



MMBTH10

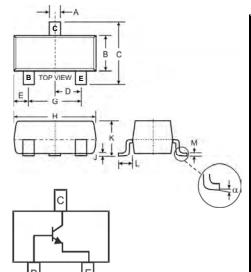
NPN SURFACE MOUNT VHF/UHF TRANSISTOR

Features

- Designed for VHF/UHF Amplifier Applications and High Output VHF Oscillators
- High Current Gain Bandwidth Product
- Ideal for Mixer and RF Amplifier Applications with collector currents in the 100μA - 30 mA Range
- Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 3 and 4)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Information: K3H, K3Y; See Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)



SOT-23									
Dim	Min	Max							
Α	0.37	0.51							
В	1.20	1.40							
С	2.30	2.50							
D	0.89	1.03							
E	0.45	0.60							
G	1.78	2.05							
Н	2.80	3.00							
J	0.013	0.10							
K	0.903	1.10							
L	0.45	0.61							
М	0.085	0.180							
α	0°	8°							
All Dimensions in mm									

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	30	V
Collector-Emitter Voltage	V _{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current - Continuous (Note 1)	Ic	50	mA
Power Dissipation (Note 1)	P _D	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{ heta JA}$	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition					
OFF CHARACTERISTICS (Note 2)										
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	25		V	$I_{C} = 1 \text{mA}, I_{B} = 0$					
Collector-Base Breakdown Voltage	V _{(BR)CBO}	30	_	V	$I_C = 100 \mu A, I_E = 0$					
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	3.0	_	V	$I_E = 10\mu A, I_C = 0$					
Collector Cutoff Current	I _{CBO}	_	100	nA	$V_{CB} = 25V, I_E = 0$					
Emitter Cutoff Current	I _{EBO}	_	100	nA	$V_{EB} = 2V, I_{C} = 0$					
ON CHARACTERISTICS (Note 2)										
DC Current Gain	h _{FE}	60	_	_	$I_C = 4mA, V_{CE} = 10.0V$					
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	_	0.5	V	$I_C = 4mA$, $I_B = 400\mu A$					
Base-Emitter On Voltage	V _{BE(SAT)}	_	0.95	V	$I_C = 4mA, V_{CE} = 10.0V$					
SMALL SIGNAL CHARACTERISTICS	•		•	•						
Current Gain-Bandwidth Product	f _T	650	_	MHz	V _{CE} = 10V, f = 100MHz, I _C = 4mA					
Collector-Base Capacitance	C _{CB}	_	0.7	pF	$V_{CB} = 10V$, $f = 1.0MHz$, $I_E = 0$					
Collector-Base Feedback Capacitance	C _{RB}	_	0.65	pF	V _{CB} = 10V, f = 1.0MHz, I _E = 0					
Collector-Base Time Constant	Rb'Cc	_	9	ps	$V_{CB} = 10V$, $f = 31.8MHz$, $I_{C} = 4mA$					

Notes:

- Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch, pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
- 2. Short duration pulse test used to minimize self-heating effect.
- 3. No purposefully added lead. Halogen and Antimony Free.
- Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date
 V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.



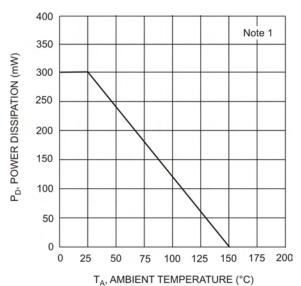
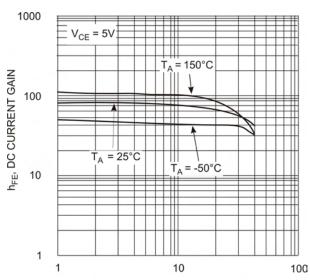
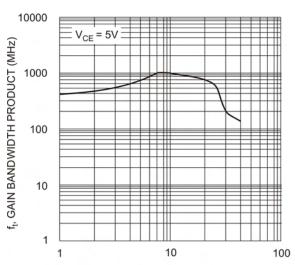


Fig. 1, Max Power Dissipation vs Ambient Temperature



I_C, COLLECTOR CURRENT (mA) Fig. 3, DC Current Gain vs. Collector Current



I_C, COLLECTOR CURRENT (mA)
Fig. 5, Gain Bandwidth Product vs Collector Current

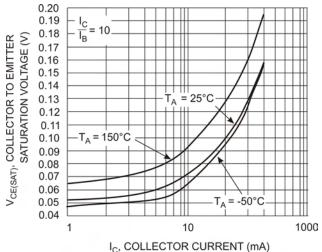


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

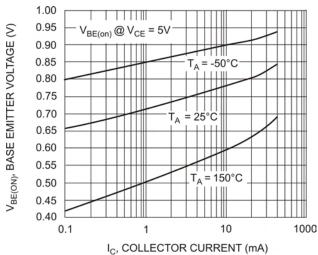


Fig. 4 Base Emitter Voltage vs. Collector Current

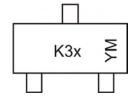


Ordering Information (Note 5)

Device	Packaging	Shipping			
MMBTH10-7-F	SOT-23	3000/Tape & Reel			

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K3x = Product Type Marking Code, e.g. K3H YM = Date Code Marking

Y = Year ex: N = 2002 M = Month ex: 9 = September

Date Code Key

Date Code N	Су														
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	М	N	Р	R	S	Т	U	V	W	Χ	Υ	Z
Month	Jan	Fe	b I	Mar	Apr	May	Ju	n	Jul	Aug	Sep	Oc	t N	Nov	Dec
Code	1	2		3	4	5	6		7	8	9	0		N	D

IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.