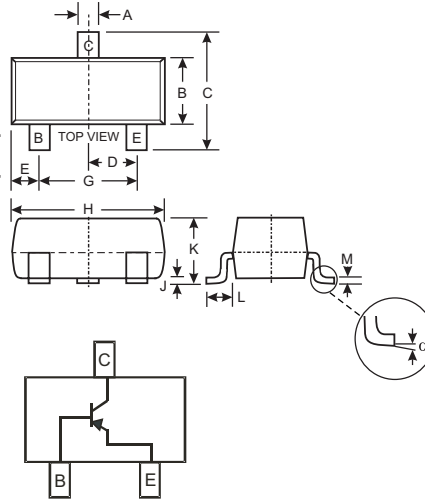


### Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMBTA05 / MMBTA06)
- Ideal for Medium Power Amplification and Switching
- **Lead Free/RoHS Compliant (Note 3)**
- **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-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- MMBTA55 Marking (See Page 2): K2H
- MMBTA56 Marking (See Page 2): K2G
- 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
$\alpha$	0°	8°
All Dimensions in mm		

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	MMBTA55	MMBTA56	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-60	-80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	-80	V
Emitter-Base Voltage	V <sub>EBO</sub>	-4.0		V
Collector Current - Continuous (Note 1)	I <sub>C</sub>	-500		mA
Power Dissipation (Note 1)	P <sub>d</sub>	300		mW
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>θJA</sub>	417		°C/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C

### Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 2)</b>					
Collector-Base Breakdown Voltage	MMBTA55 MMBTA56 V <sub>(BR)CBO</sub>	-60 -80	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	MMBTA55 MMBTA56 V <sub>(BR)CEO</sub>	-60 -80	—	V	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-4.0	—	V	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
Collector Cutoff Current	MMBTA55 MMBTA56 I <sub>CBO</sub>	—	-100	nA	V <sub>CB</sub> = -60V, I <sub>E</sub> = 0 V <sub>CB</sub> = -80V, I <sub>E</sub> = 0
Collector Cutoff Current	MMBTA55 MMBTA56 I <sub>CEX</sub>	—	-100	nA	V <sub>CE</sub> = -60V, I <sub>BO</sub> = 0V V <sub>CE</sub> = -80V, I <sub>BO</sub> = 0V
<b>ON CHARACTERISTICS (Note 2)</b>					
DC Current Gain	h <sub>FE</sub>	100	—	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -100mA, V <sub>CE</sub> = -1.0V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	-0.25	V	I <sub>C</sub> = -100mA, I <sub>B</sub> = -10mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	-1.2	V	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -1.0V
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Current Gain-Bandwidth Product	f <sub>T</sub>	50	—	MHz	V <sub>CE</sub> = -1.0V, I <sub>C</sub> = -100mA, f = 100MHz

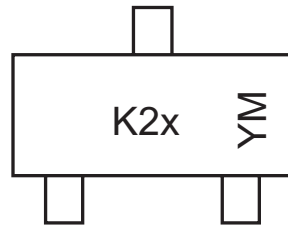
- Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
2. Short duration test pulse used to minimize self-heating effect.
3.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

## Ordering Information (Note 4)

Device	Packaging	Shipping
MMBTA55-7-F MMBTA56-7-F	SOT-23	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



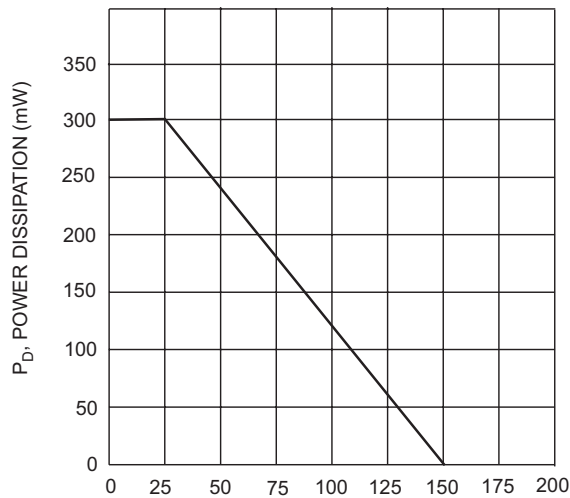
K2x = Product Type Marking Code, ex: K2H = MMBTA55  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

Date Code Key

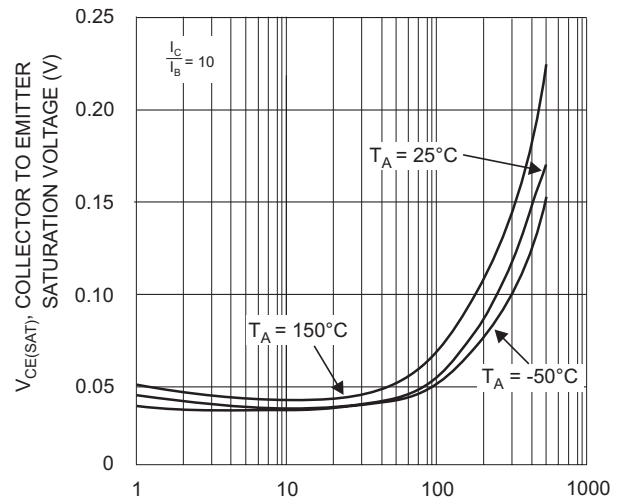
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Code	J	K	L	M	N	P	R	S	T	U	V	W

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



T<sub>A</sub>, AMBIENT TEMPERATURE (°C)  
 Fig. 1, Max Power Dissipation vs Ambient Temperature



I<sub>C</sub>, COLLECTOR CURRENT (mA)  
 Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

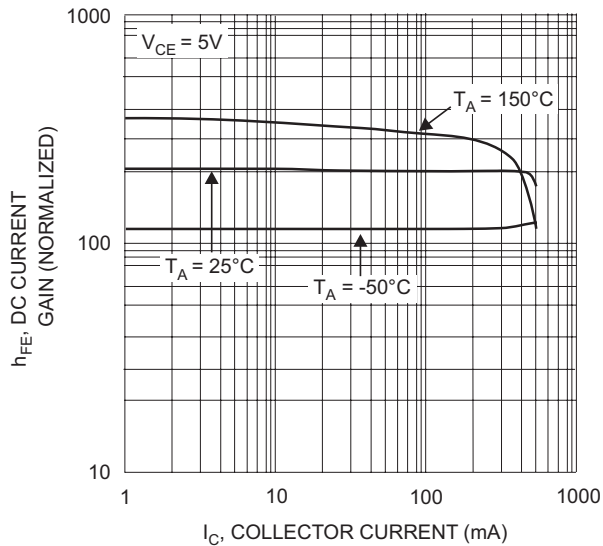


Fig. 3, DC Current Gain vs Collector Current

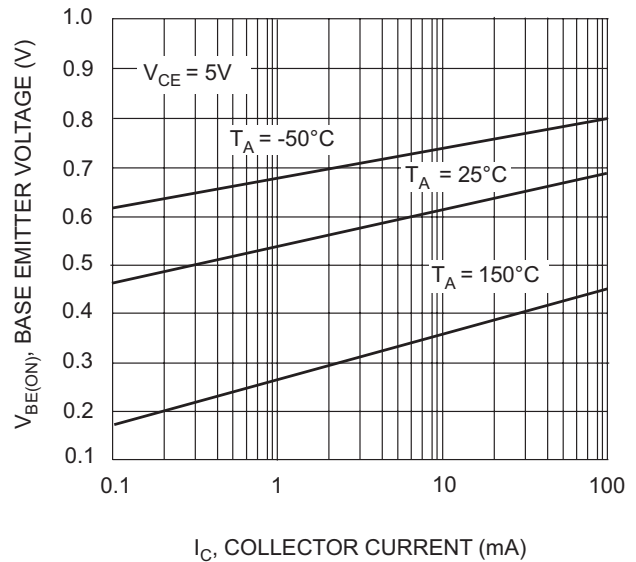


Fig. 4 Base Emitter Voltage vs. Collector Current

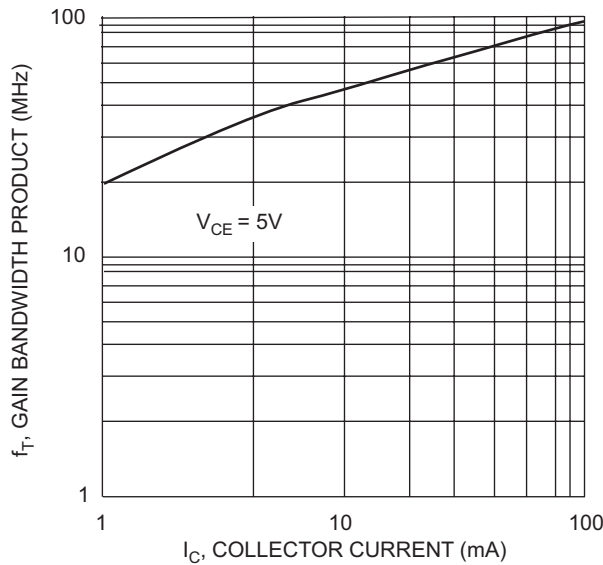


Fig. 5 Gain Bandwidth Product vs. Collector Current

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