



# MMBT2907A

## PNP GENERAL PURPOSE SWITCHING TRANSISTOR

**VOLTAGE** 60 Volt **POWER** 225 mWatt

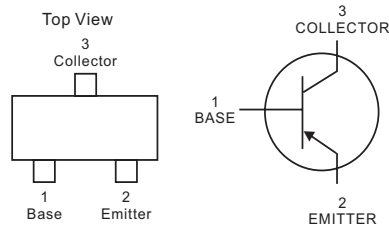
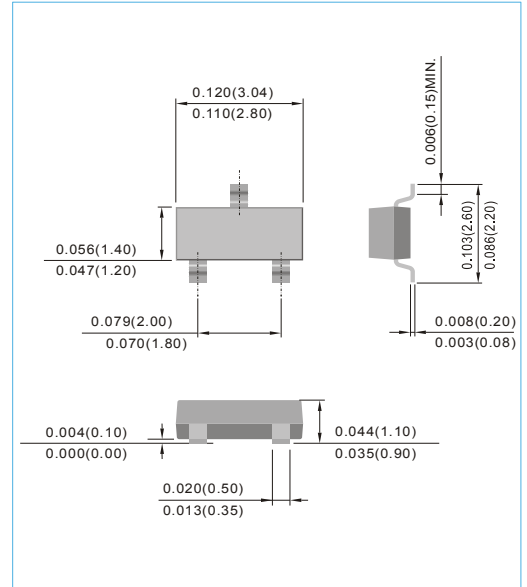
### FEATURES

- PNP epitaxial silicon, planar design
- Collector-emitter voltage  $V_{CE} = -60V$
- Collector current  $I_C = -600mA$
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

### MECHANICAL DATA

Case: SOT-23  
 Terminals : Solderable per MIL-STD-750, Method 2026  
 Approx Weight: 0.0003 ounces, 0.0084 grams  
 Device Marking : M7A

**SOT-23** Unit : inch(mm)



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Collector-Base Voltage	$V_{CBO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current-Continuous	$I_C$	-600	mA

### THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Max Power Dissipation (Note 1)	$P_{TOT}$	225	mW
Storage Temperature	$T_{STG}$	-55 to 150	°C
Junction Temperature	$T_J$	-55 to 150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C / W

Note 1 : Transistor mounted on FR-4 board 70 x 60 x 1mm.



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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Collector-Emitter Breakdown Voltage	V <sub>(BR)</sub> CEO	I <sub>C</sub> = -10mA, I <sub>B</sub> = 0	-60	-	-	V
Collector-Base Breakdown Voltage	V <sub>(BR)</sub> CBO	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0	-60	-	-	V
Emitter-Base Breakdown Voltage	V <sub>(BR)</sub> EBO	I <sub>E</sub> = -10μA, I <sub>C</sub> = 0	-5.0	-	-	V
Base Cutoff Current	I <sub>BL</sub>	V <sub>CE</sub> = -30V, V <sub>EB</sub> = -0.5V	-	-	-50	nA
Collector Cutoff Current	I <sub>CEX</sub>	V <sub>CE</sub> = -30V, V <sub>EB</sub> = -0.5V	-	-	-50	nA
	I <sub>CBO</sub>	V <sub>CE</sub> = -50V, I <sub>E</sub> = 0	-	-	-10	nA
		V <sub>CE</sub> = -50V, I <sub>E</sub> = 0 T <sub>J</sub> = 125°C	-	-	-10	μA
DC Current Gain	h <sub>FE</sub>	I <sub>C</sub> = -0.1mA, V <sub>CE</sub> = -10V	75	-	-	-
		I <sub>C</sub> = -1.0mA, V <sub>CE</sub> = -10V	100	-	-	-
		I <sub>C</sub> = -10mA, V <sub>CE</sub> = -10V	100	-	-	-
		I <sub>C</sub> = -150mA, V <sub>CE</sub> = -10V	100	-	-	300
		I <sub>C</sub> = -500mA, V <sub>CE</sub> = -10V	50	-	-	-
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA	-	-	-0.4	V
		I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA	-	-	-1.6	V
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA	-	-	-1.3	V
		I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA	-	-	-2.6	V
Collector-Base Capacitance	C <sub>CB0</sub>	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz	-	-	8.0	pF
Emitter-Base Capacitance	C <sub>EBO</sub>	V <sub>CB</sub> = -2V, I <sub>C</sub> = 0, f = 1MHz	-	-	30	pF
Current Gain-Bandwidth Product	F <sub>T</sub>	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -20V, f = 100MHz	200	-	-	MHz
Turn-On Time	t <sub>on</sub>	V <sub>CC</sub> = -30V, V <sub>BE</sub> = -0.5V, I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA	-	-	45	ns
Delay Time	t <sub>d</sub>	V <sub>CC</sub> = -30V, V <sub>BE</sub> = -0.5V, I <sub>C</sub> = -150mA, I <sub>B</sub> = -15mA	-	-	10	ns
Rise Time	t <sub>r</sub>	V <sub>CC</sub> = -30V, V <sub>BE</sub> = -0.5V, I <sub>C</sub> = -150mA, I <sub>B1</sub> = -15mA	-	-	40	ns
Turn-Off Time	t <sub>off</sub>	V <sub>CC</sub> = -6V, I <sub>C</sub> = -150mA, I <sub>B1</sub> = I <sub>B2</sub> = -15mA	-	-	100	ns
Storage Time	t <sub>s</sub>	V <sub>CC</sub> = -6V, I <sub>C</sub> = -150mA, I <sub>B1</sub> = I <sub>B2</sub> = -15mA	-	-	80	ns
Fall Time	t <sub>f</sub>	V <sub>CC</sub> = -6V, I <sub>C</sub> = -150mA, I <sub>B1</sub> = I <sub>B2</sub> = -15mA	-	-	30	ns



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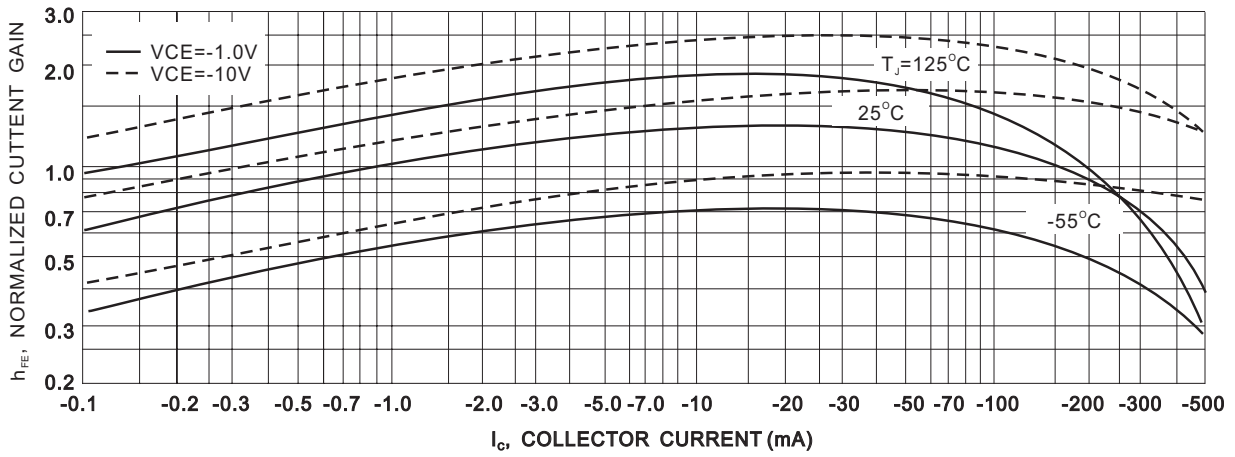


Fig.1-DC Current Gain

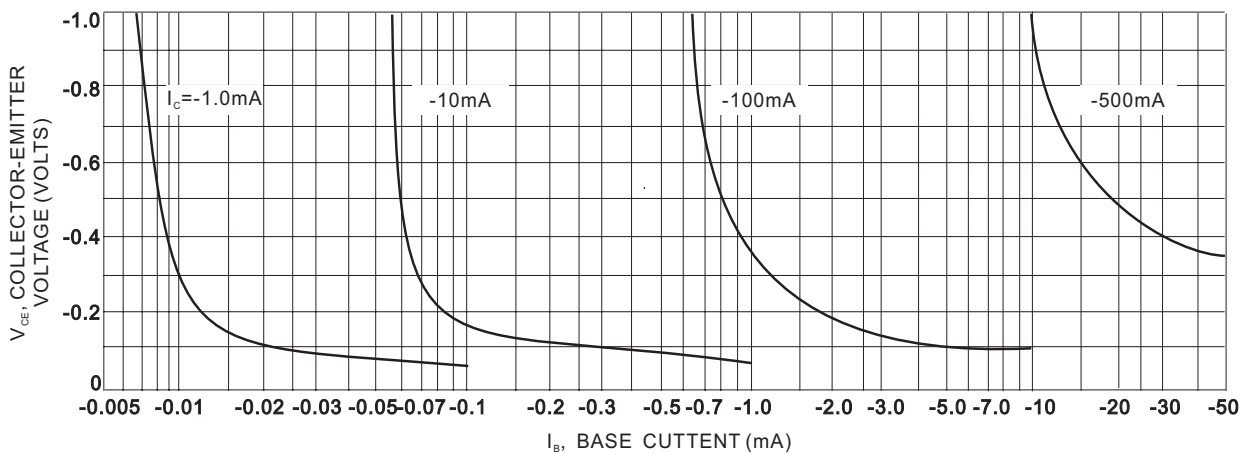


Fig.2-Collector Saturation Region

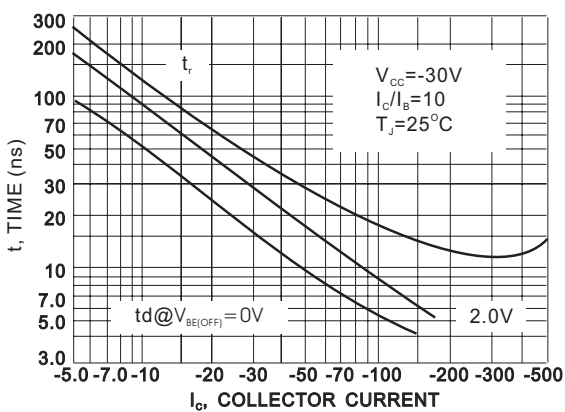


Fig.3-Turn-On Time

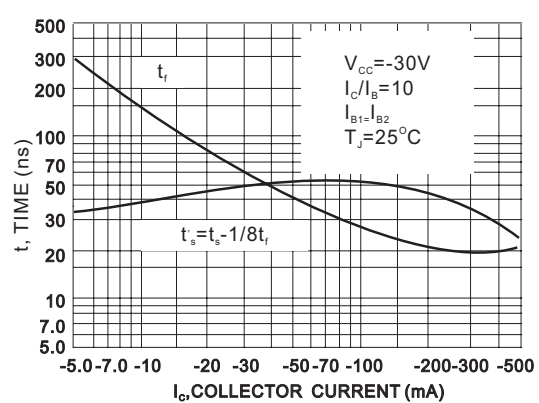


Fig.4-Turn-Off Time



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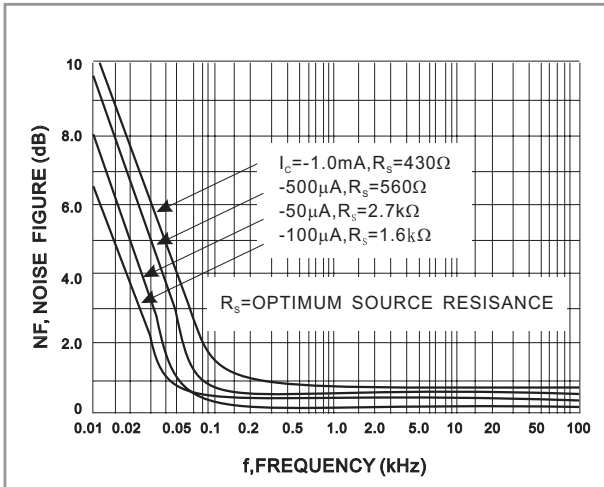


Fig.5-Frequency Effects

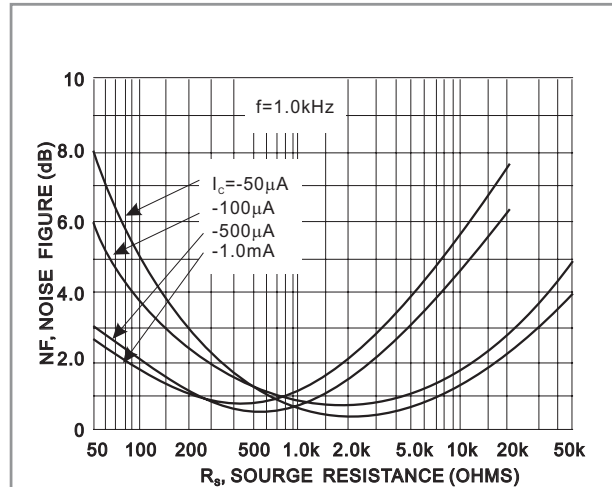


Fig.6-Source Resistance Effects

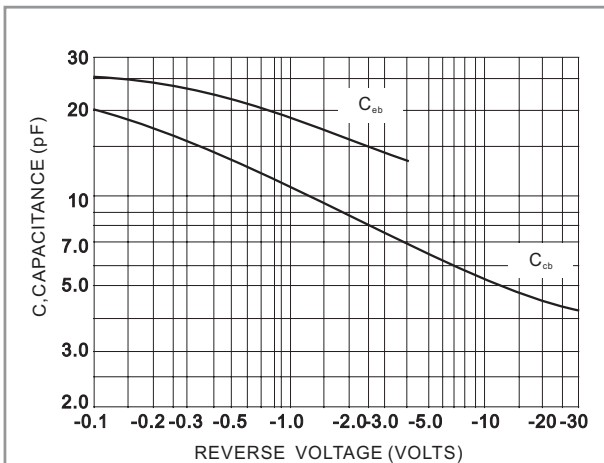


Fig.7-Capacitances

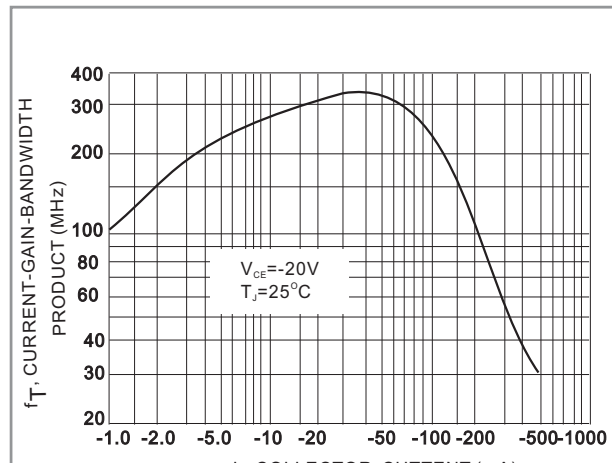


Fig.8-Current-Gain-Bandwidth Product

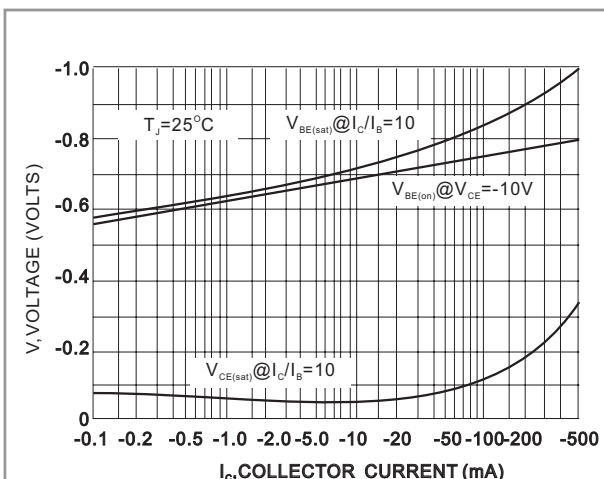


Fig.9-On Voltage

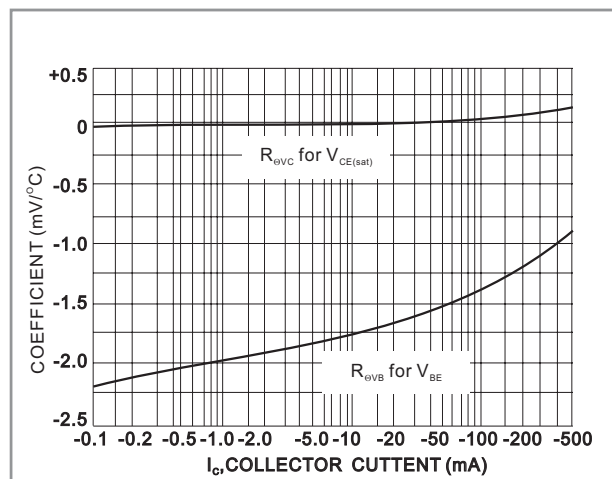
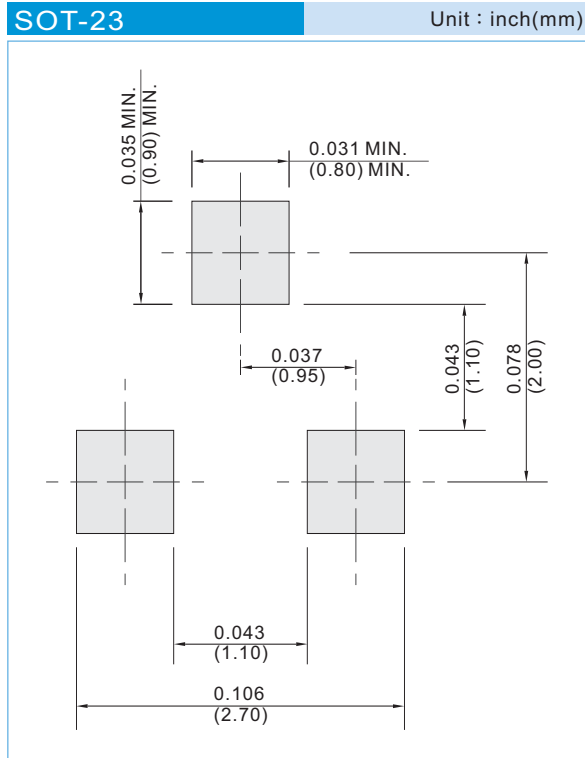


Fig.10-Temperature Coefficients



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## MOUNTING PAD LAYOUT



## ORDER INFORMATION

- Packing information
  - T/R - 12K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel



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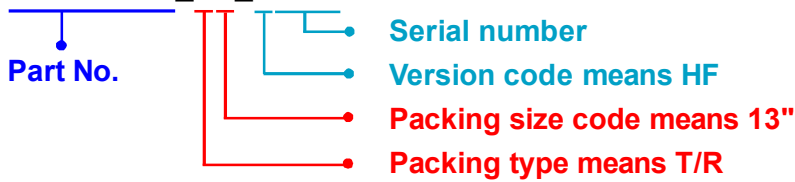
## Part No\_packing code\_Version

MMBT2907A\_R1\_00001

MMBT2907A\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



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