

## 350mW, PNP Small Signal Transistor

### FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

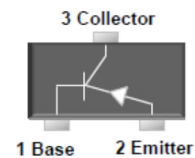
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: SOT-23
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 0.008g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_{CBO}$	-60	V
$V_{CEO}$	-60	V
$V_{EBO}$	-5	V
$I_C$	-600	mA
$h_{FE}$	300	
Package	SOT-23	
Configuration	Single die	



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	MMBT2907A	UNIT
Marking code on the device		2F	
Collector-base voltage	$V_{CBO}$	-60	V
Collector-emitter voltage	$V_{CEO}$	-60	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-600	mA
Power dissipation	$P_D$	350	mW
Junction temperature	$T_J$	-55 to +150	$^\circ\text{C}$
Storage temperature	$T_{STG}$	-55 to +150	$^\circ\text{C}$

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

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$I_C = -10 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	-60	-	-	V
Collector-emitter breakdown voltage	$I_C = -10 \text{mA}, I_B = 0$	$V_{(BR)CEO}$	-60	-	-	V
Emitter-base breakdown voltage	$I_E = -10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	-5	-	-	V
Collector cutoff current	$V_{CB} = -50 \text{V}, I_E = 0$	$I_{CBO}$	-	-	-20	nA
Emitter cutoff current	$V_{CE} = -30 \text{V},$ $V_{BE(OFF)} = -0.5\text{V}$	$I_{CEX}$	-	-	-50	nA
Base cut-off current	$V_{CE} = -30 \text{V},$ $V_{BE(OFF)} = -0.5\text{V}$	$I_B$	-	-	-50	nA
DC current gain	$V_{CE} = -10 \text{V}, I_C = -0.1 \text{mA}$	$h_{FE}$	75	-	-	
	$V_{CE} = -10 \text{V}, I_C = -1 \text{mA}$		100	-	-	
	$V_{CE} = -10 \text{V}, I_C = -10 \text{mA}$		100	-	-	
	$V_{CE} = -10 \text{V}, I_C = -150 \text{mA}$		100	-	300	
	$V_{CE} = -10 \text{V}, I_C = -500 \text{mA}$		50	-	-	
Collector-emitter saturation voltage	$I_C = -150 \text{mA}, I_B = -15 \text{mA}$	$V_{CE(sat)}$	-	-	-0.4	V
	$I_C = -500 \text{mA}, I_B = -50 \text{mA}$		-	-	-1.6	
Base-emitter saturation voltage	$I_C = -150 \text{mA}, I_B = -15 \text{mA}$	$V_{BE(sat)}$	-	-	-1.3	V
	$I_C = -500 \text{mA}, I_B = -50 \text{mA}$		-	-	-2.6	
Transition frequency	$V_{CE} = -20 \text{V}, I_C = -50 \text{mA},$ $f = 100\text{MHz}$	$f_T$	200	-	-	MHz
Output capacitance	$f = 100\text{KHz}, V_{CB} = -10 \text{V},$ $I_E = 0$	$C_{obo}$	-	-	8	pF
Input capacitance	$f = 100\text{KHz}, V_{EB} = -2 \text{V},$ $I_C = 0$	$C_{ibo}$	-	-	30	pF
Delay time	$V_{CE} = -30\text{V}, I_{B1} = -15\text{mA},$ $I_C = -150\text{mA}$	$t_d$	-	-	10	ns
Rise time	$V_{CE} = -30\text{V}, I_{B1} = -15\text{mA},$ $I_C = -150\text{mA}$	$t_r$	-	-	40	ns
Storage time	$V_{CE} = -6\text{V}, I_{B1} = -I_{B2} = -15\text{mA},$ $I_C = -150\text{mA}$	$t_s$	-	-	225	ns
Fall time	$V_{CE} = -6\text{V}, I_{B1} = -I_{B2} = -15\text{mA},$ $I_C = -150\text{mA}$	$t_f$	-	-	60	ns

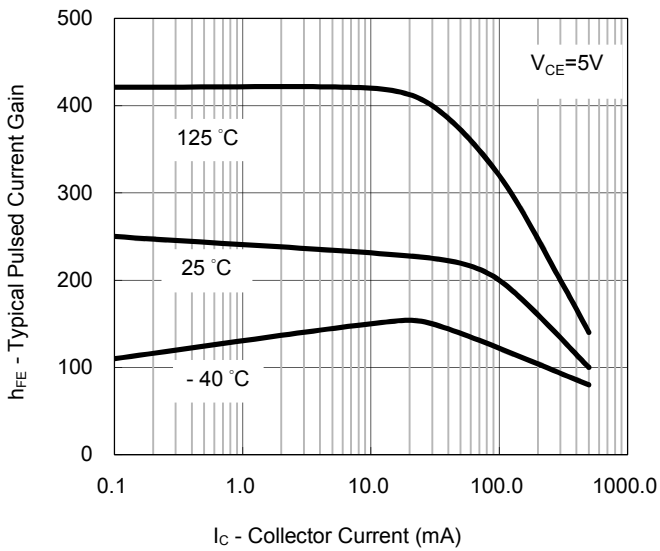
**ORDERING INFORMATION**

ORDERING CODE	PACKAGE	PACKING
MMBT2907A RF	SOT-23	3K / 7" Reel
MMBT2907A RFG	SOT-23	3K / 7" Reel

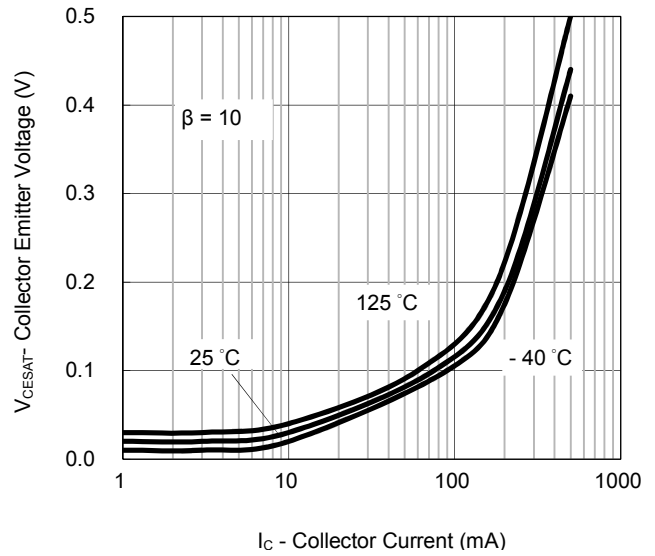
**CHARACTERISTICS CURVES**

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

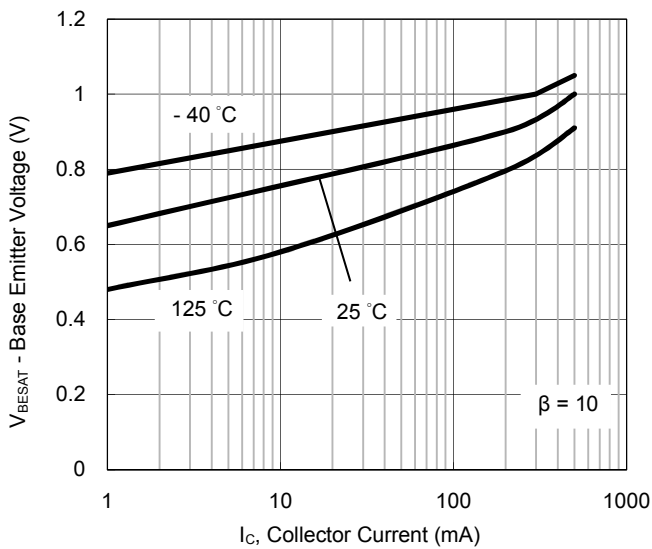
**Fig. 1 Typical Pulsed Current Gain VS. Collector Current**



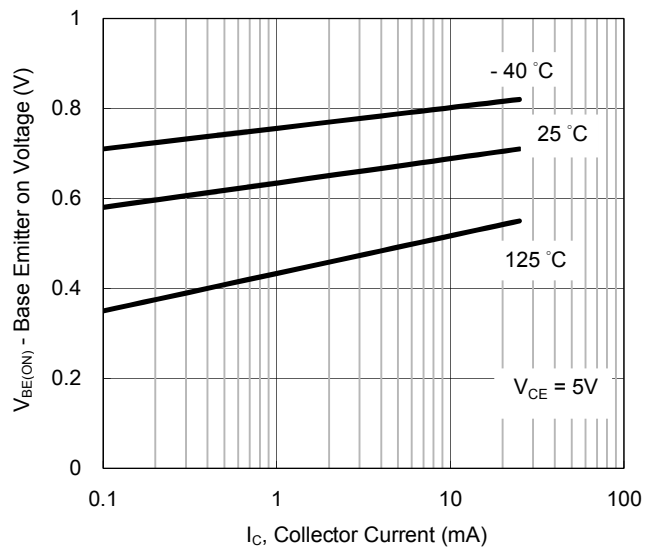
**Fig.2 Collector-Emitter Saturation Voltage VS. Collector Current**



**Fig.3 Base-Emitter Saturation Voltage VS. Collector Current**



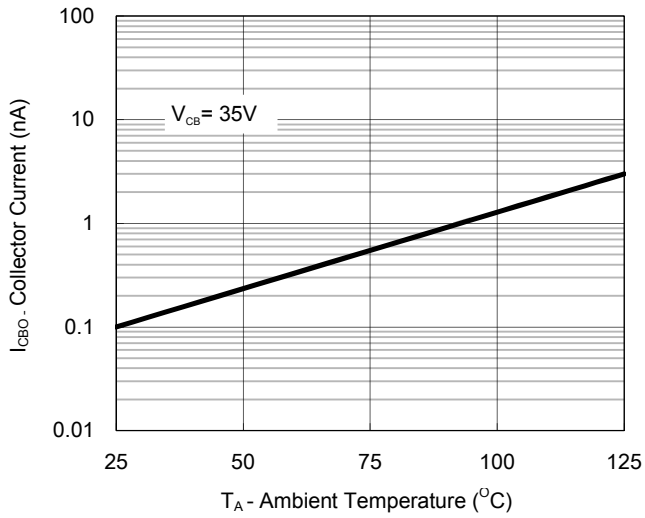
**Fig.4 Base Emitter On Voltage VS. Collector Current**



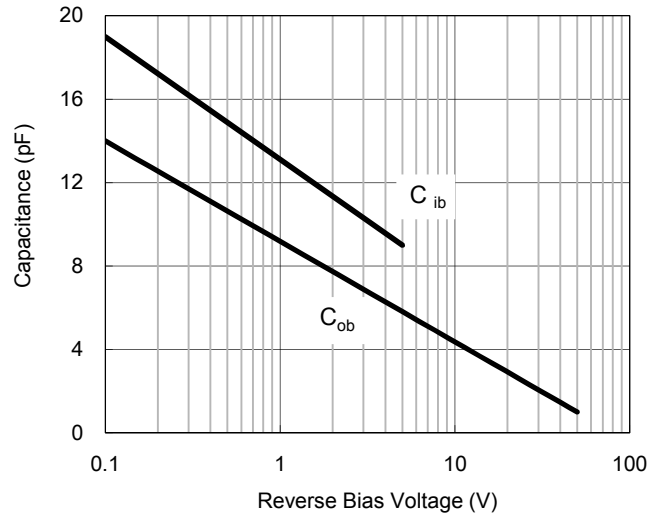
**CHARACTERISTICS CURVES**

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**Fig.5 Collector-Cutoff Current VS. Ambient Temperature**

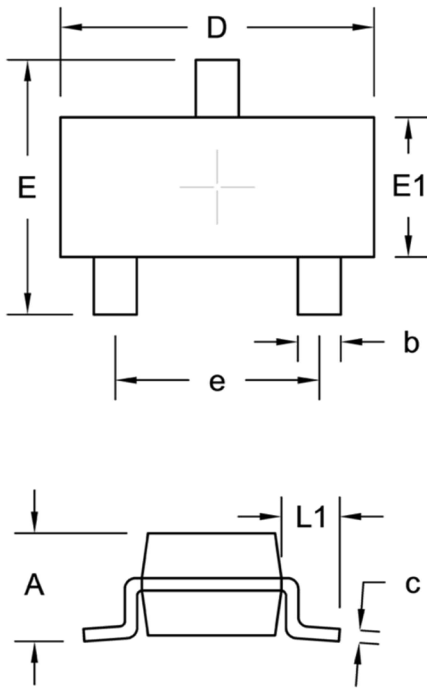


**Fig.6 Input and Output Capacitance VS. Reverse Bias Voltage**



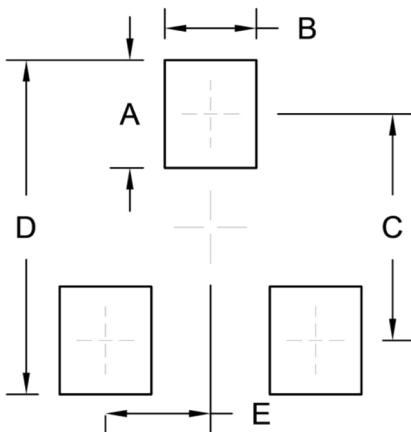
**PACKAGE OUTLINE DIMENSION**

**SOT-23**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.89	1.12	0.035	0.044
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	1.90 BSC		0.075 BSC	
L1	0.54 REF.		0.021 REF.	

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.00	0.039
B	0.85	0.033
C	2.10	0.083
D	3.10	0.122
E	0.98	0.039