



#### 32V PNP POWER SWITCHING TRANSISTOR IN SOT-89

#### **Features**

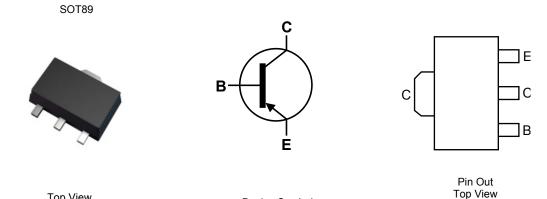
- BV<sub>CEO</sub> > -32V
- I<sub>C</sub> = -1A high Continuous Collector Current
- Complementary NPN Type: 2DD1664
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications

Top View

- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

#### **Mechanical Data**

- Case: SOT89
- Case material: molded Plastic. "Green" molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.055 grams (Approximate)



Device Symbol

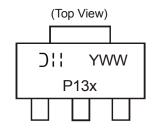
### Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
2DB1132P-13	P13P	13	12	2,500
2DB1132Q-13	P13Q	13	12	2,500
2DB1132R-13	P13R	13	12	2,500
2DB1132R-13R	P13R	13	12	4,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com/quality/lead\_free.html for more information about Diodes Incorporated's definitions of Halogen and Antimony free, "Green" and Lead-Free.
- 3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html

## **Marking Information**



P13x = Product Type Marking Code: P13P = 2DB1132P Where

P13Q = 2DB1132Q P13R = 2DB1132R

YWW = Date Code Marking Y = Last digit of year ex: 7 = 2007 WW = Week code 01 - 52



# Absolute Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-32	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Continuous Collector Current	Ic	-1	Α
Peak Pulse Current	I <sub>CM</sub>	-2	А

# Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit		
	(Note 5)		1		
Power Dissipation	(Note 6)	$P_{D}$	1.5	W	
	(Note 7)		2.0	]	
	(Note 5)		125		
Thermal Resistance, Junction to Ambient Air	(Note 6)	$R_{\theta JA}$	83	°C/W	
	(Note 7)		60		
Thermal Resistance, Junction to Lead (Note 8)		$R_{ heta JL}$	22	°C/W	
Operating and Storage Temperature Range	$T_{J_i} T_{STG}$	-55 to +150	°C		

# ESD Ratings (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

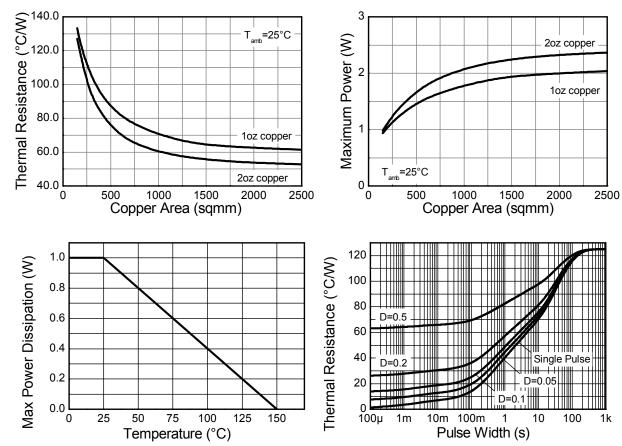
Notes:

- 5. For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

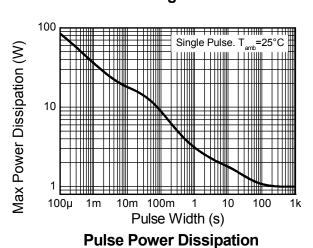
  6. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
- 7. Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
- 8. Thermal resistance from junction to solder-point (on the exposed collector pad).
- 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



# **Thermal Characteristics and Derating Information**



**Derating Curve** 



**Transient Thermal Impedance** 

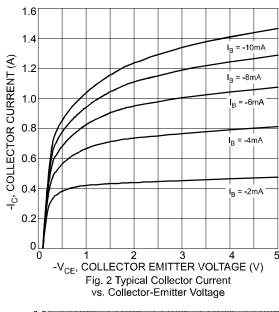


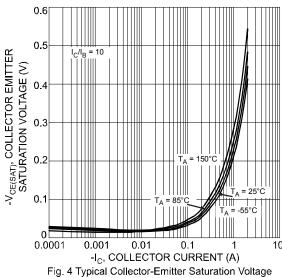
## Electrical Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV <sub>CBO</sub>	-40	_	_	V	I <sub>C</sub> = -50μA
Collector-Emitter Breakdown Voltage (Note 10)		BV <sub>CEO</sub>	-32		_	V	I <sub>C</sub> = -1mA
Emitter-Base Breakdown Voltage		BV <sub>EBO</sub>	-5	_	_	V	I <sub>E</sub> = -50μA
Collector Cut-off Current		I <sub>CBO</sub>			-0.5	μΑ	V <sub>CB</sub> =-20V
Emitter Cut-off Current		I <sub>EBO</sub>	_	_	-0.5	μΑ	V <sub>EB</sub> = -4V
Static Forward Current Transfer Ratio (Note 10)	2DB1132P 2DB1132Q 2DB1132R	h <sub>FE</sub>	82 120 180	_	180 270 390	_	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -3V
Collector-Emitter saturation Voltage (Note 10)		V <sub>CE(sat)</sub>	—	-125	-500	mV	I <sub>C</sub> =-500mA, I <sub>B</sub> = -50mA
Transition frequency		f <sub>T</sub>		190	_	MHz	$I_E = 50 \text{mA}, V_{CE} = -5 \text{V}, f = 30 \text{MHz}$
Output Capacitance		$C_{ob}$	_	12	30	pF	$I_E = 0A$ , $V_{CB} = -10V$ , $f=1MHz$

Notes: 10. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%

# Typical Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)





vs. Collector Current

500

T<sub>A</sub> = 150°C

T<sub>A</sub> = 25°C

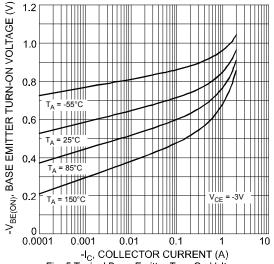
100

T<sub>A</sub> = 25°C

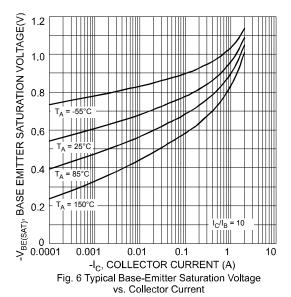
100

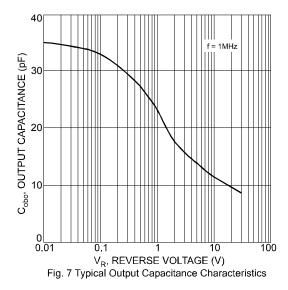
T<sub>A</sub> = 55°C

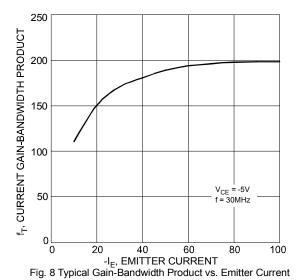
T<sub>A</sub> =





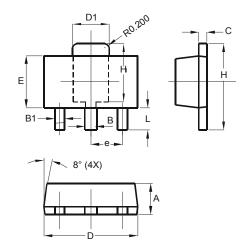






# **Package Outline Dimensions**

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

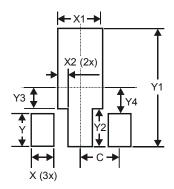


SOT89				
Dim	Min	Max		
Α	1.40	1.60		
В	0.44	0.62		
B1	0.35	0.54		
С	0.35	0.44		
D	4.40 4.60			
D1	1.62 1.83			
Е	2.29 2.60			
e	1.50 Typ			
Н	3.94 4.25			
H1	2.63 2.93			
L	0.89	1.20		
All Dimensions in mm				



## **Suggested Pad Layout**

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
С	1.500

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