



MMBTH24

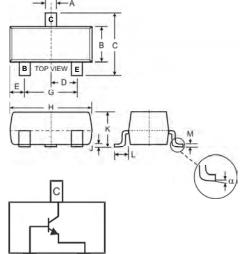
NPN SURFACE MOUNT VHF/UHF TRANSISTOR

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)

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- 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: 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 3.00 0.10 1.10							
Н	2.80								
J	0.013								
K	0.903								
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}	40	V		
Collector-Emitter Voltage	V _{CEO}	40	V		
Emitter-Base Voltage	V_{EBO}	4.0	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 _i , T _{STG}	-55 to +150	°C		

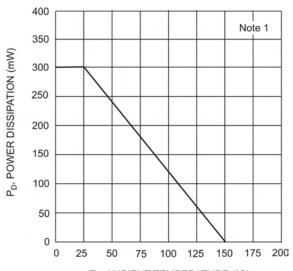
Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition					
OFF CHARACTERISTICS (Note 2)										
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40	_	V	$I_{C} = 1 \text{mA}, I_{B} = 0$					
Collector-Base Breakdown Voltage	V _{(BR)CBO}		_	V	$I_C = 100 \mu A, I_E = 0$					
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	4.0	_	V	$I_E = 10 \mu A, I_C = 0$					
Collector Cutoff Current	I _{CBO}	_	100	nA	V _{CB} = 30V, 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}	30	_	_	$I_C = 8mA, V_{CE} = 10.0V$					
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	400	_	MHz	V _{CE} = 10V, f = 100MHz, I _C = 8mA					
Collector-Base Capacitance	ССВ	_	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	I _C = 4mA, V _{CB} = 10V, f = 31.8MHz					

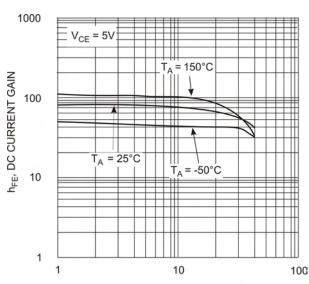
Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch pad layout, as shown on Diodes Inc. suggested pad layout Notes: document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

- Short duration pulse test used to minimize self-heating effect.
- 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 Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.

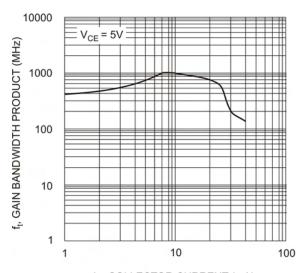




T_A, AMBIENT TEMPERATURE (°C) Fig. 1, Max Power Dissipation vs Ambient Temperature



 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

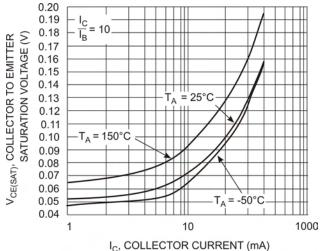


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

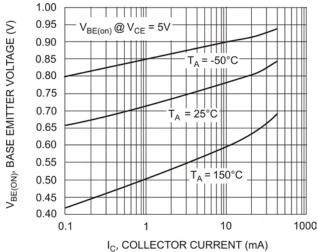


Fig. 4 Base Emitter Voltage vs. Collector Current

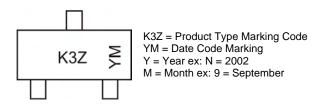


Ordering Information (Note 5)

Device	Packaging	Shipping			
MMBTH24-7-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



Date Code Key

Date Code	INEY														
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	Х	Υ	Z
Month	Jan	Fe	b	Mar	Apr	May	Ju	n	Jul	Aug	Sep	Oc	t I	Nov	Dec
Code	1	2		3	4	5	6		7	8	9	0		N	D

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