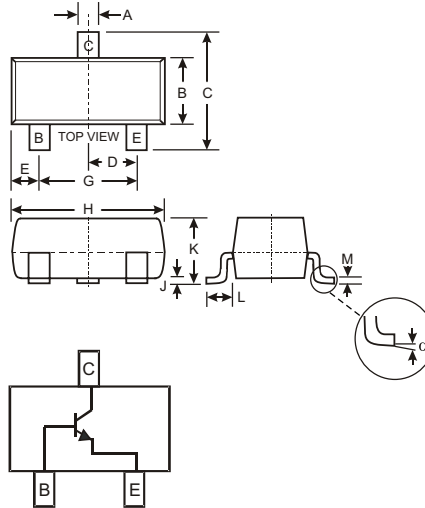


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (MMBTA55 / MMBTA56)
- Ideal for Medium Power Amplification and Switching
- Available in Lead Free/RoHS Compliant Version (Note 3)

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Please see Ordering Information, Note 5, on Page 2
- MMBTA05 Marking (See Page 2): K1G, K1H
- MMBTA06 Marking (See Page 2): K1G
- Ordering & Date Code Information: See Page 2
- 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	MMBTA05	MMBTA06	Unit
Collector-Base Voltage	V_{CB0}	60	80	V
Collector-Emitter Voltage	V_{CE0}	60	80	V
Emitter-Base Voltage	V_{EB0}	4.0		V
Collector Current - Continuous (Note 1)	I_C	500		mA
Power Dissipation (Note 1)	P_d	300		mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417		K/W
Operating and Storage and 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-Base Breakdown Voltage	MMBTA05 MMBTA06 $V_{(BR)CBO}$	60 80	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	MMBTA05 MMBTA06 $V_{(BR)CEO}$	60 80	—	V	$I_C = 1.0\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	4.0	—	V	$I_E = 100\mu\text{A}, I_C = 0$
Collector Cutoff Current	MMBTA05 MMBTA06 I_{CBO}	—	100	nA	$V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 80\text{V}, I_E = 0$
Collector Cutoff Current	MMBTA05 MMBTA06 I_{CES}	—	100	nA	$V_{CE} = 60\text{V}, I_{B0} = 0\text{V}$ $V_{CE} = 80\text{V}, I_{B0} = 0\text{V}$
ON CHARACTERISTICS (Note 2)					
DC Current Gain	h_{FE}	100	—	—	$I_C = 10\text{mA}, V_{CE} = 1.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 1.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.25	V	$I_C = 100\text{mA}, I_B = 10\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	1.2	V	$I_C = 100\text{mA}, V_{CE} = 1.0\text{V}$
SMALL SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product	f_T	100	—	MHz	$V_{CE} = 2.0\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$

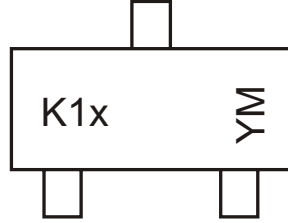
- Note:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. Short duration test pulse used to minimize self-heating effect.
 3. No purposefully added lead.

Ordering Information (Note 4)

Device	Packaging	Shipping
MMBTA05-7 MMBTA06-7	SOT-23	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
5. For Lead Free/RoHS Compliant version part number, please add "-F" suffix to the part number above. Example: MMBTA06-7-F.

Marking Information



K1x = Product Type Marking Code, e.g. K1G
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
Code	J	K	L	M	N	P	R	S	T	U	V	W

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

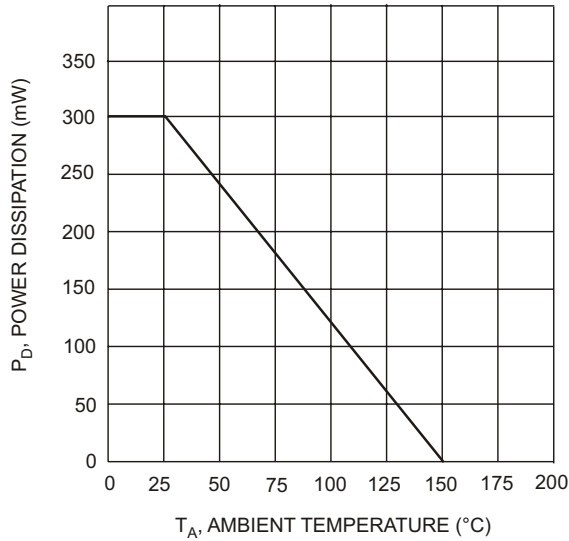


Fig. 1, Max Power Dissipation vs Ambient Temperature

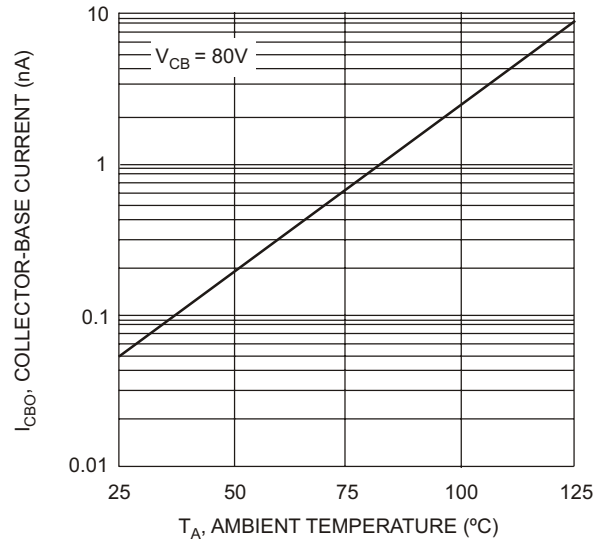


Fig. 2 Typical Collector-Cutoff Current vs. Ambient Temperature

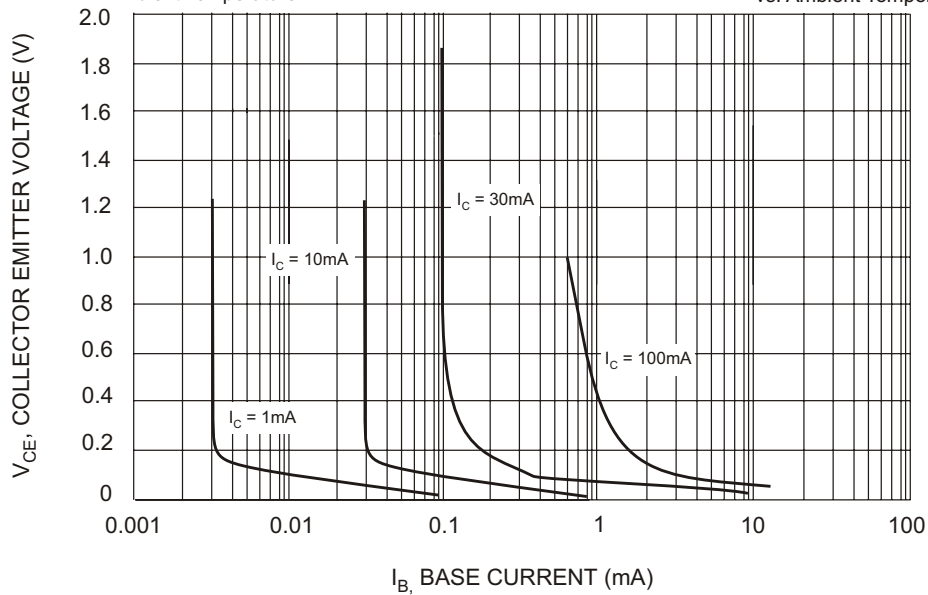


Fig. 3 Typical Collector Saturation Region

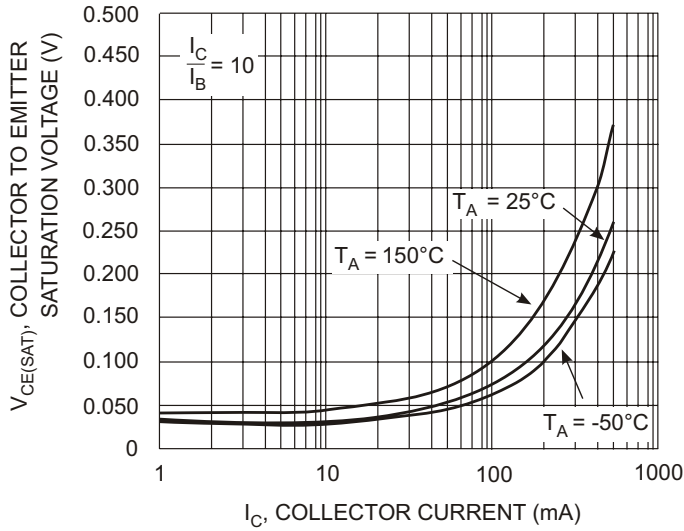


Fig. 4 Collector Emitter Saturation Voltage vs. Collector Current

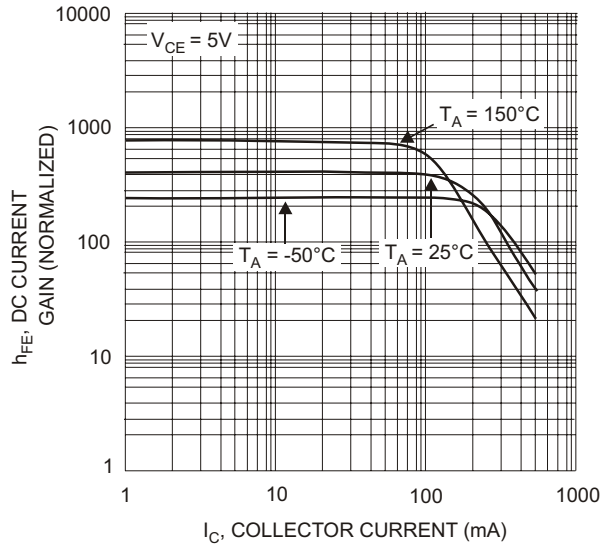


Fig. 5, DC Current Gain vs Collector Current

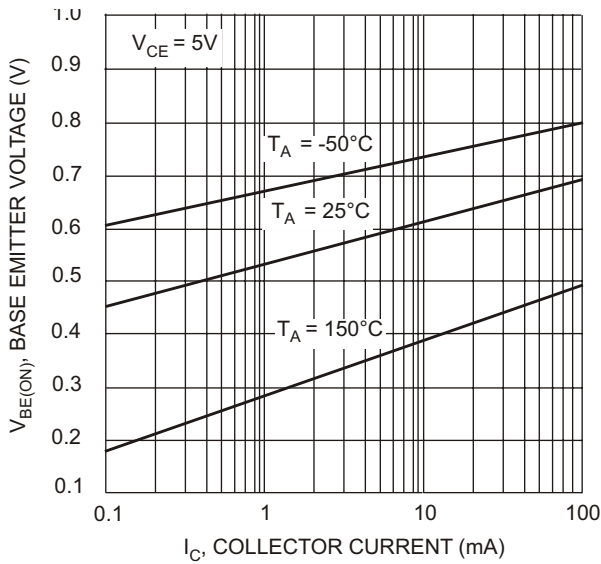


Fig. 6, Base Emitter Voltage vs Collector Current

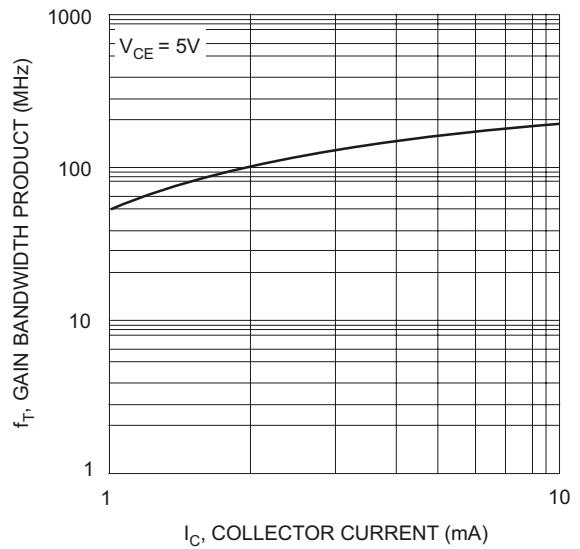


Fig. 7, Gain Bandwidth Product vs Collector Current