



Micro Commercial Components

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MMBT2222A

NPN General Purpose Amplifier

Features

- Surface Mount SOT-23 Package
- Capable of 350mWatts of Power Dissipation, $I_C=600mA$
- Operating Junction Temperature: $-55^{\circ}C$ to $+150^{\circ}C$
- Storage Temperature: $-55^{\circ}C$ to $+150^{\circ}C$
- Case Material: Molded Plastic. UL Flammability Classification Rating 94-0 and MSL Rating 1
- Marking: 1P

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
OFF CHARACTERISTICS				
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage* ($I_C=10mA$, $I_B=0$)	40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C=10\mu A$, $I_E=0$)	75		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E=10\mu A$, $I_C=0$)	6.0		Vdc
I_{BL}	Base Cutoff Current ($V_{CE}=60Vdc$, $V_{BE}=3.0Vdc$)		20	nAdc
I_{CEX}	Collector Cutoff Current ($V_{CE}=60Vdc$, $V_{BE}=3.0Vdc$)		10	nAdc

ON CHARACTERISTICS

h_{FE}	DC Current Gain* ($I_C=0.1mA$, $V_{CE}=10Vdc$)	35	300	Vdc	
		($I_C=1.0mA$, $V_{CE}=10Vdc$)			50
		($I_C=10mA$, $V_{CE}=10Vdc$)			75
		($I_C=150mA$, $V_{CE}=10Vdc$)			100
		($I_C=150mA$, $V_{CE}=1.0Vdc$)			50
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=150mA$, $I_B=15mA$)	0.3	Vdc		
		($I_C=500mA$, $I_B=50mA$)		1.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C=150mA$, $I_B=15mA$)	0.6	1.2	Vdc	
	($I_C=500mA$, $I_B=50mA$)		2.0		

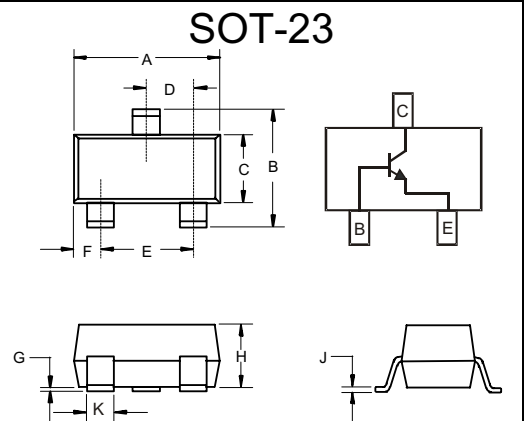
SMALL-SIGNAL CHARACTERISTICS

f_T	Current Gain-Bandwidth Product ($I_C=20mA$, $V_{CE}=20Vdc$, $f=100MHz$)	300		MHz
C_{obo}	Output Capacitance ($V_{CB}=10Vdc$, $I_E=0$, $f=1.0MHz$)		8.0	pF
C_{ibo}	Input Capacitance ($V_{BE}=0.5Vdc$, $I_C=0$, $f=1.0MHz$)		25	pF
NF	Noise Figure ($I_C=100\mu A$, $V_{CE}=10Vdc$, $R_S=1.0k\Omega$, $f=1.0kHz$)		4.0	dB

SWITCHING CHARACTERISTICS

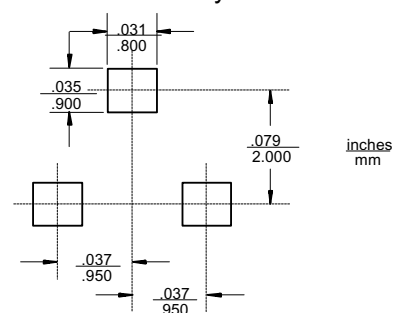
t_d	Delay Time	($V_{CC}=30Vdc$, $V_{BE}=0.5Vdc$)	10	ns
t_r	Rise Time	($I_C=150mA$, $I_{B1}=15mA$)	25	ns
t_s	Storage Time	($V_{CC}=30Vdc$, $I_C=150mA$)	225	ns
t_f	Fall Time	($I_{B1}=I_{B2}=15mA$)	60	ns

*Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2.0\%$



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Suggested Solder Pad Layout



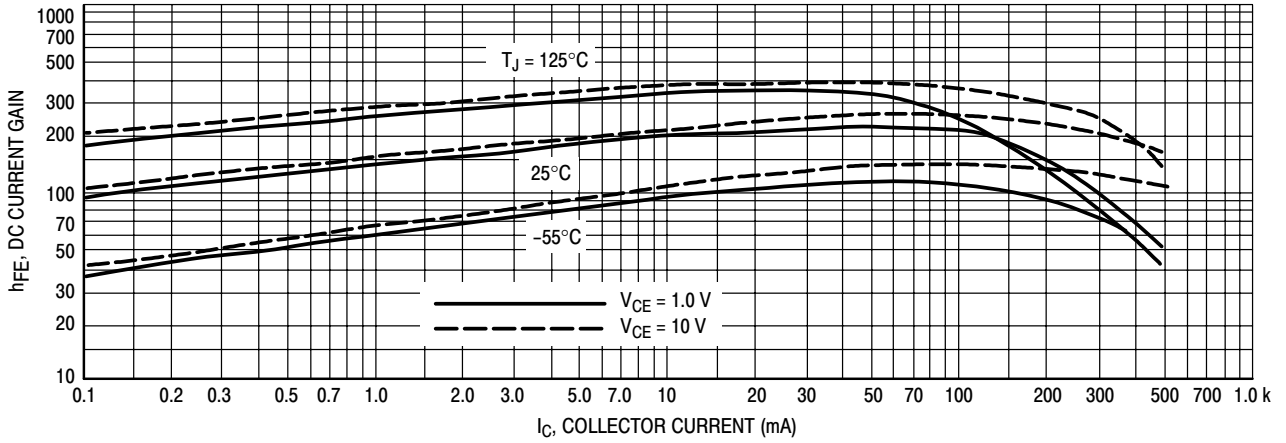


Figure 1. DC Current Gain

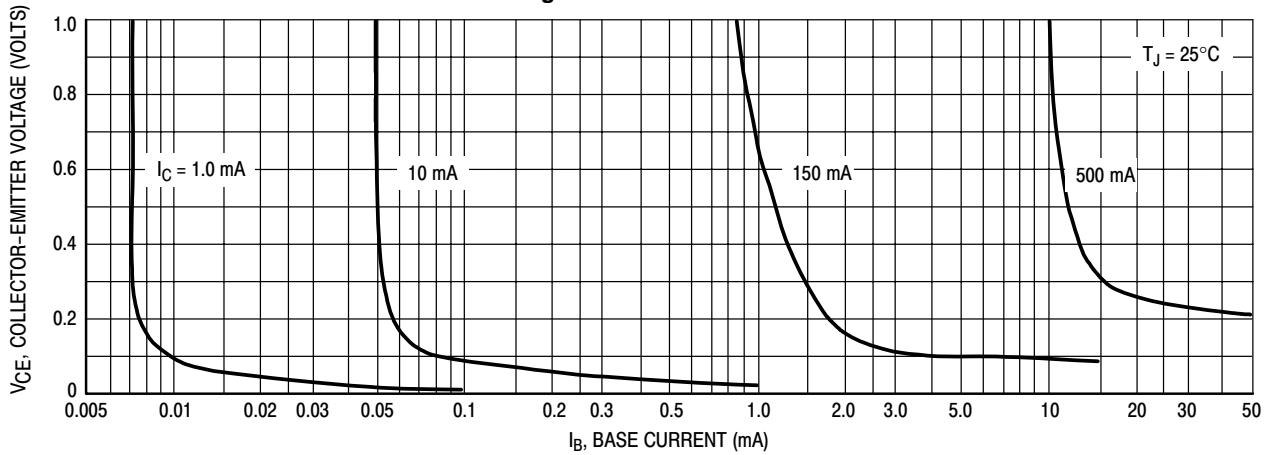


Figure 2. Collector Saturation Region

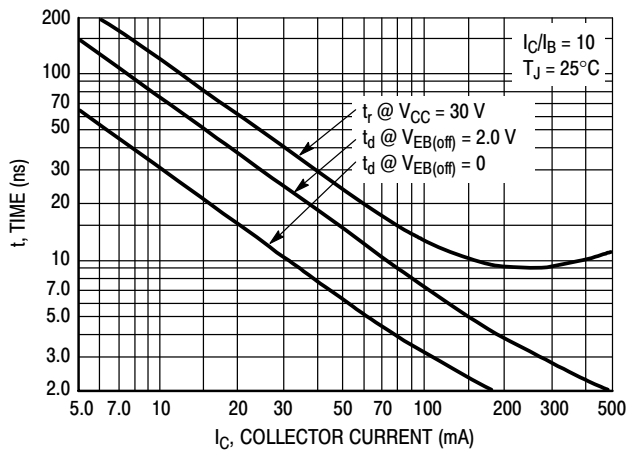


Figure 3. Turn-On Time

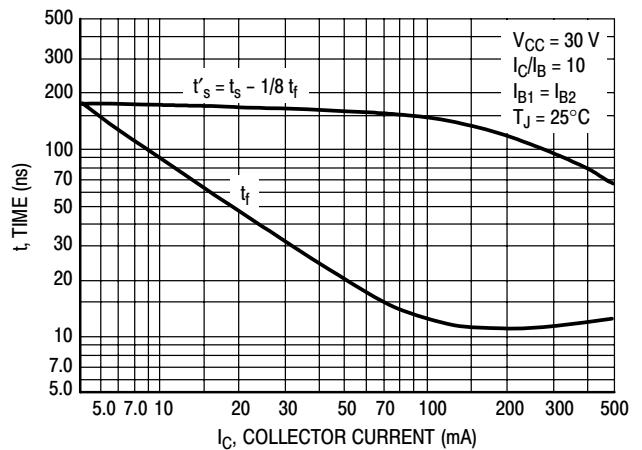


Figure 4. Turn-Off Time

MMBT2222A

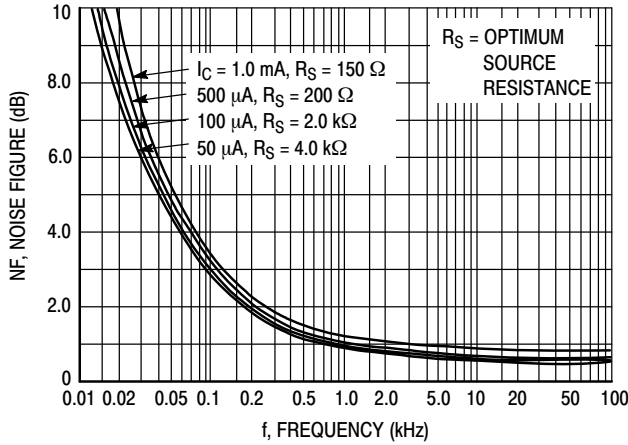


Figure 5. Frequency Effects

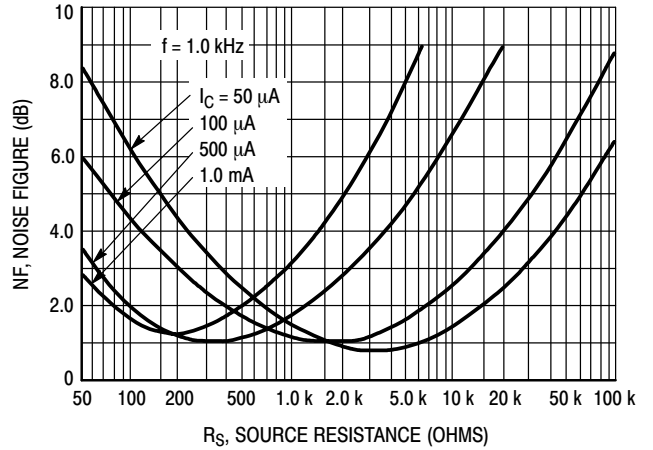


Figure 6. Source Resistance Effects

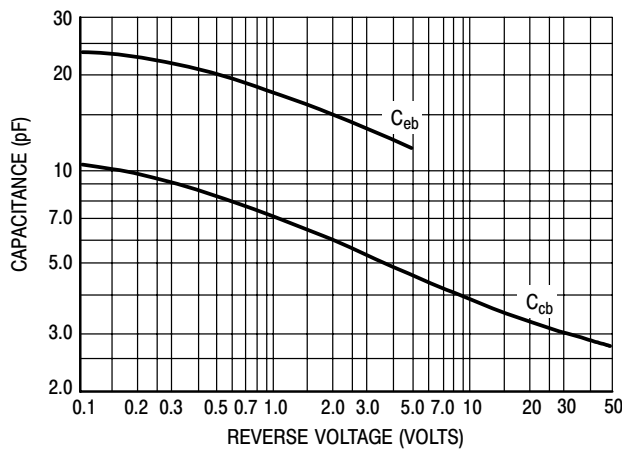


Figure 7. Capacitances

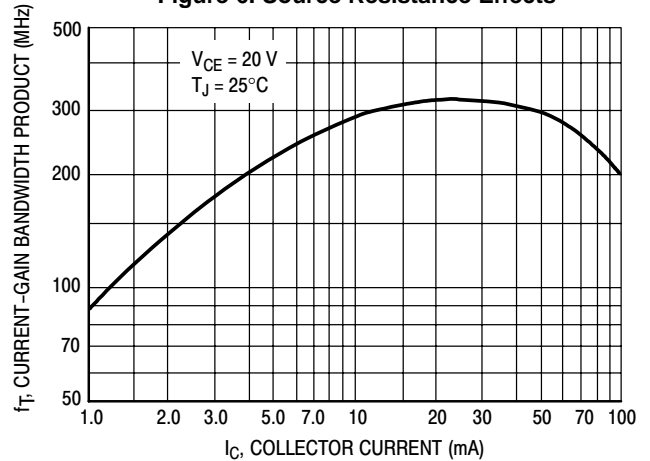


Figure 8. Current-Gain Bandwidth Product

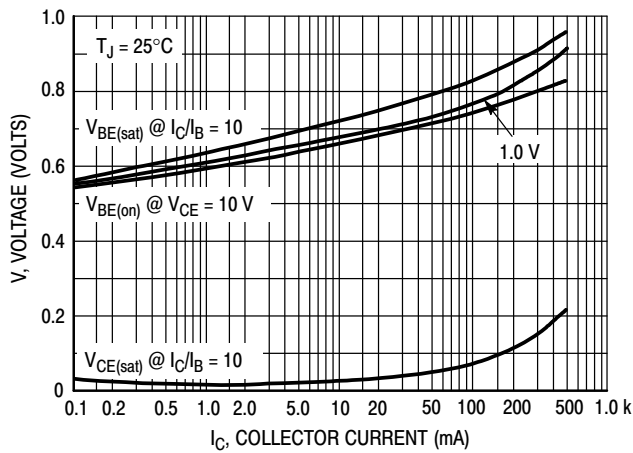


Figure 9. "On" Voltages

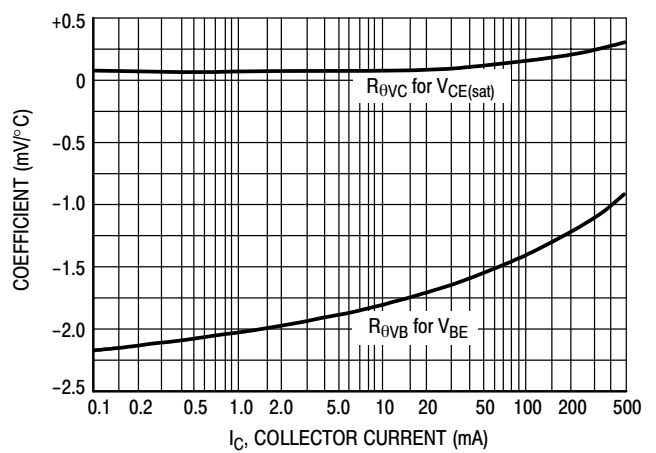


Figure 10. Temperature Coefficients



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Ordering Information

Device (Part Number)-TP	Packing Tape&Reel;3Kpcs/Reel
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