



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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# MMBTH10

## NPN VHF/UHF Transistors

### Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Designed for VHF/UHF Amplifier applications and high output VHF Oscillators
- High current gain bandwidth product
- Marking Code: 3EM
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

### Maximum Ratings

Symbol	Rating	Rating	Unit
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{CBO}$	Collector-Base Voltage	30	V
$V_{EBO}$	Emitter-Base Voltage	3.0	V
$I_C$	Collector Current-Continuous <sup>(1)</sup>	50	mA
$P_C$	Power dissipation <sup>(2)</sup>	225	mW
$T_J$	Junction Temperature	-55 to +150	°C
$T_{STG}$	Storage Temperature	-55 to +150	°C

### 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 ( $I_C=1.0mA, I_B=0$ )	25	---	Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=100\mu A, I_E=0$ )	30	---	Vdc
$V_{(BR)EBO}$	Collector-Emitter Breakdown Voltage ( $I_E=10\mu A, I_C=0$ )	3.0	---	Vdc
$I_{CBO}$	Collector-Base Cutoff Current ( $V_{CB}=25Vdc, I_E=0$ )	---	100	nAdc
$I_{EBO}$	Emitter-Base Cutoff Current ( $V_{EB}=2.0Vdc, I_C=0$ )	---	100	nAdc

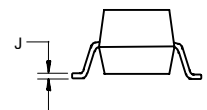
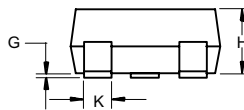
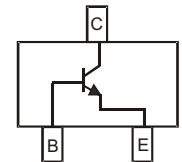
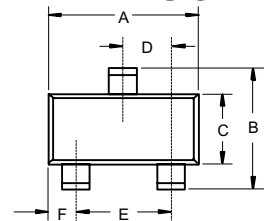
#### ON CHARACTERISTICS

$h_{FE}$	DC Current Gain ( $I_C=4.0mA, V_{CE}=10Vdc$ )	60	---	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=4.0mA, I_B=400\mu A$ )	---	0.5	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ( $I_C=4.0mA, V_{CE}=10Vdc$ )	---	0.95	Vdc

#### SMALL SIGNAL CHARACTERISTICS

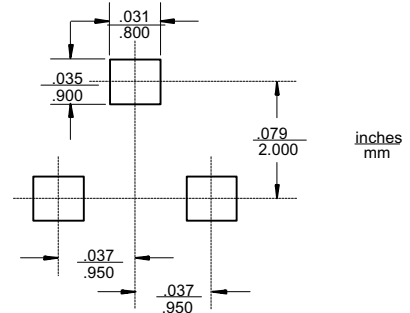
$f_T$	Current-Gain-Bandwidth Product ( $V_{CE}=10V, f=100MHz, I_C=4.0mA$ )	650	---	MHz
$C_{CB}$	Collector-Base Capacitance ( $V_{CB}=10V, f=1.0MHz, I_E=0$ )	---	0.7	pF
$C_{RB}$	Collector-Base Feedback Capacitance ( $V_{CB}=10V, f=1.0MHz, I_E=0$ )	---	0.65	pF

Note: 1. Valid provided that terminals are kept at ambient temperature.  
2. Pulse test: Pulse width<300us, duty cycle<2%



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





Micro Commercial Components

### Ordering Information :

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

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

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