

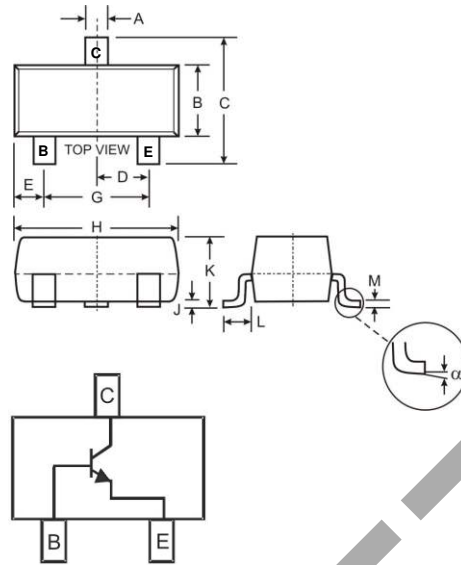


Features

- 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 100 μ A - 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
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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)	I_C	50	mA
Power Dissipation (Note 1)	P_d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ 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	$V_{(BR)CBO}$	40	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	4.0	—	V	$I_E = 10\mu\text{A}, I_C = 0$
Collector Cutoff Current	I_{CBO}	—	100	nA	$V_{CB} = 30\text{V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}	—	100	nA	$V_{EB} = 2\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 2)					
DC Current Gain	h_{FE}	30	—	—	$I_C = 8\text{mA}, V_{CE} = 10.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.5	V	$I_C = 4\text{mA}, I_B = 400\mu\text{A}$
Base-Emitter On Voltage	$V_{BE(SAT)}$	—	0.95	V	$I_C = 4\text{mA}, V_{CE} = 10.0\text{V}$
SMALL SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product	f_T	400	—	MHz	$V_{CE} = 10\text{V}, f = 100\text{MHz}, I_C = 8\text{mA}$
Collector-Base Capacitance	C_{CB}	—	0.7	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Collector-Base Feedback Capacitance	C_{RB}	—	0.65	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Collector-Base Time Constant	$R_b C_c$	—	9	ps	$I_C = 4\text{mA}, V_{CB} = 10\text{V}, f = 31.8\text{MHz}$

- 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>.
 - 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 Sb_2O_3 Fire Retardants.

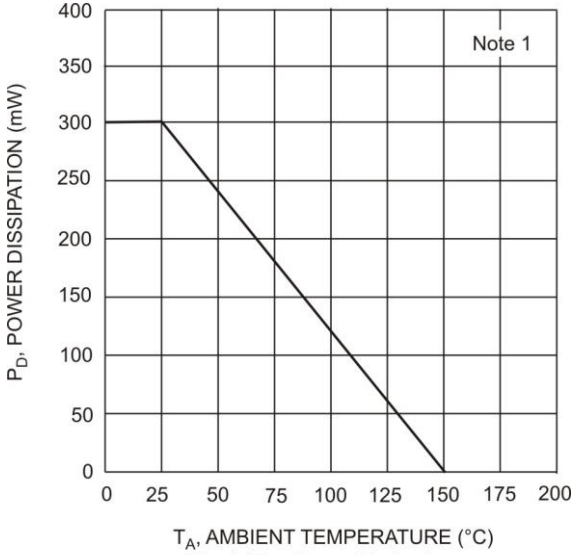


Fig. 1, Max Power Dissipation vs Ambient Temperature

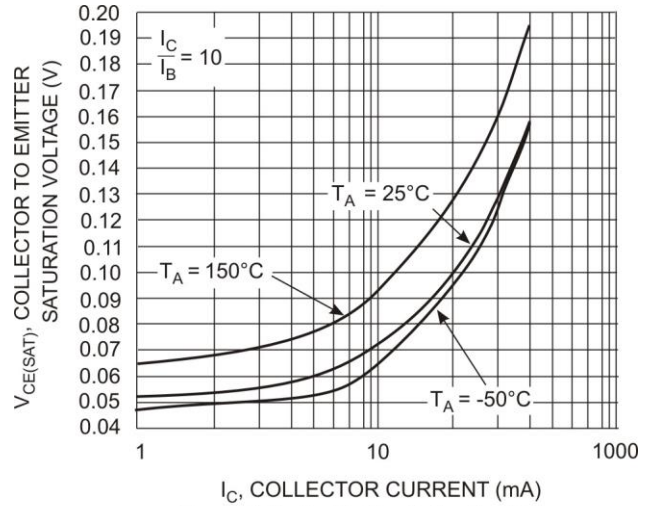


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

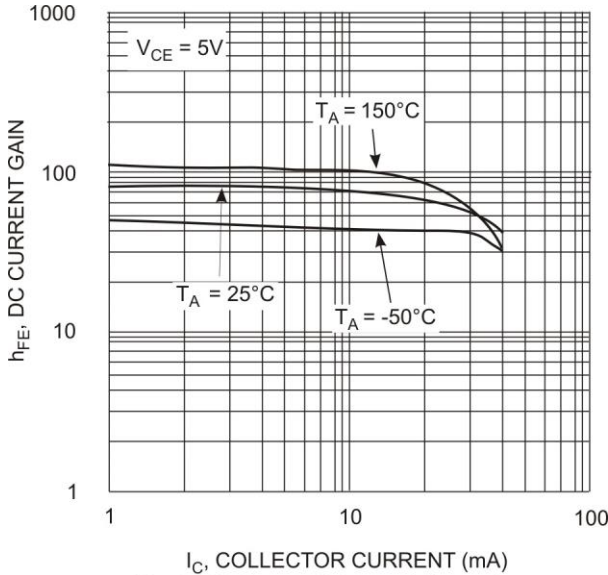


Fig. 3, DC Current Gain vs. Collector Current

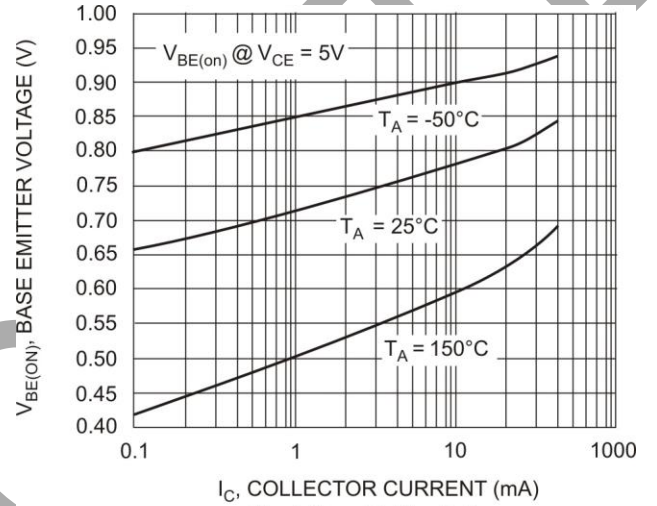


Fig. 4 Base Emitter Voltage vs. Collector Current

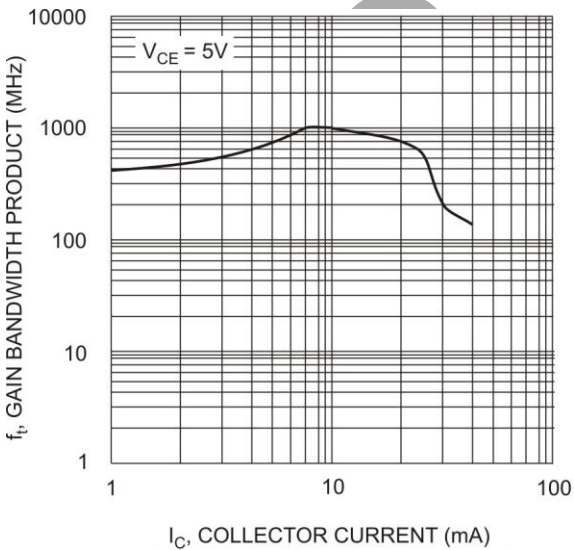
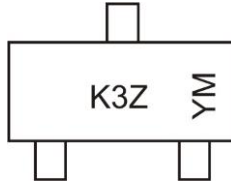


Fig. 5, Gain Bandwidth Product vs Collector Current

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


K3Z = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

OBSOLETE

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