



Micro Commercial Components

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

MMBT3904T

150mW
NPN General
Purpose Amplifier

Features

- Case Material: Molded Plastic. UL Flammability Classification Rating 94-0 and MSL Rating 1
- Collector Current: 0.2A
- Operating and Storage Junction Temperatures: -55°C to 150°C
- Marking: 1N

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage* ($I_C=1.0mA$, $I_B=0$)	40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C=10\mu A$, $I_E=0$)	60		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E=10\mu A$, $I_C=0$)	6.0		Vdc
I_{CBO}	Collector Cut-off Current ($V_{CB}=30Vdc$, $I_E=0$)		50	nAdc
I_{EBO}	Emitter Cut-off Current ($V_{EB}=5Vdc$, $I_C=0$)		50	nAdc

ON CHARACTERISTICS

h_{FE}	DC Current Gain*			
	($I_C=0.1mA$, $V_{CE}=1.0Vdc$)	40		
	($I_C=1.0mA$, $V_{CE}=1.0Vdc$)	70		
	($I_C=10mA$, $V_{CE}=1.0Vdc$)	100	300	
	($I_C=50mA$, $V_{CE}=1.0Vdc$)	60		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_C=10mA$, $I_B=1.0mA$)		0.2	Vdc
	($I_C=50mA$, $I_B=5.0mA$)		0.3	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_C=10mA$, $I_B=1.0mA$)	0.65	0.85	Vdc
	($I_C=50mA$, $I_B=5.0mA$)		0.95	

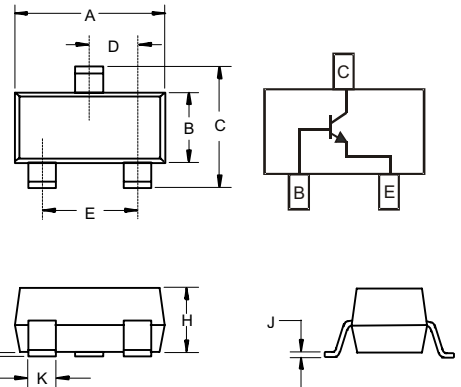
SMALL-SIGNAL CHARACTERISTICS

f_T	Current Gain-Bandwidth Product ($I_C=10mA$, $V_{CE}=20Vdc$, $f=100MHz$)	300		MHz
C_{obo}	Output Capacitance ($V_{CB}=5.0Vdc$, $I_E=0$, $f=1.0MHz$)		4.0	pF
NF	Noise Figure ($I_C=100\mu A$, $V_{CE}=5.0Vdc$, $R_S=1.0k\Omega$, $f=1MHz$)		5.0	dB

SWITCHING CHARACTERISTICS

t_d	Delay Time	($V_{CC}=3.0Vdc$, $V_{BE}=0.5Vdc$)	35	ns
t_r	Rise Time	$I_C=10mA$, $I_{B1}=1.0mA$	35	ns
t_s	Storage Time	($V_{CC}=3.0Vdc$, $I_C=10mA$)	200	ns
t_f	Fall Time	$I_{B1}=I_{B2}=1.0mA$	50	ns

SOT-523



DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.059	.067	1.50	1.70	
B	.030	.033	0.75	0.85	
C	.057	.069	1.45	1.75	
D	.020 Nominal		0.50 Nominal		
E	.035	.043	0.90	1.10	
G	.000	.004	.000	.100	
H	.028	.031	.70	0.80	
J	.004	.008	.100	.200	
K	.010	.014	.25	.35	

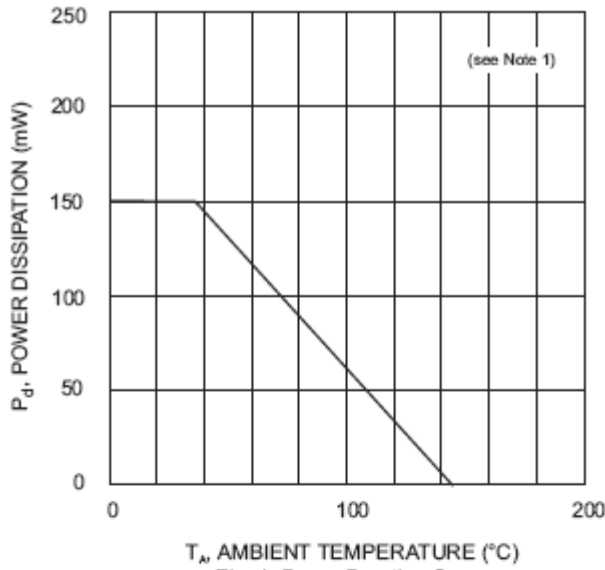


Fig. 1, Power Derating Curve

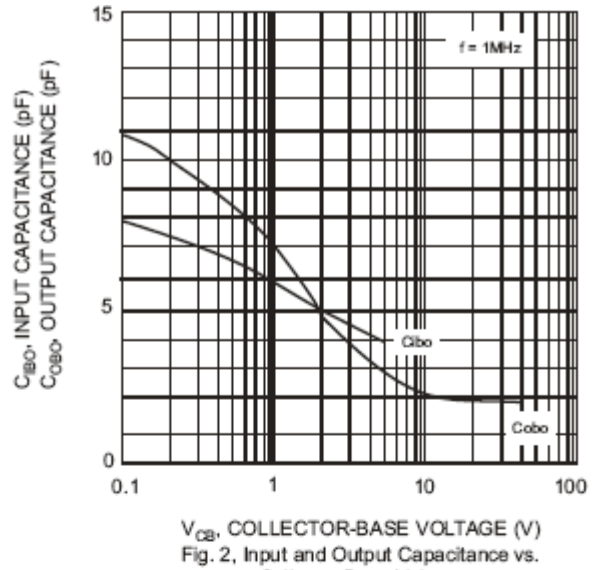


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

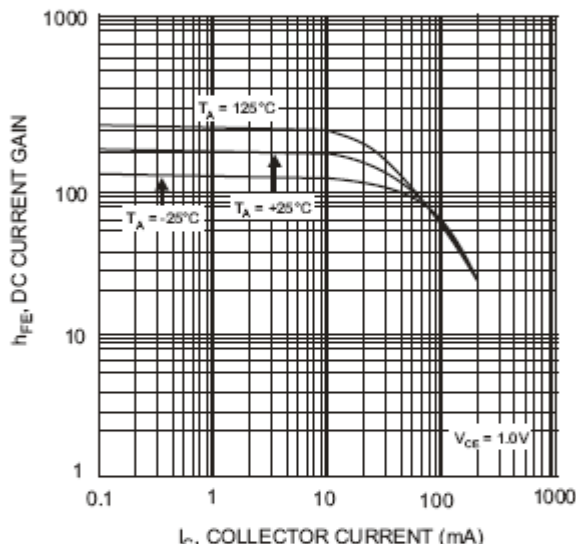


Fig. 3, Typical DC Current Gain vs. Collector Current

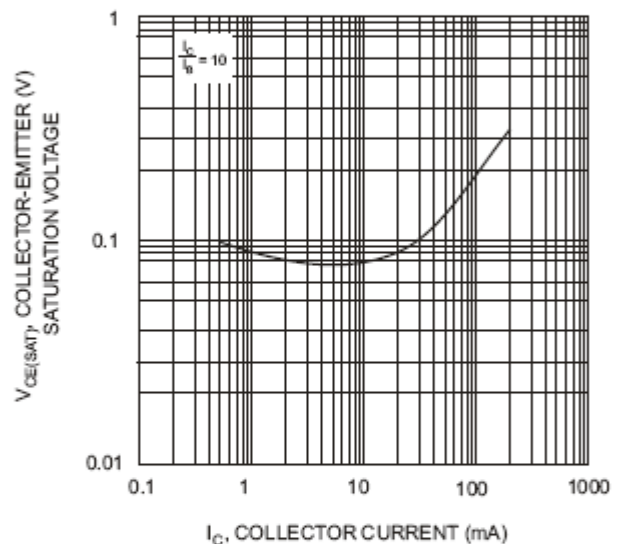


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

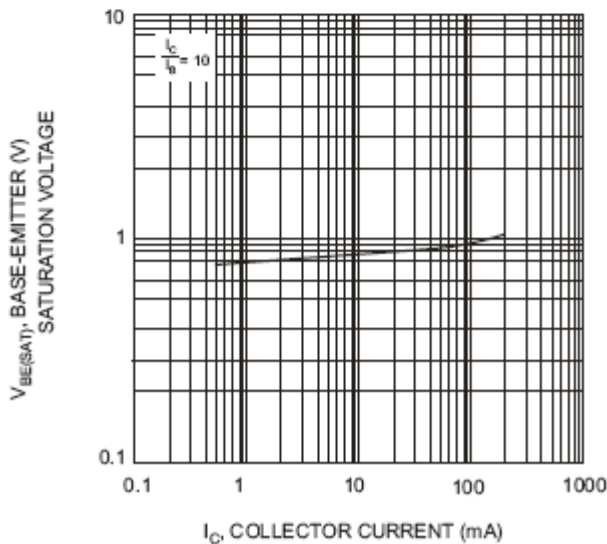


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current



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Ordering Information

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

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