



MMSTA4

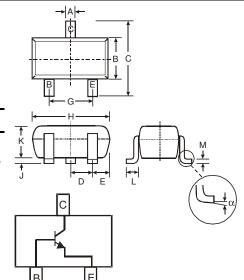
NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMSTA92)
- Ideal for Low Power Amplification and Switching
- Ultra-Small Surface Mount Package
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3 and 4)

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. 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).
- Marking Information: K3M, See Page 3
- Ordering & Date Code Information: See Page 3
- Weight: 0.006 grams (approximate)



	SOT-323	
Dim	Min	Max
Α	0.25	0.40
В	1.15	1.35
С	2.00	2.20
D	0.65 N	ominal
E	0.30	0.40
G	1.20	1.40
Н	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
М	0.10	0.18
α	0°	8°
All Dim	nensions	in mm

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	300	V
Collector-Emitter Voltage	V _{CEO}	300	V
Emitter-Base Voltage	V _{EBO}	6.0	V
Collector Current (Note 1)	Ic	200	mA
Power Dissipation (Note 1)	P _d	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{ hetaJA}$	625	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

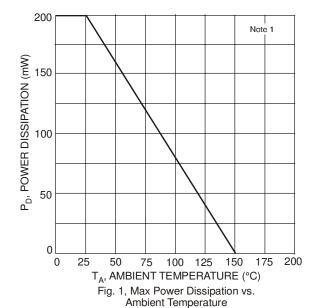
Electrical Characteristics @T_A = 25°C unless otherwise specified

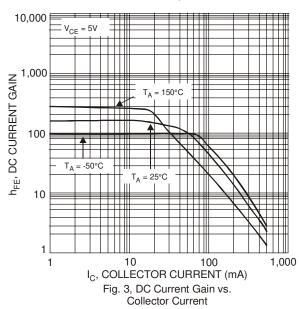
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	300	_	V	$I_C = 100 \mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	300	_	V	$I_C = 1.0 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6.0	_	V	$I_E = 100 \mu A, I_C = 0$
Collector Cutoff Current	I _{CBO}	_	100	nA	V _{CB} = 200V, I _E = 0
Collector Cutoff Current	I _{EBO}	_	100	nA	$V_{CE} = 6.0V, I_{C} = 0$
ON CHARACTERISTICS (Note 5)					
		25			$I_C = 1.0 \text{mA}, V_{CE} = 10 \text{V}$
DC Current Gain	h _{FE}	40	_	_	$I_C = 10 \text{mA}, V_{CE} = 10 \text{V}$
		40			$I_C = 30 \text{mA}, V_{CE} = 10 \text{V}$
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	_	0.5	V	$I_C = 20 \text{mA}, I_B = 2.0 \text{mA}$
Base-Emitter Saturation Voltage	V _{BE(SAT)}	_	0.9	V	I _C = 20mA, I _B = 2.0mA
SMALL SIGNAL CHARACTERISTICS	<u> </u>				
Output Capacitance	C _{cb}		3.0	pF	$V_{CB} = 20V, f = 1.0MHz, I_{E} = 0$
Current Gain-Bandwidth Product	f _T	50	_	MHz	V _{CE} = 20V, I _C = 10mA, f = 100MHz

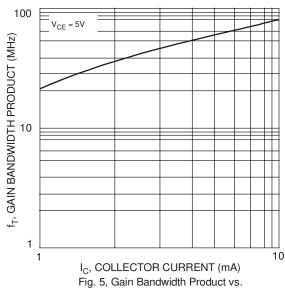
Notes:

- 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.
- 2. No purposefully added lead.
- 3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
- Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
- 5. Short duration pulse test used to minimize self-heating effect.









Collector Current

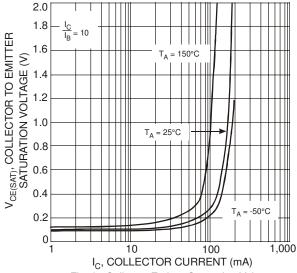


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

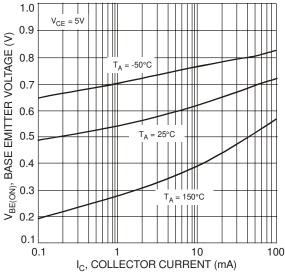


Fig. 4, Base Emitter Voltage vs. Collector Current

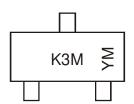


Ordering Information (Note 4 & 6)

Device	Packaging	Shipping
MMSTA42-7-F	SOT-323	3000/Tape & Reel

6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K3M= Product Type Marking Code YM = Date Code Marking Y = Year ex: N = 2002M = 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	М	N	Р	R	S	Т	U	V	W	Χ	Υ	Z

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	Ν	D

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