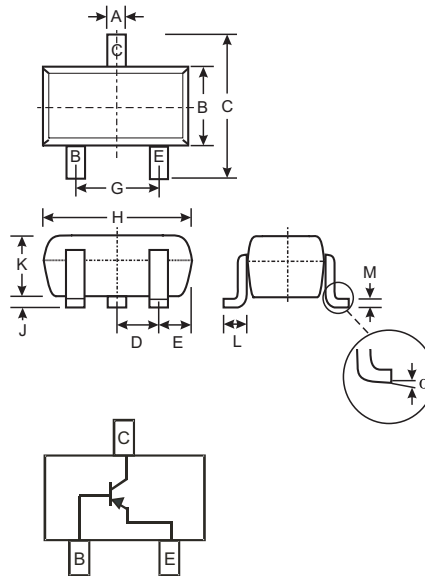


### Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (MMSTA42)
- Ideal for Medium 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 (See Page 2): K3R
- 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
$\alpha$	0°	8°
<b>All Dimensions in mm</b>		

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

Characteristic	Symbol	MMSTA92	Unit
Collector-Base Voltage	$V_{CBO}$	-300	V
Collector-Emitter Voltage	$V_{CEO}$	-300	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current (Note 1)	$I_C$	-100	mA
Power Dissipation (Note 1)	$P_d$	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	625	K/W
Operating and Storage and Temperature Range	$T_j, T_{STG}$	-55 to +150	$^\circ\text{C}$

- 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.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  4. 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.

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

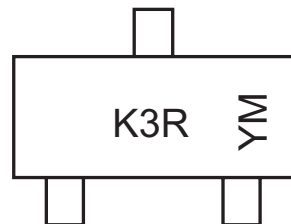
Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>					
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-300	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-300	—	V	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5.0	—	V	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	-250	nA	V <sub>CB</sub> = -200V, I <sub>E</sub> = 0
Collector Cutoff Current	I <sub>EBO</sub>	—	-100	nA	V <sub>CE</sub> = -3.0V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 5)</b>					
DC Current Gain	h <sub>FE</sub>	25 40 25	—	—	I <sub>C</sub> = -1.0mA, V <sub>CE</sub> = -10V I <sub>C</sub> = -10mA, V <sub>CE</sub> = -10V I <sub>C</sub> = -30mA, V <sub>CE</sub> = -10V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	-0.5	V	I <sub>C</sub> = -20mA, I <sub>B</sub> = -2.0mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	-0.9	V	I <sub>C</sub> = -20mA, I <sub>B</sub> = -2.0mA
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	C <sub>cb</sub>	—	6.0	pF	V <sub>CB</sub> = -20V, f = 1.0MHz, I <sub>E</sub> = 0
Current Gain-Bandwidth Product	f <sub>T</sub>	50	—	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA, f = 100MHz

## Ordering Information (Note 4 and 6)

Device	Packaging	Shipping
MMSTA92-7-F	SOT-323	3000/Tape & Reel

- Notes:
- 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.
  - Short duration test pulse used to minimize self-heating effect.
  - For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

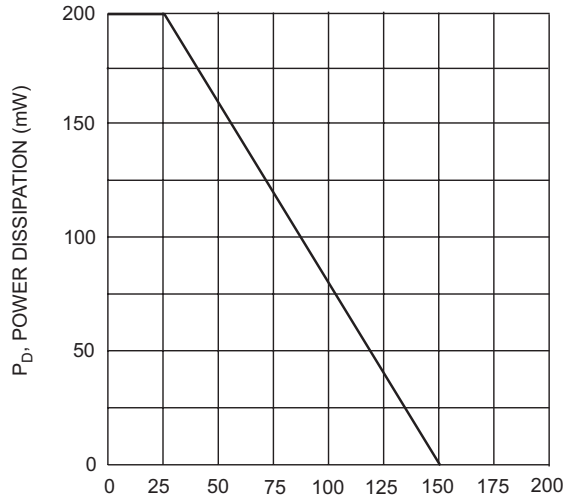
## Marking Information



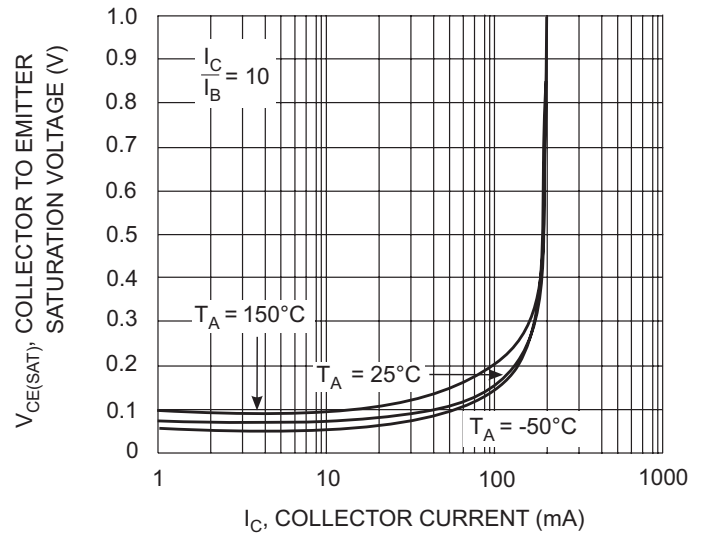
K3R = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

### Date Code Key

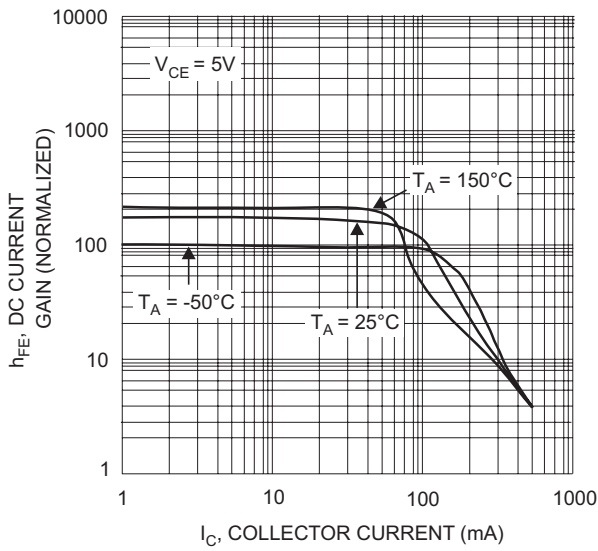
<b>Year</b>	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Code</b>	J	K	L	M	N	P	R	S	T	U	V	W
<b>Month</b>	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Code</b>	1	2	3	4	5	6	7	8	9	O	N	D



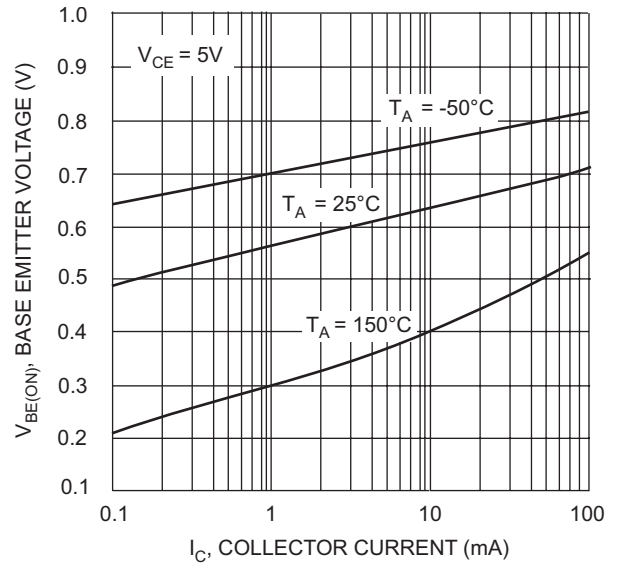
$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 1, Max Power Dissipation vs Ambient Temperature



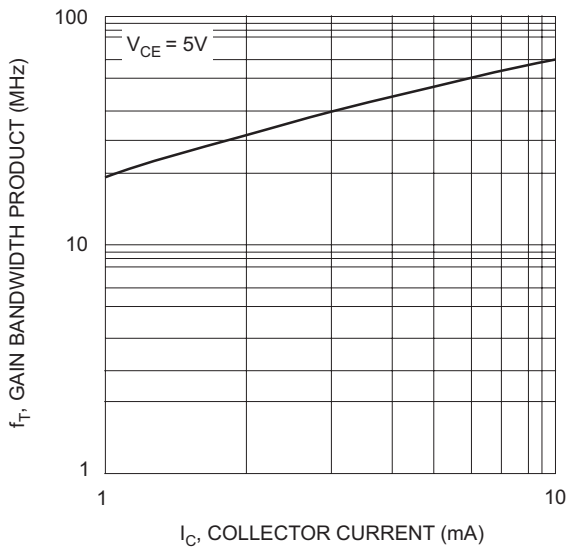
$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current



$I_C$ , 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

**IMPORTANT NOTICE**

Diodes, Inc. and its subsidiaries reserve the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. Diodes, Inc. does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

**LIFE SUPPORT**

The products located on our website at [www.diodes.com](http://www.diodes.com) are not recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury without the expressed written approval of Diodes Incorporated.