



NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

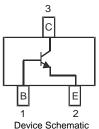
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMBTA55 / MMBTA56)
- Ideal for Low Power Amplification and Switching
- Lead, Halogen and Antimony Free, RoHS Compliant (Note 3)
- "Green" Device (Note 4)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating) Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)







Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	MMBTA05	MMBTA06	Unit
Collector-Base Voltage	V _{CBO}	60	80	V
Collector-Emitter Voltage	V_{CEO}	60	80	V
Emitter-Base Voltage	V _{EBO}	4	.0	V
Collector Current - Continuous (Note 1)	Ic	50	00	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
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 @T_A = 25°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	$I_C = 100 \mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	MMBTA05 MMBTA06	V _{(BR)CEO}	60 80	_	V	I _C = 1.0mA, I _B = 0
Emitter-Base Breakdown Voltage		V _{(BR)EBO}	4.0	_	V	$I_E = 100 \mu A, I_C = 0$
Collector Cutoff Current	MMBTA05 MMBTA06	I _{CBO}		100	nA	$V_{CB} = 60V, I_{E} = 0$ $V_{CB} = 80V, I_{E} = 0$
Collector Cutoff Current	MMBTA05 MMBTA06	I _{CES}		100	nA	$V_{CE} = 60V, I_{BO} = 0V$ $V_{CE} = 80V, I_{BO} = 0V$
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 = 100mA, I _B = 10mA
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	<u> </u>	f _T	100		MHz	$V_{CE} = 2.0V$, $I_{C} = 10mA$, $f = 100MHz$

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.

- Short duration pulse test used to minimize self-heating effect.
- 3. No purposefully added lead. Halogen and Antimony Free.
- 4. 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.





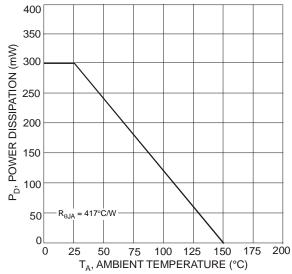
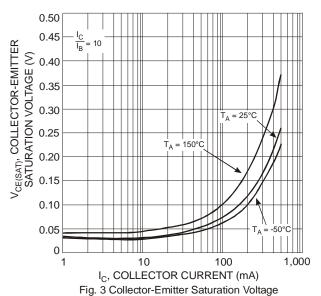


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 1)



vs. Collector Current

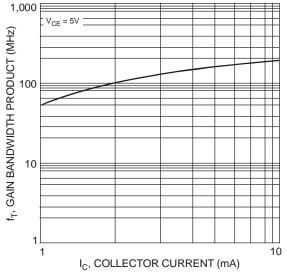


Fig. 5 Typical Gain Bandwidth Product vs. Collector Current

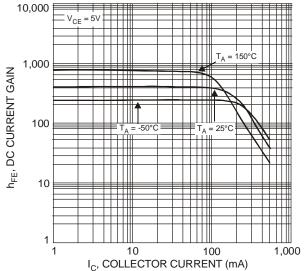


Fig. 2 Typical DC Current Gain vs. Collector Current

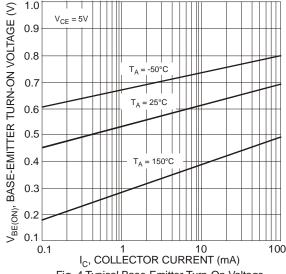


Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

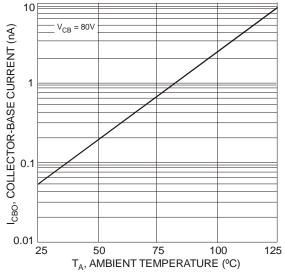
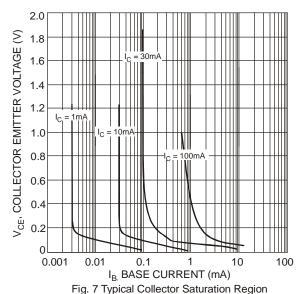


Fig. 6 Typical Collector-Cutoff Current vs. Ambient Temperature



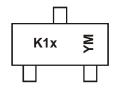


Ordering Information (Note 5)

Part Number	Case	Packaging
MMBTA05-7-F	SOT-23	3000/Tape & Reel
MMBTA06-7-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

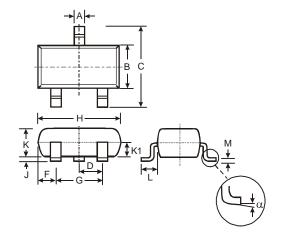


K1x = Product Type Marking Code: K1G, K1H = MMBTA05 K1G = MMBTA06 YM = Date Code Marking Y = Year (ex: N = 2002) M = Month (ex: 9 = September)

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	J	K	L	M	N	Р	R	S	Т	U	V	W	Χ	Υ	Z	Α	В	С
Month	Jan	1	Feb	Mai	r	Apr	May	,	Jun	Jul		Aug	Sep		Oct	Nov	,	Dec
Code	1		2	3		4	5		6	7		8	9		0	N		D

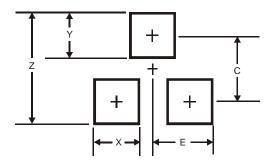
Package Outline Dimensions



SOT-23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
С	2.30	2.50	2.40				
D	0.89	1.03	0.915				
F	0.45	0.60	0.535				
G	1.78	2.05	1.83				
Η	2.80	3.00	2.90				
J	0.013	0.10	0.05				
K	0.903	1.10	1.00				
K1	-	-	0.400				
L	0.45	0.61	0.55				
М	0.085	0.18	0.11				
α	0°	8°	-				
All	All Dimensions in mm						



Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
Х	0.8
Υ	0.9
С	2.0
E	1.35

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