Micro Commercial Components
20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

MMBT2222A

NPN General Purpose Amplifier

Features

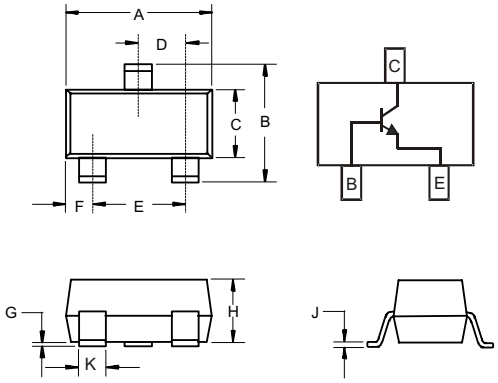
- Halogen free available upon request by adding suffix "-HF"
- Surface Mount SOT-23 Package
- Capable of 350mWatts of Power Dissipation, I_C=600mA
- Operating and Storage Junction Temperature: -55°C to +150°C
- Thermal resistance,Junction to Ambient:500°C/W
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking:1P
- Lead Free Finish/RoHS Compliant("P"Suffix designates Compliant)

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
OFF CHARACTERISTICS				
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage* (I_C=10mAdc, I_B=0)	40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (I_C=10μAdc, I_E=0)	75		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_E=10μAdc, I_C=0)	6.0		Vdc
I_{CEX}	Collector Cutoff Current (V_{CE}=60Vdc, V_{BE}=3.0Vdc)		10	nAdc
ON CHARACTERISTICS				
h_{FE}	DC Current Gain*			
	(I_C=0.1mAdc, V_{CE}=10Vdc)	35		
	(I_C=1.0mAdc, V_{CE}=10Vdc)	50		
	(I_C=10mAdc, V_{CE}=10Vdc)	75		
	(I_C=150mAdc, V_{CE}=10Vdc)	100	300	
	(I_C=150mAdc, V_{CE}=1.0Vdc)	50		
	(I_C=500mAdc, V_{CE}=10Vdc)	40		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage			
	(I_C=150mAdc, I_B=15mAdc)		0.3	Vdc
	(I_C=500mAdc, I_B=50mAdc)		1.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage			
	(I_C=150mAdc, I_B=15mAdc)	0.6	1.2	Vdc
	(I_C=500mAdc, I_B=50mAdc)		2.0	
SMALL-SIGNAL CHARACTERISTICS				
f_T	Current Gain-Bandwidth Product (I_C=20mAdc, V_{CE}=20Vdc, f=100MHz)	300		MHz
C_{obo}	Output Capacitance (V_{CB}=10Vdec, 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=100μAdc, V_{CE}=10Vdc, R_S=1.0kΩ 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=150mAdc, I_{B1}=15mAdc)	25	ns
t_s	Storage Time	(V_{CC}=30Vdc, I_C=150mAdc	225	ns
t_f	Fall Time	I_{B1}=I_{B2}=15mAdc)	60	ns

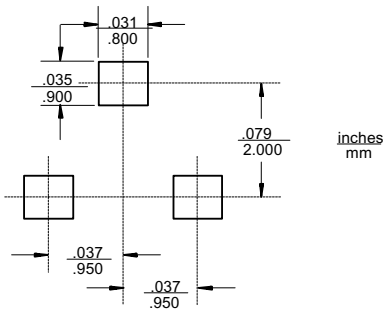
*Pulse Width ≤ 300μs, Duty Cycle≤ 2.0%

SOT-23



DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
A	.110	.120	2.80	3.04	
B	.083	.104	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



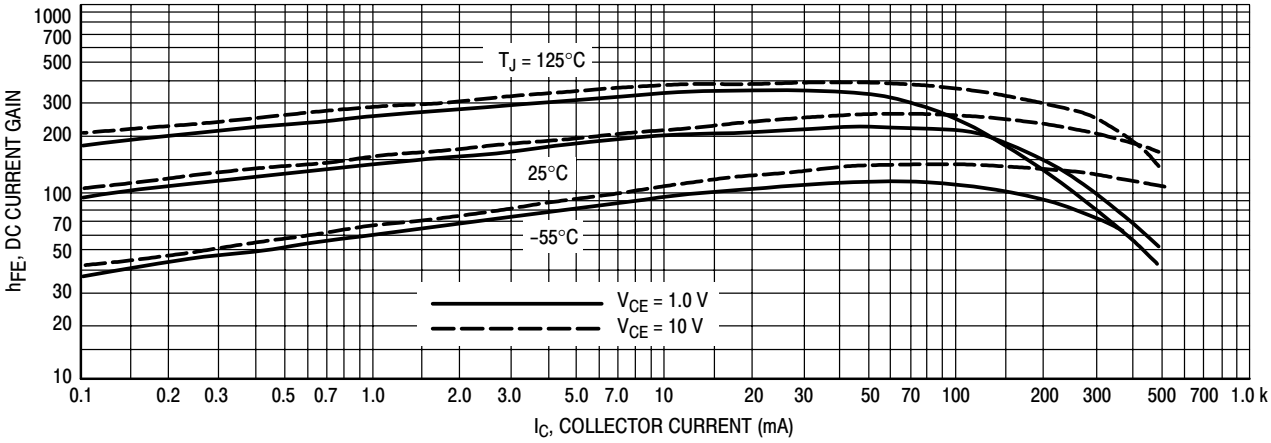


Figure 1. DC Current Gain

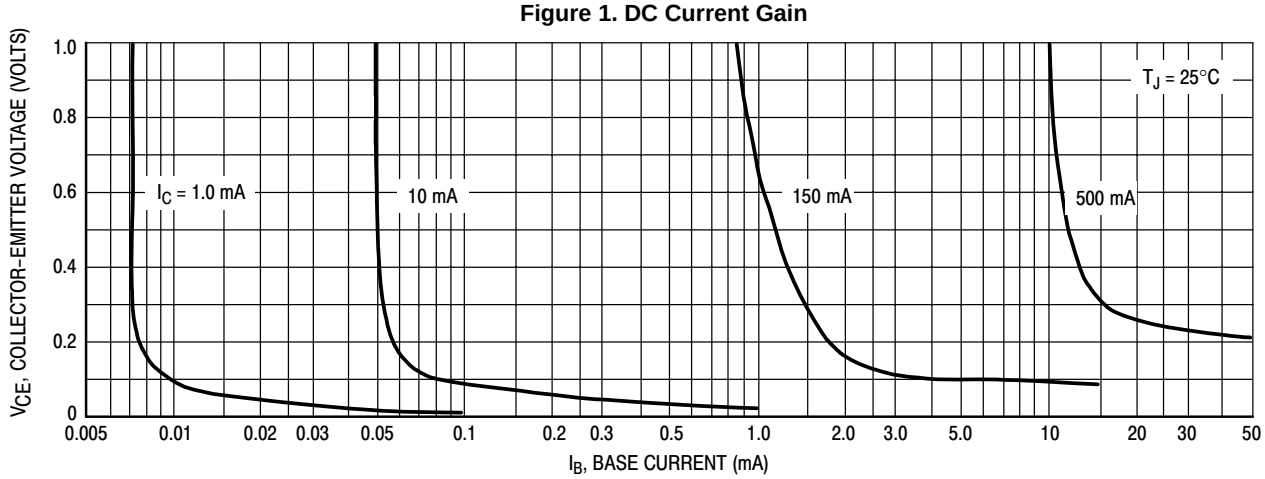


Figure 2. Collector Saturation Region

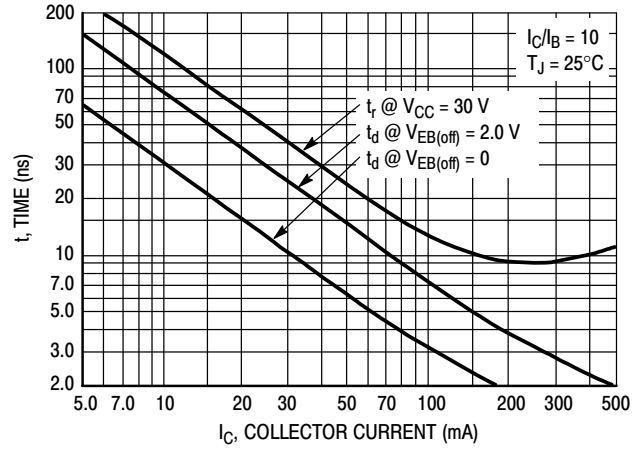


Figure 3. Turn−On Time

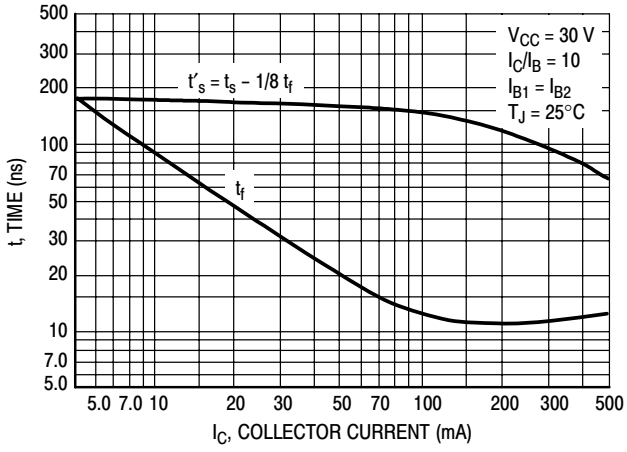


Figure 4. Turn−Off Time

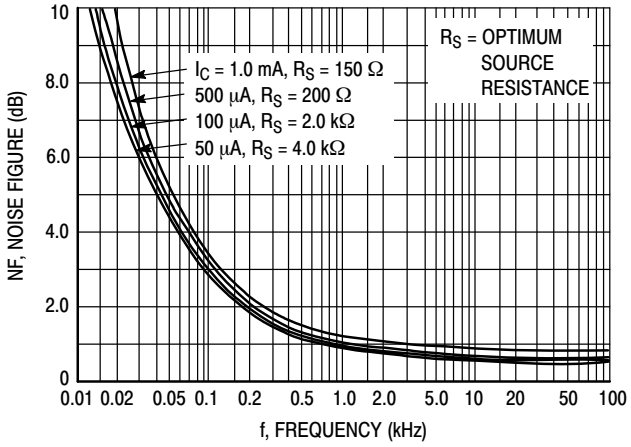


Figure 5. Frequency Effects

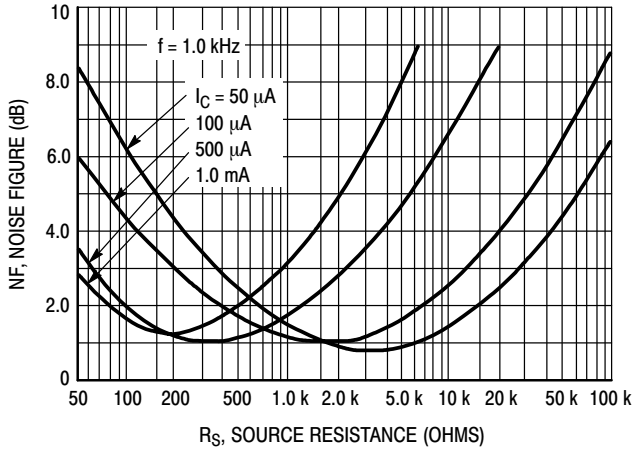


Figure 6. Source Resistance Effects

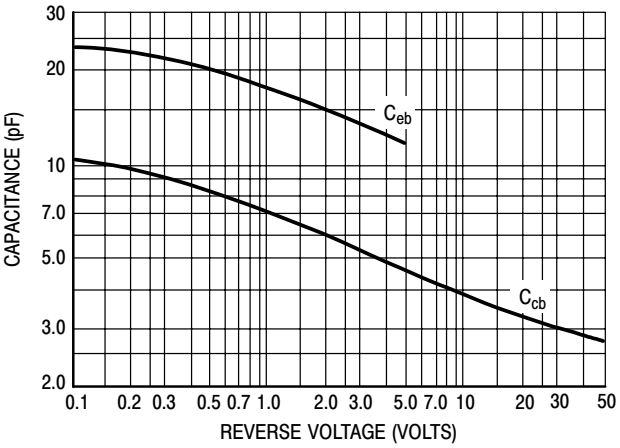


Figure 7. Capacitances

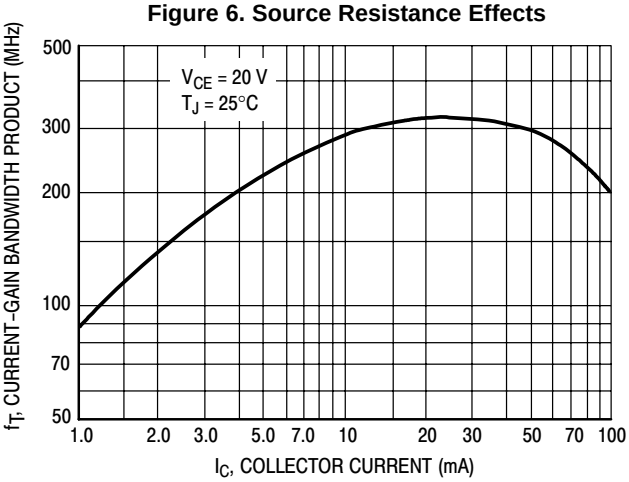


Figure 8. Current–Gain Bandwidth Product

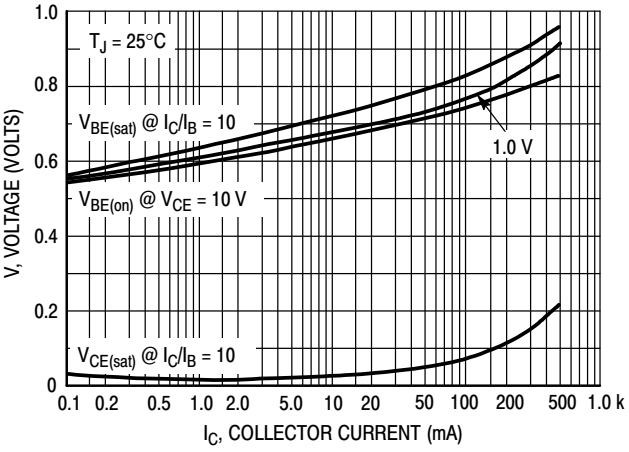


Figure 9. "On" Voltages

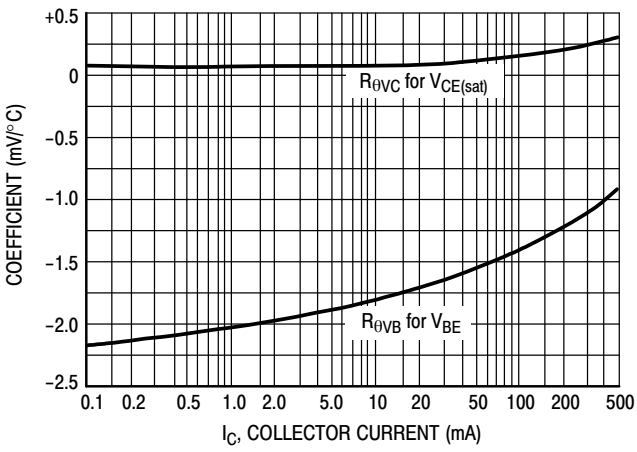


Figure 10. Temperature Coefficients

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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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