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[Micro Commercial Components \(MCC\)](#)
[MMBT4403-TP](#)

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sales@integrated-circuit.com

M.C.C.

Micro Commercial Components



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

MMBT4403

PNP General Purpose Amplifier

Features

- Operating and Storage Junction Temperatures: -55°C to 150°C
- Capable of 350mWatts of Power Dissipation
- Surface Mount SOT-23 Package
- $I_C = -600\text{mA}$
- 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
- Marking: 2T/M3A
- Halogen free available upon request by adding suffix "-HF"

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
OFF CHARACTERISTICS				
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ^(NOTE 1) ($I_C = 1.0\text{mA}$, $I_B = 0$)	40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_C = 100\mu\text{A}$, $I_E = 0$)	40		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_E = 100\mu\text{A}$, $I_C = 0$)	5.0		Vdc
I_{BL}	Base Cutoff Current ($V_{CE} = 30\text{Vdc}$, $V_{BE} = 3.0\text{Vdc}$)		0.1	μA
I_{CEX}	Collector Cutoff Current ($V_{CE} = 30\text{Vdc}$, $V_{BE} = 3.0\text{Vdc}$)		0.1	μA

ON CHARACTERISTICS

h_{FE}	DC Current Gain ^(NOTE 1) ($I_C = 0.1\text{mA}$, $V_{CE} = 1.0\text{Vdc}$)	30		
	($I_C = 1.0\text{mA}$, $V_{CE} = 1.0\text{Vdc}$)	60		
	($I_C = 10\text{mA}$, $V_{CE} = 1.0\text{Vdc}$)	100		
	($I_C = 150\text{mA}$, $V_{CE} = 2.0\text{Vdc}$) ($I_C = 500\text{mA}$, $V_{CE} = 2.0\text{Vdc}$)	100 20	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 1.30	Vdc

SMALL-SIGNAL CHARACTERISTICS

f_T	Current Gain-Bandwidth Product ($I_C = 20\text{mA}$, $V_{CE} = 10\text{Vdc}$, $f = 100\text{MHz}$)	200		MHz
C_{cb}	Output Capacitance ($V_{CB} = 10\text{Vdc}$, $I_E = 0$, $f = 1.0\text{MHz}$)		8.5	pF
C_{eb}	Input Capacitance ($V_{EB} = 0.5\text{Vdc}$, $I_C = 0$, $f = 1.0\text{MHz}$)		30.0	pF

SWITCHING CHARACTERISTICS

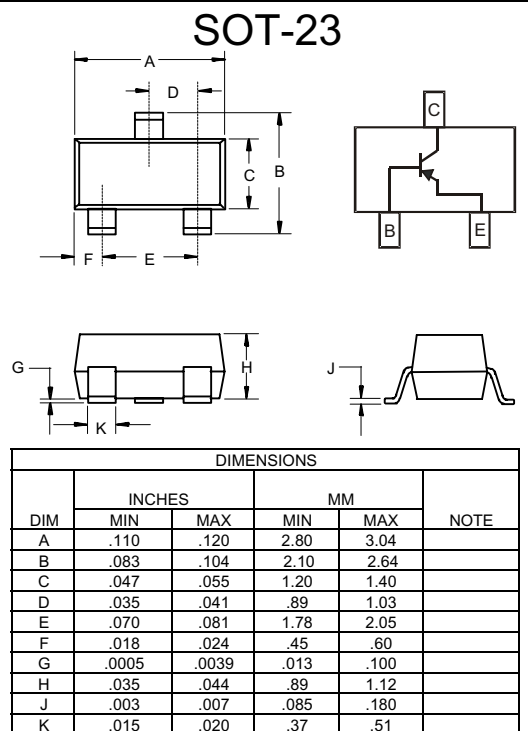
t_d	Delay Time	($V_{CC} = 3.0\text{Vdc}$, $V_{BE} = 2.0\text{Vdc}$)	15	ns
t_r	Rise Time	$I_C = 150\text{mA}$, $I_{B1} = 15\text{mA}$	20	ns
t_s	Storage Time	($V_{CC} = 3.0\text{Vdc}$, $I_C = 150\text{mA}$)	225	ns
t_f	Fall Time	$I_{B1} = I_{B2} = 15\text{mA}$	30	ns

THERMAL CHARACTERISTICS

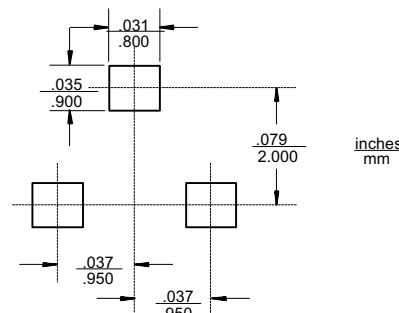
R_{thJA}	Thermal Resistance, Junction to Ambient ^(NOTE 2)	357	°C/W
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NOTE: 1. Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

2. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.



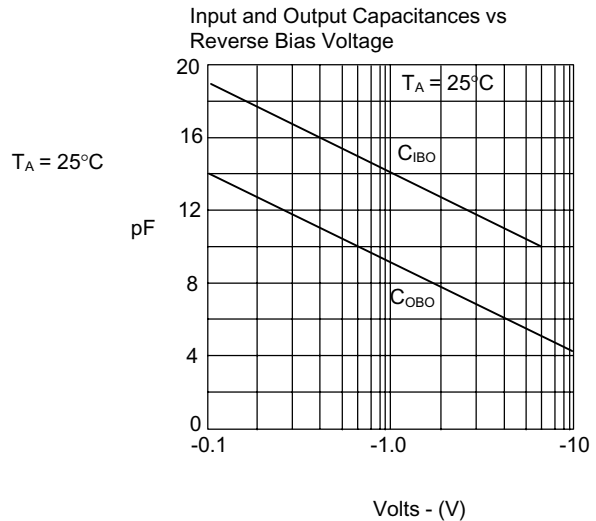
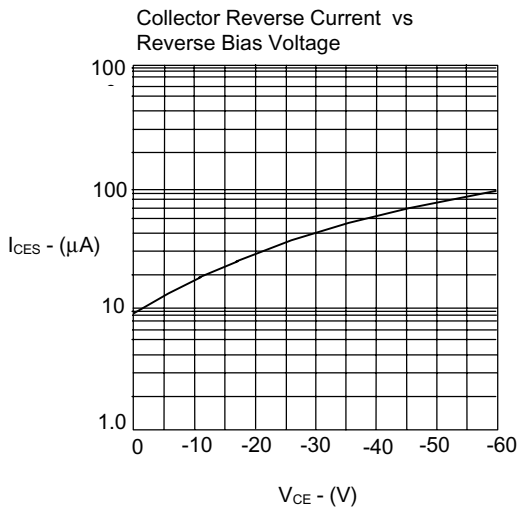
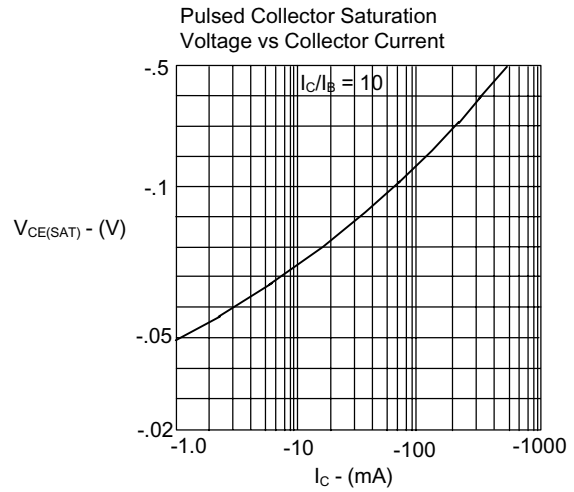
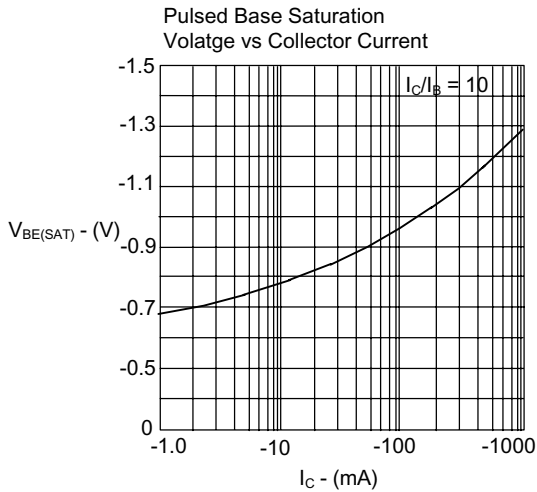
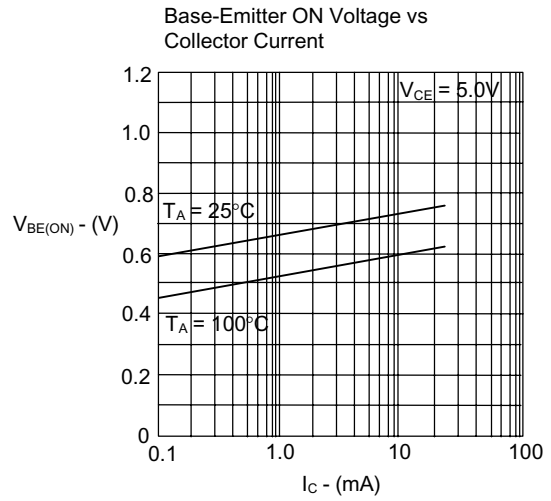
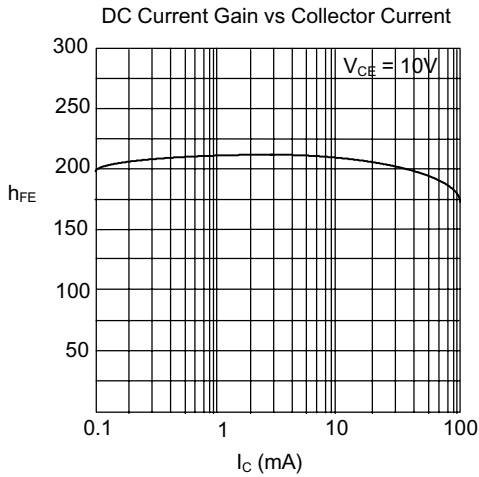
Suggested Solder Pad Layout



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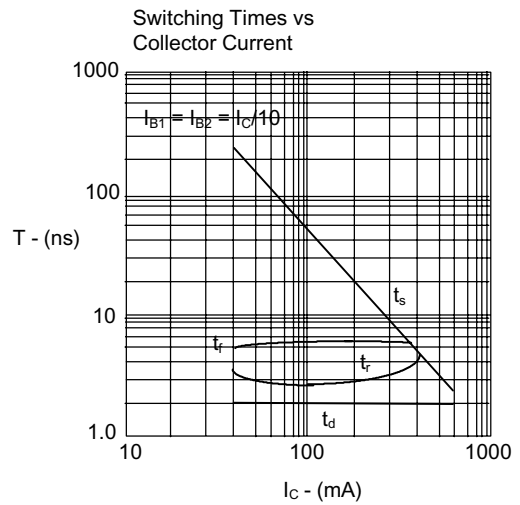
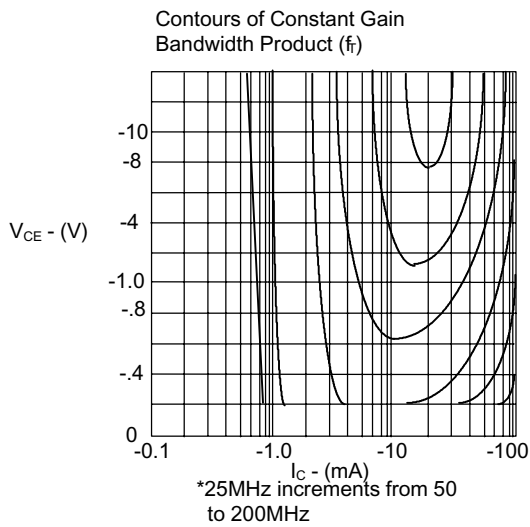
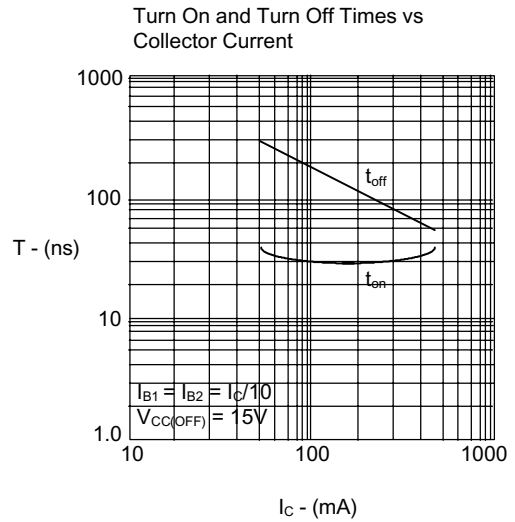
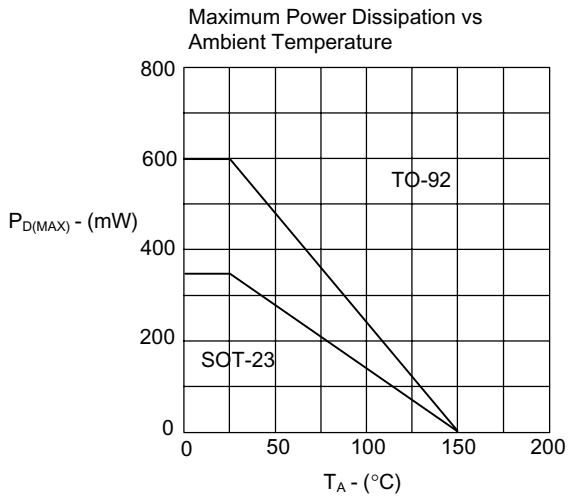
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Ordering Information :

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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