

# TRANSISTOR (NPN)

## PRODUCT SUMMARY

SOT-23 Plastic-Encapsulate Transistors

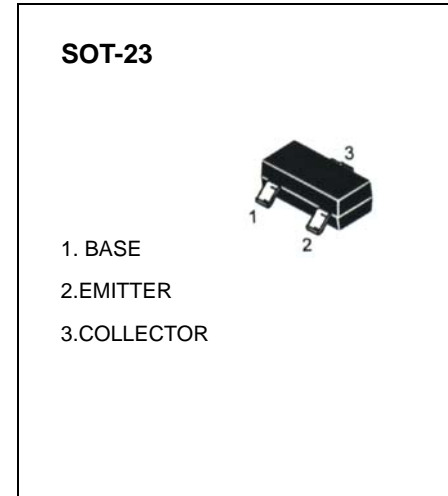
## FEATURES

Epitaxial planar die construction  
Complementary PNP Type available (MMBT2907A)

## MARKING: 1P

## MECHANICAL DATA

NA



## MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V <sub>CBO</sub>	Collector-Base Voltage	75	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	600	mA
P <sub>C</sub>	Collector Power Dissipation	350	mW
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55to+150	°C

## ELECTRICAL CHARACTERISTICS

(Tamb=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	75			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60V, I_E=0$			10	nA
Collector cut-off current	$I_{CEX}$	$V_{CE}=60V, V_{BE(off)}=3V$			10	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=3V, I_C=0$			0.1	$\mu A$
DC current gain	$h_{FE(1)}$	$V_{CE}=10V, I_C=150mA$	100		300	
	$h_{FE(2)}$	$V_{CE}=10V, I_C=0.1mA$	40			
	$h_{FE(3)}$	$V_{CE}=10V, I_C=500mA$	42			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500mA, I_B=50mA$ $I_C=150mA, I_B=15mA$			1 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500mA, I_B=50mA$ $I_C=150mA, I_B=15mA$	0.6		2.0 1.2	V
Transition frequency	$f_T$	$V_{CE}=20V, I_C=20mA$ $f=100MHz$	300			MHz
Delay time	$t_d$	$V_{CC}=30V, V_{BE(off)}=-0.5V$			10	nS
Rise time	$t_r$	$I_C=150mA, I_{B1}=15mA$			25	nS
Storage time	$t_S$	$V_{CC}=30V, I_C=150mA$			225	nS
Fall time	$t_f$	$I_{B1}=-I_{B2}=15mA$			60	nS

### CLASSIFICATION OF $h_{FE(1)}$

Rank	L	H
Range	100-200	200-300

## TYPICAL CHARACTERISTICS

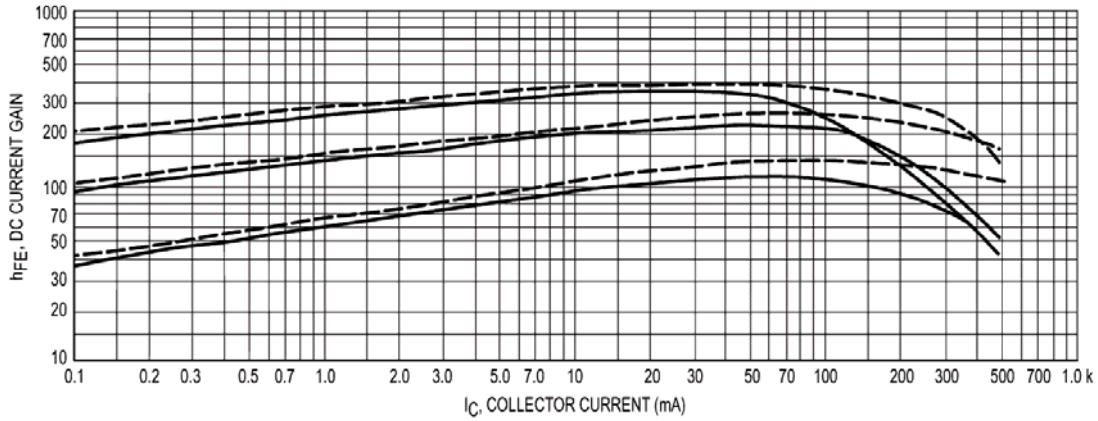


Figure 3. DC Current Gain

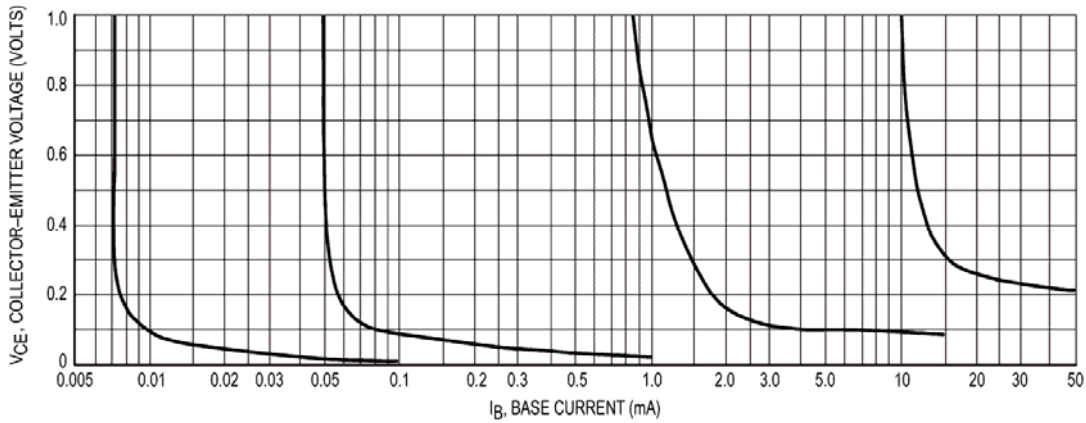


Figure 4. Collector Saturation Region

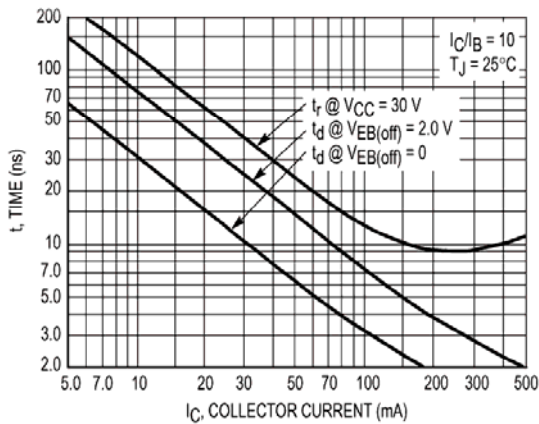


Figure 5. Turn-On Time

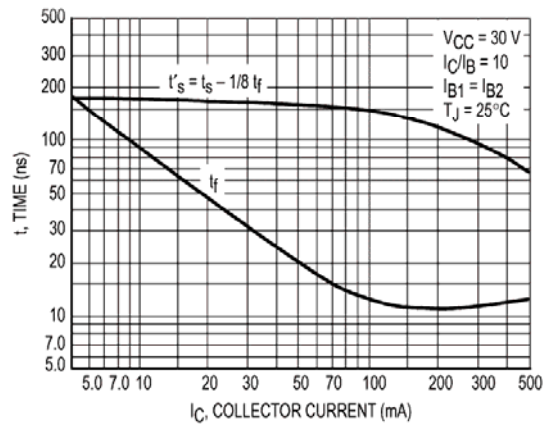
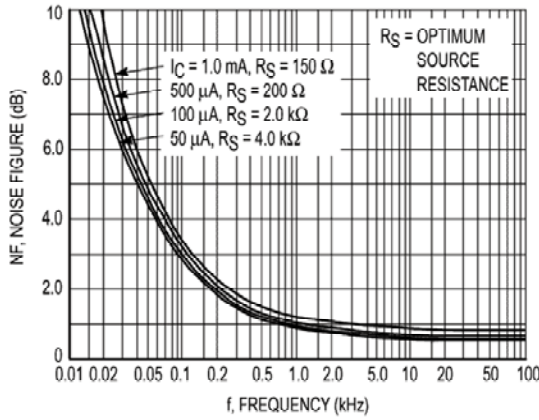
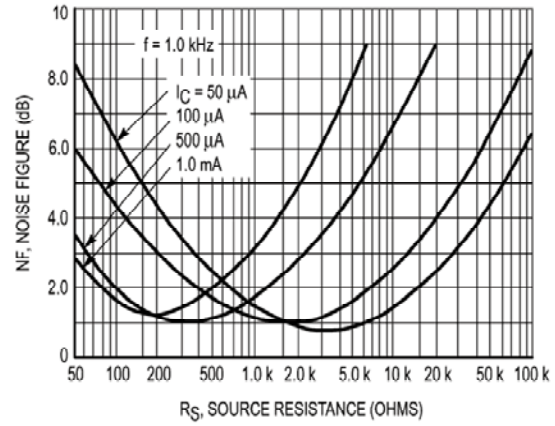
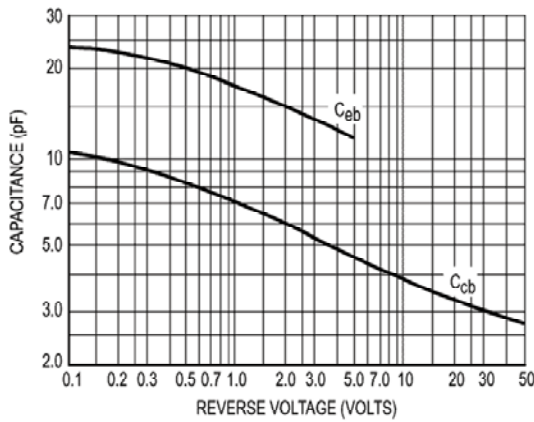
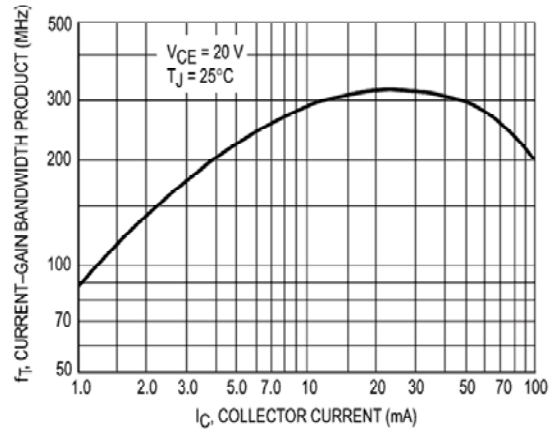
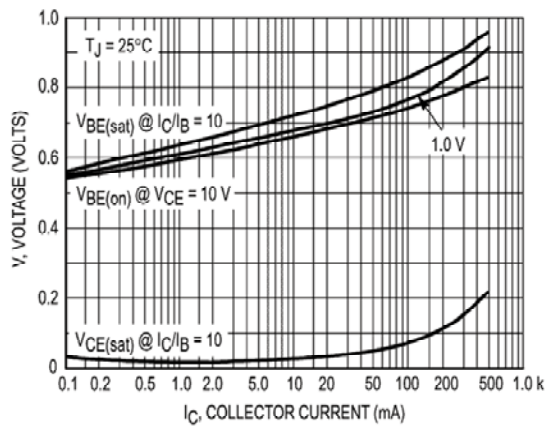
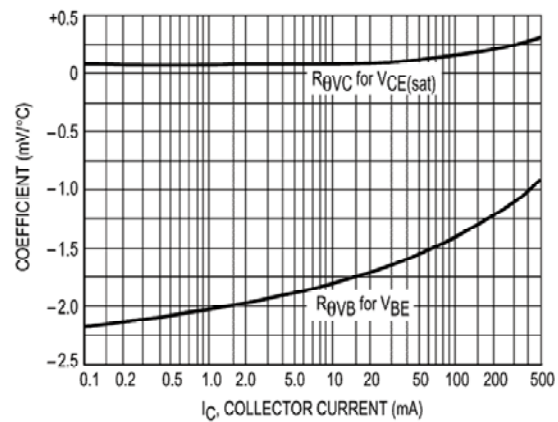


Figure 6. Turn-Off Time


**Figure 7. Frequency Effects**

**Figure 8. Source Resistance Effects**

**Figure 9. Capacitances**

**Figure 10. Current-Gain Bandwidth Product**

**Figure 11. "On" Voltages**

**Figure 12. Temperature Coefficients**

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