



MMBT4401

Features

- Halogen free available upon request by adding suffix "-HF"
- Surface Mount SOT-23 Package
- Capable of 350mWatts of Power Dissipation
- Operating and Storage Junction Temperatures: -55°C to 150°C
- $I_C=600\text{mA}$
- Marking: 2X/M4A
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

NPN General Purpose Amplifier

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
OFF CHARACTERISTICS				
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage* ($I_C=1.0\text{mA}$, $I_B=0$)	40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C=10\text{mA}$, $I_E=0$)	60		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E=0.1\text{mA}$, $I_C=0$)	6.0		Vdc
I_{BL}	Base Cutoff Current ($V_{CE}=35\text{Vdc}$, $V_{BE}=0.4\text{Vdc}$)		0.1	μAdc
I_{CEX}	Collector Cutoff Current ($V_{CE}=35\text{Vdc}$, $V_{BE}=0.4\text{Vdc}$)		0.1	μAdc

ON CHARACTERISTICS

h_{FE}	DC Current Gain* ($I_C=0.1\text{mA}$, $V_{CE}=1.0\text{Vdc}$) ($I_C=1.0\text{mA}$, $V_{CE}=1.0\text{Vdc}$) ($I_C=10\text{mA}$, $V_{CE}=1.0\text{Vdc}$) ($I_C=150\text{mA}$, $V_{CE}=1.0\text{Vdc}$) ($I_C=500\text{mA}$, $V_{CE}=1.0\text{Vdc}$)	20 40 80 100 40	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)		0.4 0.75	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C=150\text{mA}$, $I_B=15\text{mA}$) ($I_C=500\text{mA}$, $I_B=50\text{mA}$)	0.75	0.95 1.2	Vdc

SMALL-SIGNAL CHARACTERISTICS

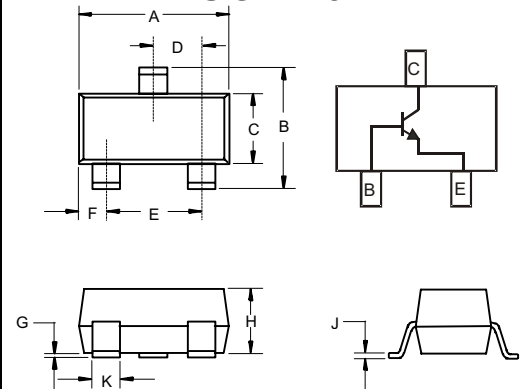
f_T	Current Gain-Bandwidth Product ($I_C=20\text{mA}$, $V_{CE}=10\text{Vdc}$, $f=100\text{MHz}$)	250		MHz
C_{cb}	Collector-Base Capacitance ($V_{CB}=5.0\text{Vdc}$, $I_E=0$, $f=1.0\text{MHz}$)		6.5	pF
C_{eb}	Emitter-Base Capacitance ($V_{BE}=0.5\text{Vdc}$, $I_C=0$, $f=1.0\text{MHz}$)		30.0	pF

SWITCHING CHARACTERISTICS

t_d	Delay Time	($V_{CC}=30\text{Vdc}$, $V_{BE}=0.2\text{Vdc}$)	15	ns
t_r	Rise Time	($I_C=150\text{mA}$, $I_{B1}=15\text{mA}$)	20	ns
t_s	Storage Time	($V_{CC}=30\text{Vdc}$, $I_C=150\text{mA}$)	225	ns
t_f	Fall Time	($I_{B1}=I_{B2}=15\text{mA}$)	30	ns

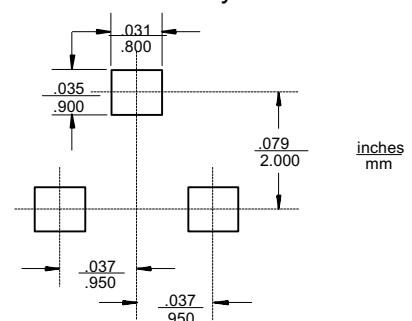
*Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

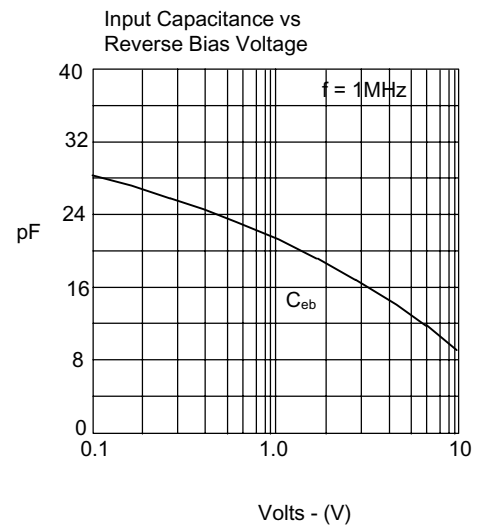
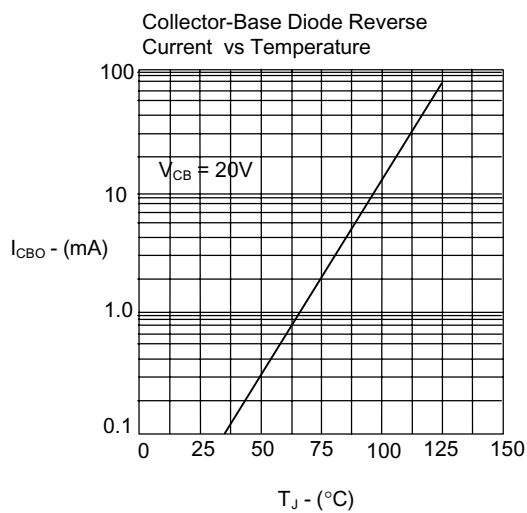
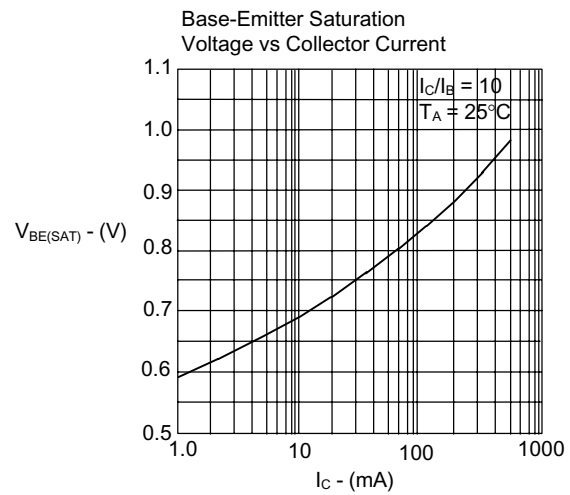
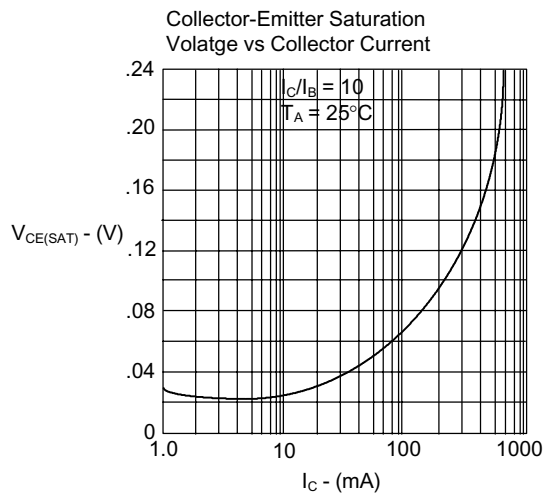
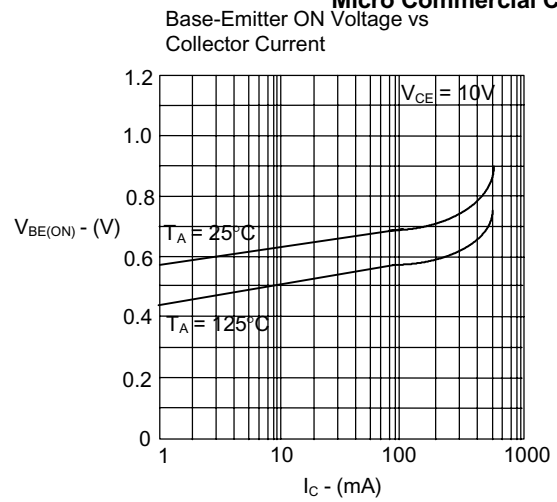
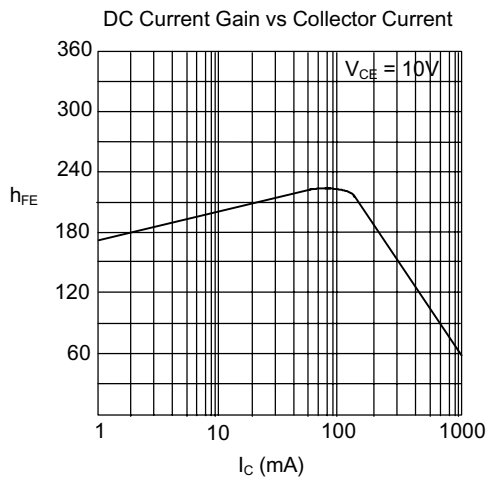
SOT-23



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
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

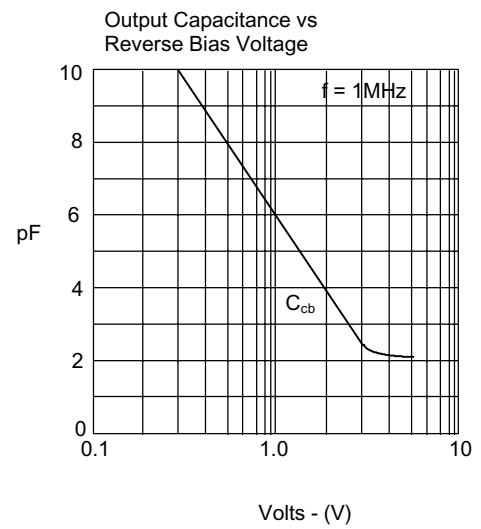
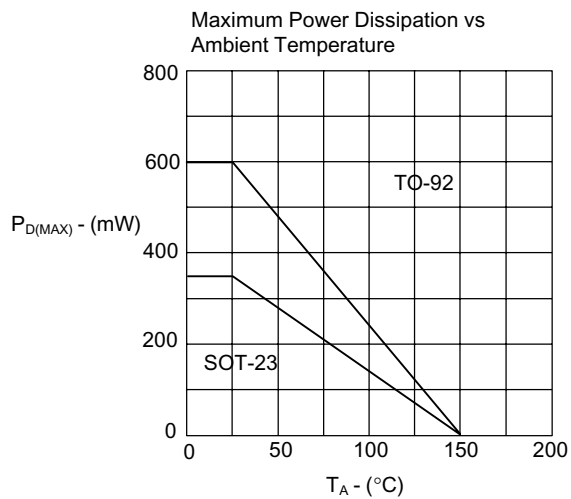




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Micro Commercial Components



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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