I <sub>C</sub> = -10 mAdc, I <sub>B</sub> =0) <sup>(2)</sup>	V <sub>(BR)CEO</sub>	-60	-	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = -10 μAdc, I <sub>E</sub> =0)	V <sub>(BR)CBO</sub>	-60	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = -10 μAdc, I <sub>C</sub> =0)	V <sub>(BR)EBO</sub>	-5.0	-	Vdc
Collector Cutoff Current (V <sub>CB</sub> = -50 Vdc, I <sub>E</sub> =0)	I <sub>CBO</sub>	-	-10	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = -4 Vdc, I <sub>C</sub> =0)	I <sub>EBO</sub>	-	-10	nAdc

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

2. Pulse Test:Pulse Width=300 us, Duty Cycle ≤2.0%

## ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Max	Unit
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### ON CHARACTERISTICS<sup>(1)</sup>

DC Current Gain ( $I_C = -0.1 \text{ mAdc}, V_{CE} = -10 \text{ Vdc}$ )	hFE	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 <sup>(3)</sup> ( $I_C = -150 \text{ mAdc}, I_B = -15 \text{ mAdc}$ ) ( $I_C = -500 \text{ mAdc}, I_B = -50 \text{ mAdc}$ )	VCE(sat)	-	-	-0.4	Vdc
		-	-	-1.6	
Base-Emitter Saturation Voltage <sup>(3)</sup> ( $I_C = -150 \text{ mAdc}, I_B = -15 \text{ mAdc}$ ) ( $I_C = -500 \text{ mAdc}, I_B = -50 \text{ mAdc}$ )	VBE(sat)	-	-	-1.3	Vdc
		-	-	-2.6	

### SMALL-SIGNAL CHARACTERISTICS

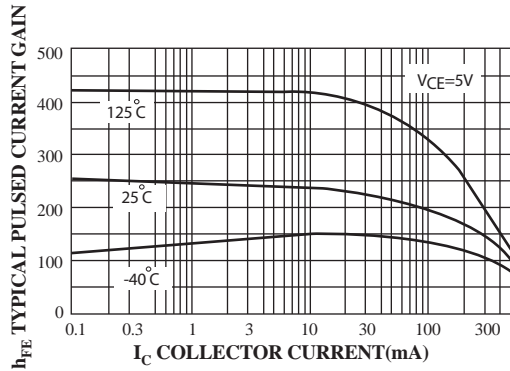
Current-Gain-Bandwidth Product <sup>(1)</sup> ( $I_C = -2.0 \text{ mAdc}, V_{CE} = -12 \text{ Vdc}, f = 30 \text{ MHz}$ )	fT	-	140	-	MHz
Output Capacitance ( $V_{CB} = -12 \text{ Vdc}, I_E = 0, f = 1.0 \text{ MHz}$ )	CoBo	-	-	5.0	pF

## ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise noted) (Continued)

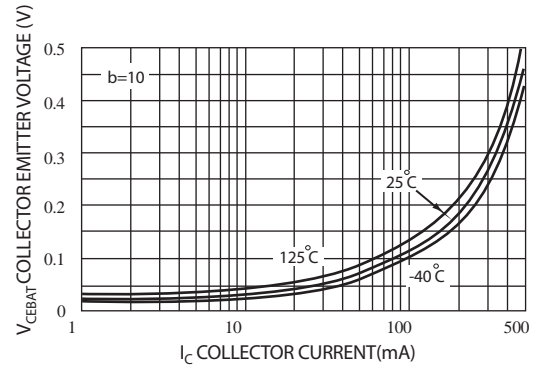
Characteristics	Symbol	Min	Max	Unit
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### SWITCHING CHARACTERISTICS

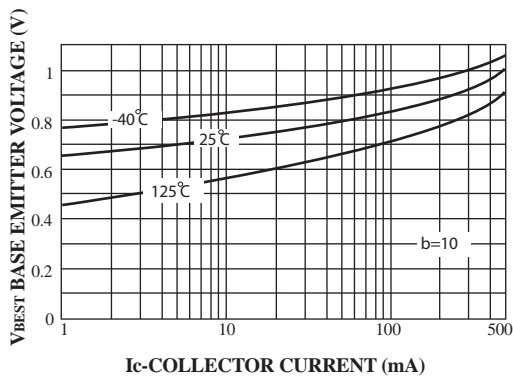
Turn-On Time	$(V_{CC} = -30 \text{ Vdc}, I_C = -150 \text{ mAdc}, I_{B1} = -15 \text{ mAdc})$	t <sub>on</sub>	-	45	ns
Delay Time		t <sub>d</sub>	-	10	
Rise Time		t <sub>r</sub>	-	40	
Turn-Off Time	$(V_{CC} = -60 \text{ Vdc}, I_C = -150 \text{ mAdc}, I_{B1} = I_{B2} = -15 \text{ mAdc})$	t <sub>off</sub>	-	100	
Storage Time		t <sub>s</sub>	-	80	
Fall Time		t <sub>f</sub>	-	30	



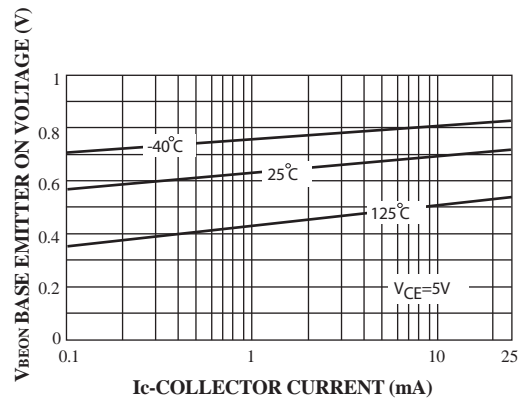
**FIG.1 Typical Pulsed Current Gain vs Collector Current**



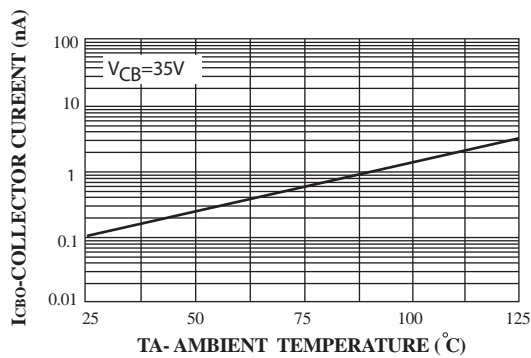
**FIG.2 Collector-Emitter Saturation Voltage vs collector Current**



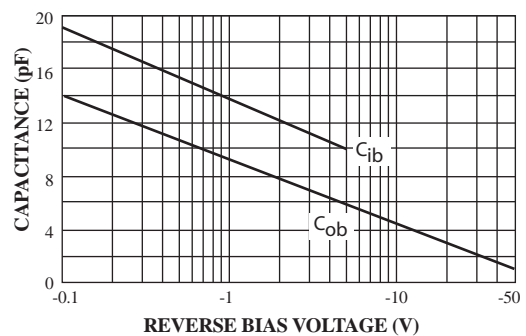
**FIG.3 Base-Emitter Saturation Voltage vs Collector Current**



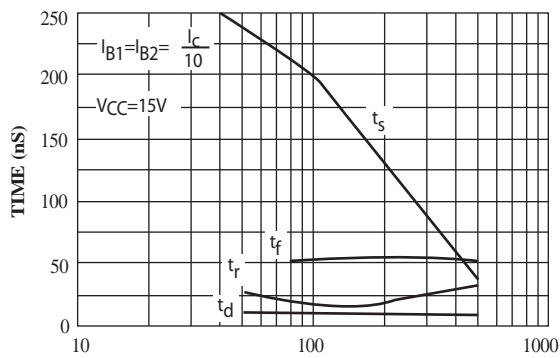
**FIG.4 Base Emitter ON Voltage vs Collector Current**



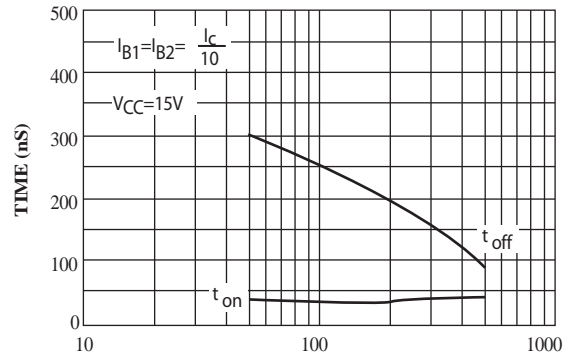
**FIG.5 Collector-Cutoff Current vs. Ambient Temperature**



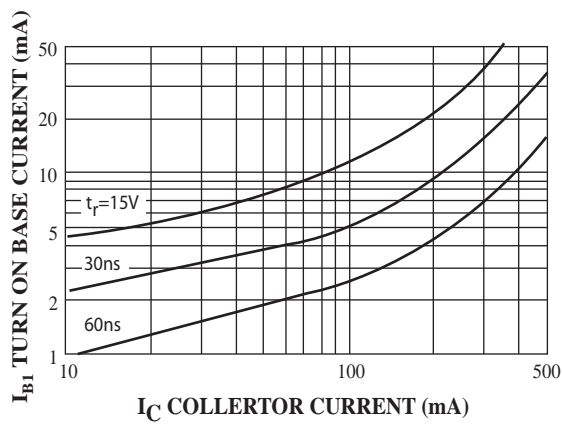
**FIG.6 Input and Output Capacitance vs Reverse Bias Voltage**



**FIG.7 Switching Times vs Collector Current**



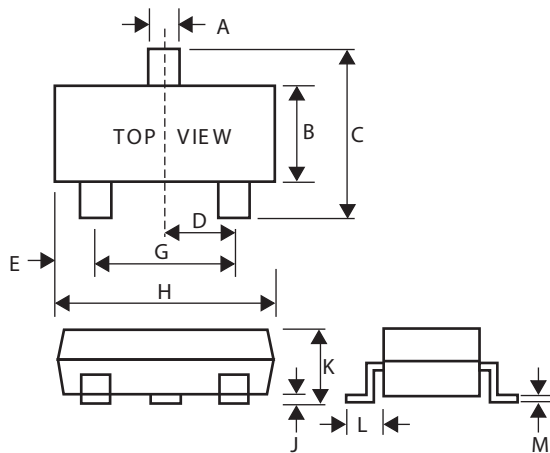
**FIG.8 Turn On and Turn Off Times vs Collector Current**



**FIG.9 Rise Time vs Collector and Turn On Base Current**

## SOT-523 Outline Dimensions (SC-75)

Unit:mm



SC-75		
Dim	Min	Max
A	0.30	0.50
B	0.70	0.90
C	1.45	1.75
D	-	0.50
E	0.15	0.40
G	0.80	1.00
H	1.40	1.80
J	0.00	0.10
K	0.70	1.00
L	0.37	0.48
M	0.10	0.25