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# MMBTA92

PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR

## Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMBTA42)
- Ideal for Medium Power Amplification and Switching
- Lead, Halogen and Antimony Free, RoHS Compliant
- "Green" Device (Notes 4 and 5)
- Qualified to AEC-Q101 Standards for High Reliability

## Mechanical Data

- Case: SOT-23
- 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
- Lead Free Plating (Matte Tin Finish annealed over
- Alloy 42 leadframe).
- Marking Information: See Page 3
  Output of American Ameri American American
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)



	SOT-23	
Dim	Min	Max
Α	0.37	0.51
В	1.20	1.40
С	2.30	2.50
D	0.89	1.03
Е	0.45	0.60
G	1.78	2.05
Н	2.80	3.00
J	0.013	0.10
к	0.903	1.10
L	0.45	0.61
М	0.085	0.180
α	0°	8°
All Din	nensions	in mm

### Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-300	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-300	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5.0	V
Collector Current (Note 1) (Note 3)	lc	-500	mA
Power Dissipation (Note 1)	Pd	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>0JA</sub>	417	°C/W
Operating and Storage and Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)				•	
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-300		V	$I_{\rm C} = -100 \mu A, I_{\rm E} = 0$
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-300		V	$I_{\rm C} = -1.0 {\rm mA},  I_{\rm B} = 0$
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5.0		V	$I_E = -100 \mu A$ , $I_C = 0$
Collector Cutoff Current	I <sub>CBO</sub>		-250	nA	$V_{CB} = -200V, I_E = 0$
Collector Cutoff Current	I <sub>EBO</sub>		-100	nA	$V_{CE} = -3.0V, I_{C} = 0$
ON CHARACTERISTICS (Note 2)				•	
DC Current Gain	h <sub>FE</sub>	25 40 25	_	_	$I_{C} = -1.0mA, V_{CE} = -10V$ $I_{C} = -10mA, V_{CE} = -10V$ $I_{C} = -30mA, V_{CE} = -10V$
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>		-0.5	V	$I_{\rm C} = -20$ mA, $I_{\rm B} = -2.0$ mA
Base- Emitter Saturation Voltage	V <sub>BE(SAT)</sub>		-0.9	V	$I_{\rm C}$ = -20mA, $I_{\rm B}$ = -2.0mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C <sub>cb</sub>		6.0	pF	$V_{CB} = -20V, f = 1.0MHz,$ $I_E = 0$
Current Gain-Bandwidth Product	f <sub>T</sub>	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. Short duration pulse test used to minimize self-heating effect.

3. When operated under collector-emitter saturation conditions within the safe operating area defined by the thermal resistance

rating ( $R_{0JA}$ ), power dissipation rating ( $P_d$ ) and power derating curve (figure 1).

4. No purposefully added lead. Halogen and Antimony Free.

 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 Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.









## Ordering Information (Note 6)

Y		
Device	Packaging	Shipping
MMBTA92-7-F	SOT-23	3000/Tape & Reel

Notes: 6. 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

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	К	L	М	Ν	Р	R	S	Т	U	V	W	Х	Y	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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