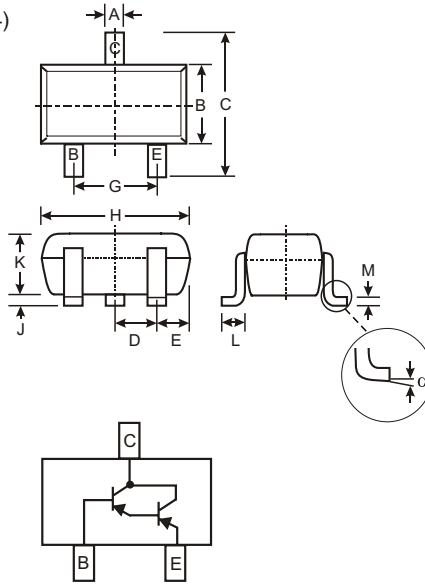


Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMSTA13/MMSTA14)
- Ultra-Small Surface Mount Package
- Ideal for Medium Power Amplification and Switching
- High Current Gain
- **Available in Lead Free/RoHS Compliant Version (Note 2)**

Mechanical Data

- Case: SOT-323
- 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
- MMSTA63 Marking K2E, K3E (See Page 2)
- MMSTA64 Marking K3E (see Page 2)
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approximate)



SOT-323		
Dim	Min	Max
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
α	0°	8°
All Dimensions in mm		

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	MMSTA63	MMSTA64	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	200		mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{θJA}	625		K/W
Operating and Storage and Temperature Range	T _J , T _{STG}	-55 to +150		°C

- 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. No purposefully added lead.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

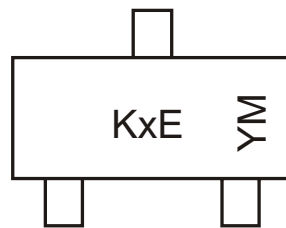
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)					
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-30	—	V	I _C = -100μA V _{BE} = 0V
Collector Cutoff Current	I _{CBO}	—	-100	nA	V _{CB} = -30V, I _E = 0
Emitter Cutoff Current	I _{EBO}	—	-100	nA	V _{EB} = -10V, I _C = 0
ON CHARACTERISTICS (Note 3)					
DC Current Gain	MMSTA63 MMSTA64 MMSTA63 MMSTA64	h _{FE}	5,000 10,000 10,000 20,000	—	I _C = -10mA, V _{CE} = -5.0V I _C = -10mA, V _{CE} = -5.0V I _C = -100mA, V _{CE} = -5.0V I _C = -100mA, V _{CE} = -5.0V
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	-1.5	V	I _C = -100mA, I _B = -100μA
Base- Emitter Saturation Voltage	V _{BE(SAT)}	—	-2.0	V	I _C = -100mA, V _{CE} = -5.0V
SMALL SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product	f _T	125	—	MHz	V _{CE} = -5.0V, I _C = -10mA, f = 100MHz

Ordering Information (Note 4)

Device	Packaging	Shipping
MMSTA63-7	SOT-323	3000/Tape & Reel
MMSTA64-7	SOT-323	3000/Tape & Reel

- Notes:
3. Short duration test pulse used to minimize self-heating effect.
 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
 5. For Lead Free/RoHS Compliant version part numbers, please add "-F" suffix to the part numbers above. Example: MMSTA64-7-F.

Marking Information

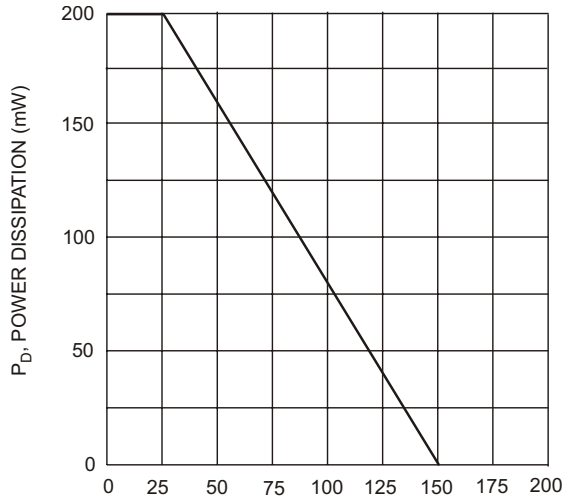


KxE = Product Type Marking Code, e.g. K2E = MMSTA63
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

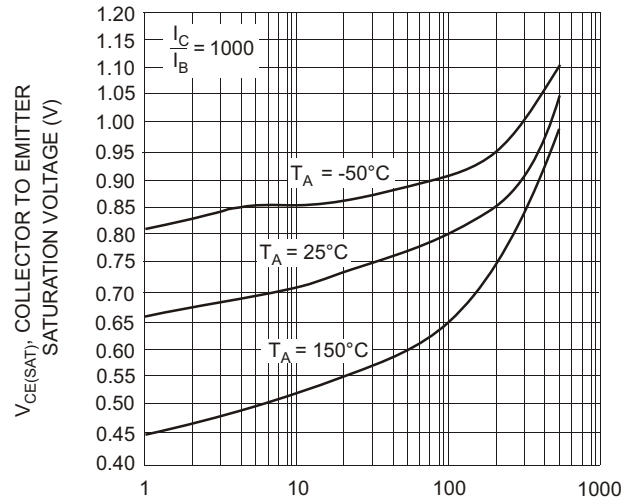
Date Code Key

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

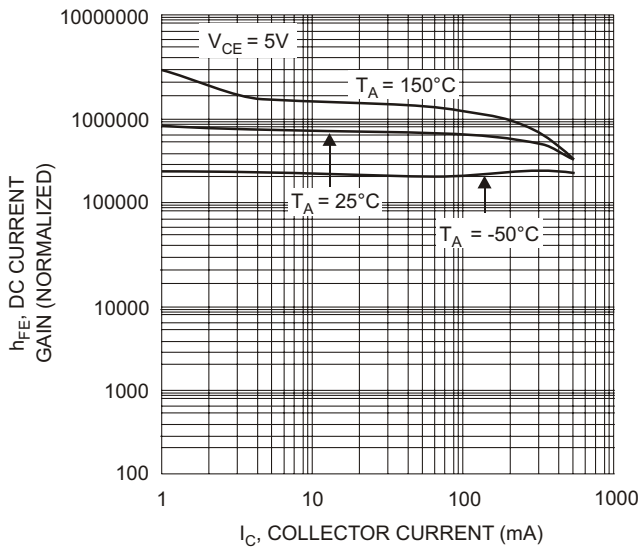
Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D



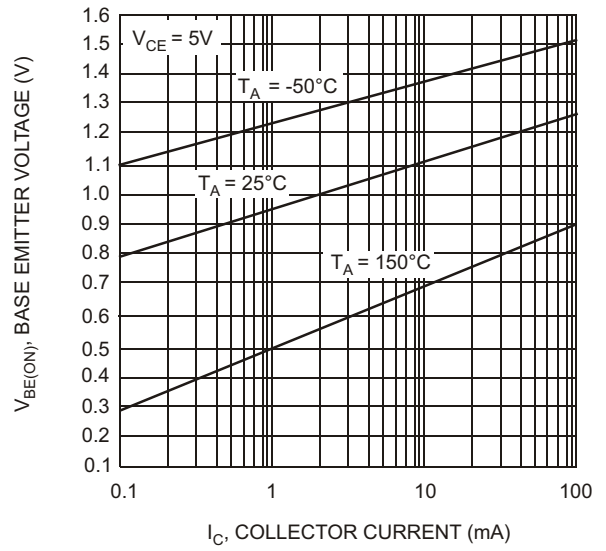
T_A , AMBIENT TEMPERATURE (°C)
Fig. 1, Max Power Dissipation vs Ambient Temperature



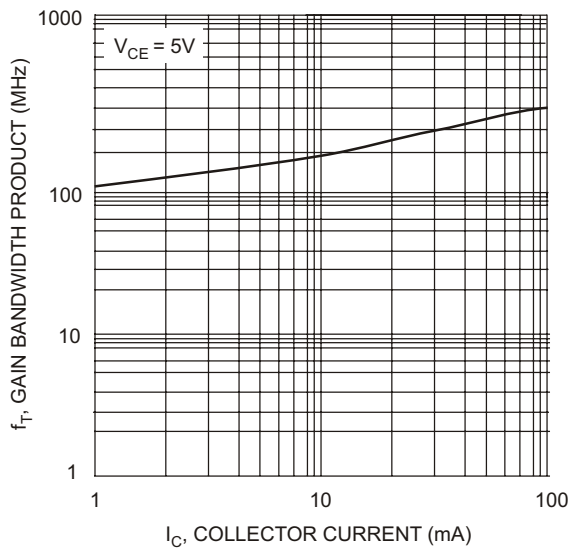
$V_{CE(SAT)}$, COLLECTOR TO EMITTER SATURATION VOLTAGE (V)
 I_C , COLLECTOR CURRENT (mA)
Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current



I_{FE} , DC CURRENT GAIN (NORMALIZED)
 I_C , COLLECTOR CURRENT (mA)
Fig. 3, DC Current Gain vs Collector Current



$V_{BE(ON)}$, BASE EMITTER VOLTAGE (V)
 I_C , COLLECTOR CURRENT (mA)
Fig. 4, Base Emitter Voltage vs. Collector Current



f_T , GAIN BANDWIDTH PRODUCT (MHz)
 I_C , COLLECTOR CURRENT (mA)
Fig. 5, Gain Bandwidth Product vs. Collector Current