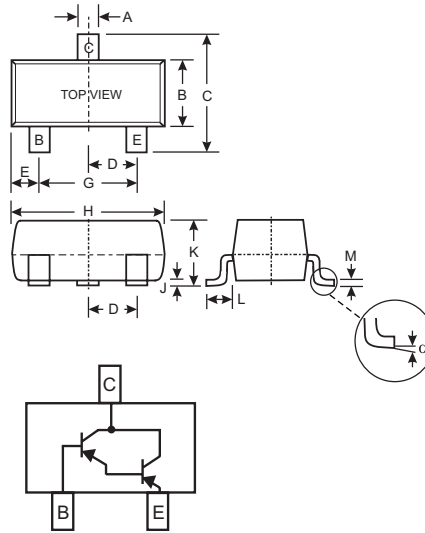


Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMBTA13 /MMBTA14)
- Ideal for Low Power Amplification and Switching
- High Current Gain
- **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
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Terminal Connections: See Diagram
- MMBTA63 Marking (See Page 3): K2E, K3E
- MMBTA64 Marking (See Page 3): K3E
- Ordering & Date Code 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		

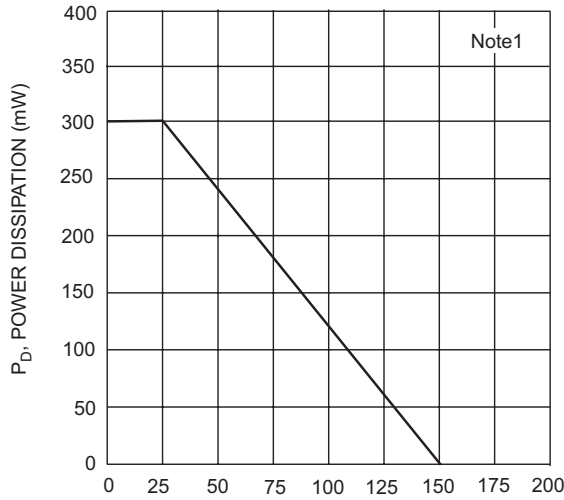
Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-30	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-10	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	$^\circ\text{C}/\text{W}$
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

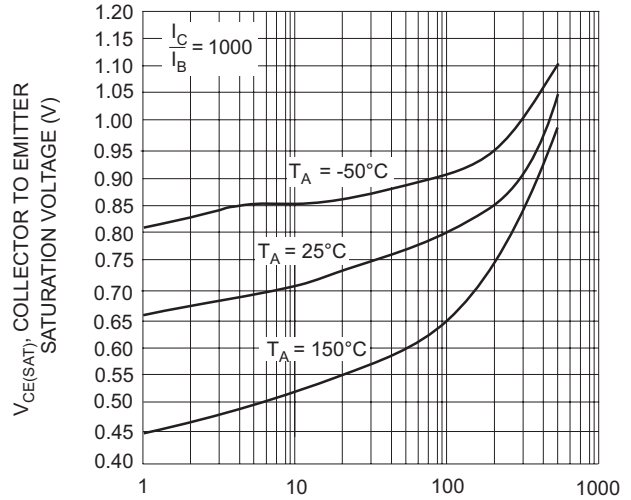
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-30	—	V	$I_C = -100\mu\text{A}, V_{BE} = 0\text{V}$
Collector Cutoff Current	I_{CBO}	—	-100	nA	$V_{CB} = -30\text{V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}	—	-100	nA	$V_{EB} = -10\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 2)					
DC Current Gain	MMBTA63 MMBTA64 MMBTA63 MMBTA64	η_{FE}	5,000 10,000 10,000 20,000	—	$I_C = -10\text{mA}, V_{CE} = -5.0\text{V}$ $I_C = -10\text{mA}, V_{CE} = -5.0\text{V}$ $I_C = -100\text{mA}, V_{CE} = -5.0\text{V}$ $I_C = -100\text{mA}, V_{CE} = -5.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-1.5	V	$I_C = -100\text{mA}, I_B = -100\mu\text{A}$
Base- Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-2.0	V	$I_C = -100\text{mA}, V_{CE} = -5.0\text{V}$
SMALL SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product	f_T	125	—	MHz	$V_{CE} = -5.0\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$

- 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 pulse test used to minimize self-heating effect.
 3. No purposefully added lead.



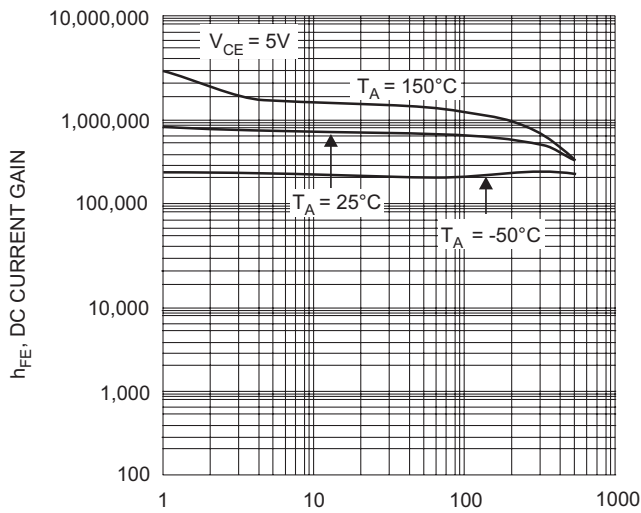
T_A , AMBIENT TEMPERATURE (°C)

Fig. 1, Max Power Dissipation vs Ambient Temperature



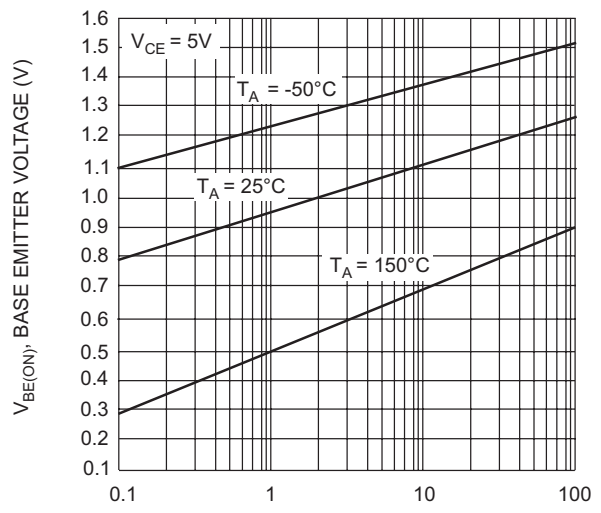
I_C , COLLECTOR CURRENT (mA)

Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current



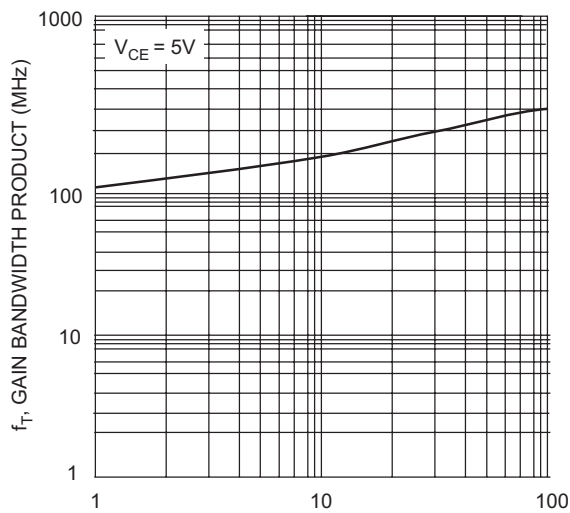
I_C , COLLECTOR CURRENT (mA)

Fig. 3, DC Current Gain vs Collector Current



I_C , COLLECTOR CURRENT (mA)

Fig. 4, Base Emitter Voltage vs. Collector Current



I_C , COLLECTOR CURRENT (mA)

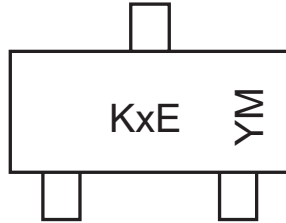
Fig. 5, Gain Bandwidth Product vs. Collector Current

Ordering Information (Note 4)

Device	Packaging	Shipping
MMBTA63-7-F MMBTA64-7-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



KxE = Product Type Marking Code, ex: K2E = MMBTA63
 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	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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