



# FMBT2222A NPN Bipolar Transistor

## Description

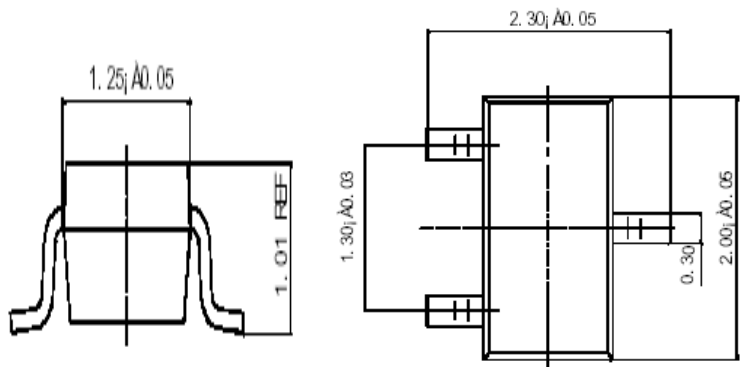
## Mechanical Dimensions

FMBT2222A



SOT-23

- 1. BASE
- 2. EMITTER
- 3. COLLECTOR



Dimension in mm

## FEATURES

- Epitaxial planar die construction
- Complementary PNP Type available(FMMBT2907A)

MARKING: 1P

MAXIMUM RATINGS\*  $T_A=25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	75	V
$V_{CEO}$	Collector-Emitter Voltage	40	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current -Continuous	600	mA
$P_C$	Collector Dissipation	300	mW
$T_J, T_{stg}$	Junction and Storage Temperature	-55to+150	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	75			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=70\text{V}, I_E=0$			0.1	$\mu\text{A}$
Collector cut-off current	$I_{CEX}$	$V_{CE}=60\text{V}, V_{BE(off)}=3\text{V}$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=3\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$H_{FE(1)}$	$V_{CE}=10\text{V}, I_C=150\text{mA}$	100		300	
	$H_{FE(2)}$	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	40			
	$H_{FE(3)}$	$V_{CE}=10\text{V}, I_C=500\text{mA}$	42			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$ $I_C=150\text{mA}, I_B=15\text{mA}$			0.6 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			1.2	V
Transition frequency	$f_T$	$V_{CE}=20\text{V}, I_C=20\text{mA}$ $f=100\text{MHz}$	300			MHz
Delay time	$t_d$	$V_{CC}=30\text{V}, V_{BE(off)}=-0.5\text{V}$			10	nS
Rise time	$t_r$	$I_C=150\text{mA}, I_{B1}=15\text{mA}$			25	nS
Storage time	$t_S$	$V_{CC}=30\text{V}, I_C=150\text{mA}$			225	nS
Fall time	$t_f$	$I_{B1}=-I_{B2}=15\text{mA}$			60	nS



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

Rank	L	H
Range	100-200	200-300

### Typical Characteristics

### FMMBT2222ALT1

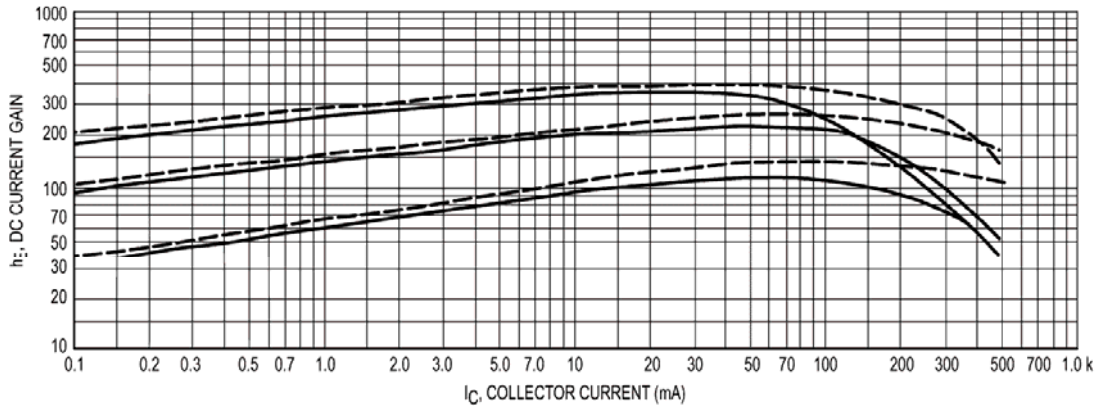


Figure 3. DC Current Gain

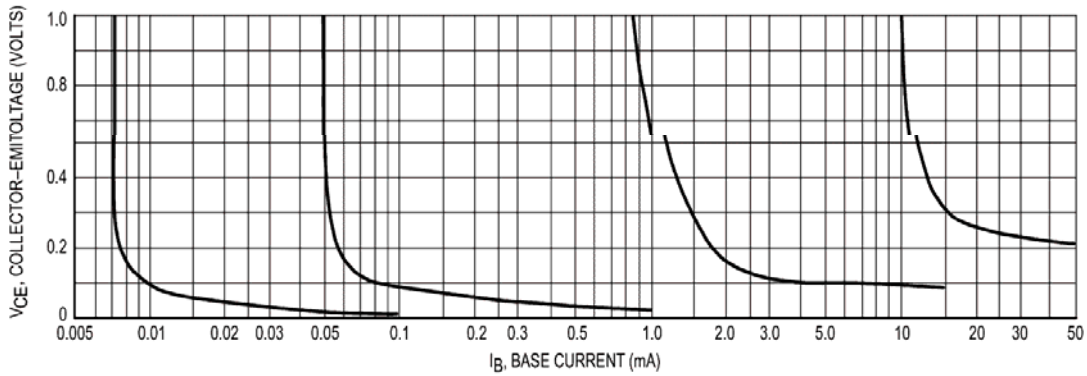


Figure 4. Collector Saturation Region

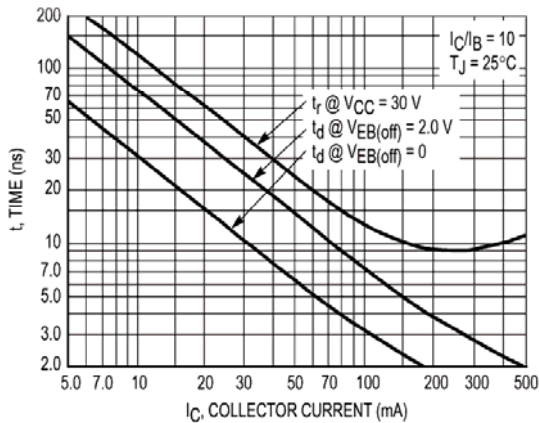


Figure 5. Turn-On Time

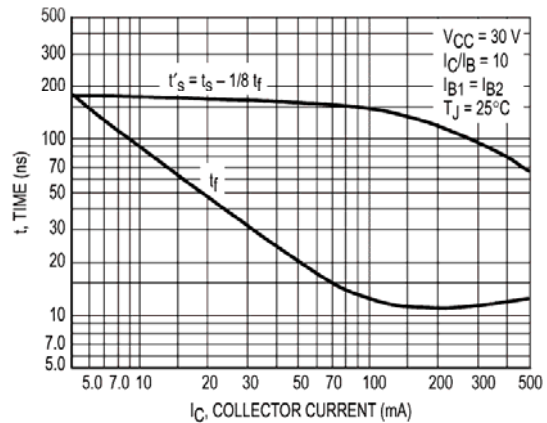


Figure 6. Turn-Off Time



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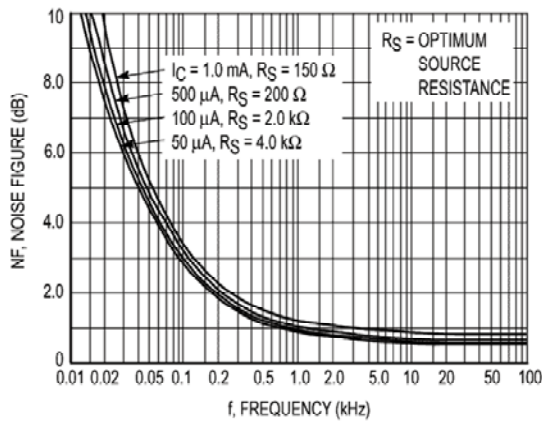


Figure 7. Frequency Effects

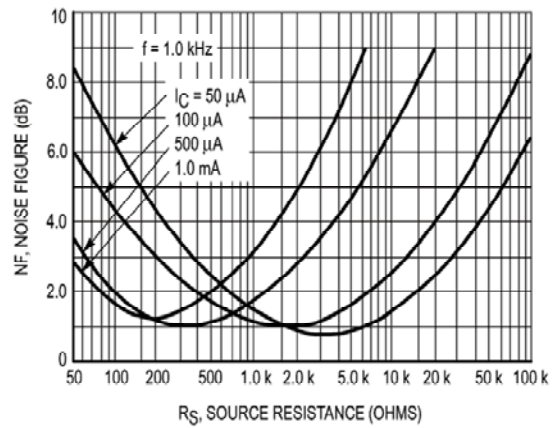


Figure 8. Source Resistance Effects

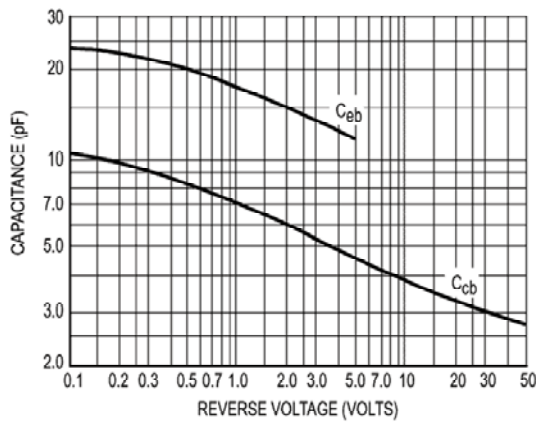


Figure 9. Capacitances

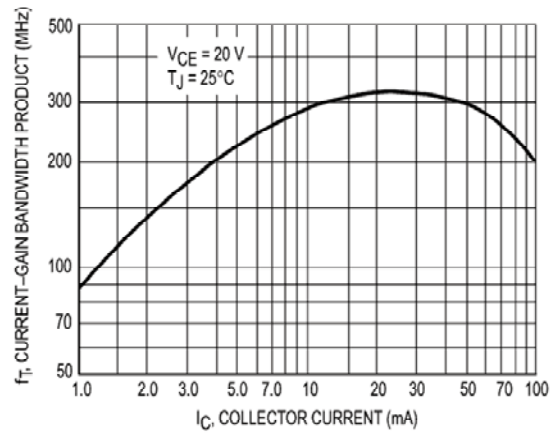


Figure 10. Current-Gain Bandwidth Product

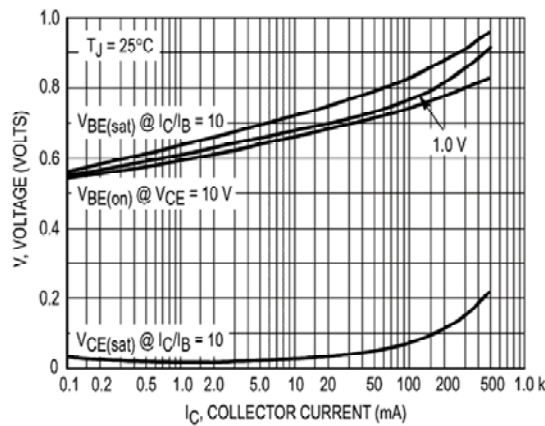


Figure 11. "On" Voltages

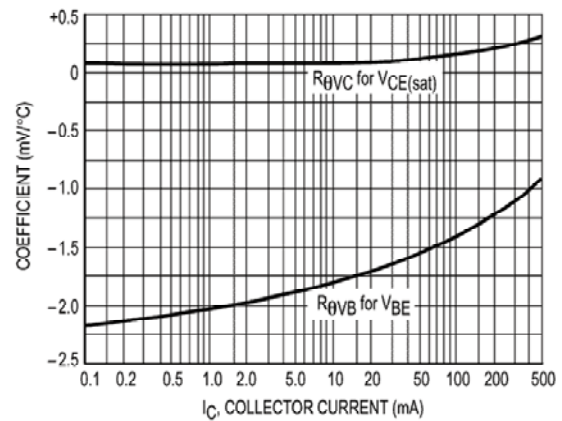


Figure 12. Temperature Coefficients