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32V PNP MEDIUM POWER TRANSISTOR IN SOT89

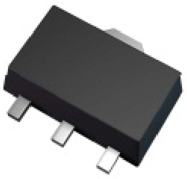
Features

- BV_{CEO} > -32V
- I_C = -2A high Continuous Current
- Low saturation voltage $V_{CE(sat)}$ < 800mV @ 2A
- Complementary NPN Type: 2DD1766
- **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**

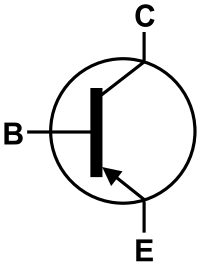
Mechanical Data

- Case: SOT89
- Case material: Molded Plastic, "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.052 grams (approximate)

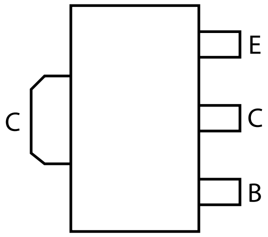
SOT89



Top View



Device Symbol



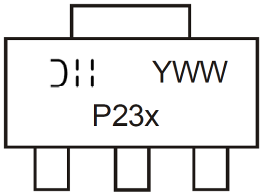
Pin Out – Top View

Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
2DB1188P-13	P23P	13	12	2,500
2DB1188Q-13	P23Q	13	12	2,500
2DB1188Q-13R	P23Q	13	12	4,000
2DB1188R-13	P23R	13	12	2,500

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



P23x = Product Type Marking Code
Where P23P = 2DB1188P
P23Q = 2DB1188Q
P23R = 2DB1188R
Ↄ⁞⁞ = Manufacturers' code marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 1 = 2011)
WW = Week Code (01 – 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

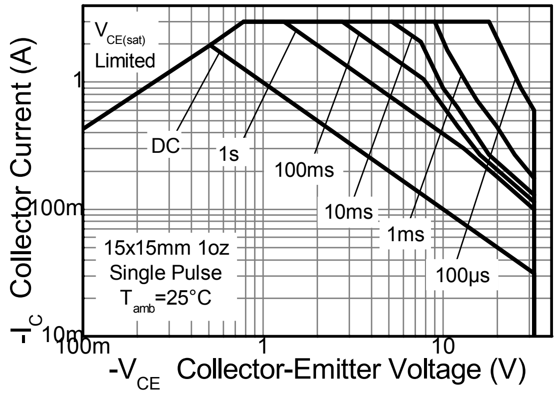
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-32	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Collector Current	I_{CM}	-3	A
Base Current	I_B	-500	mA

Thermal Characteristics (@T_A = +25°C unless otherwise specified.)

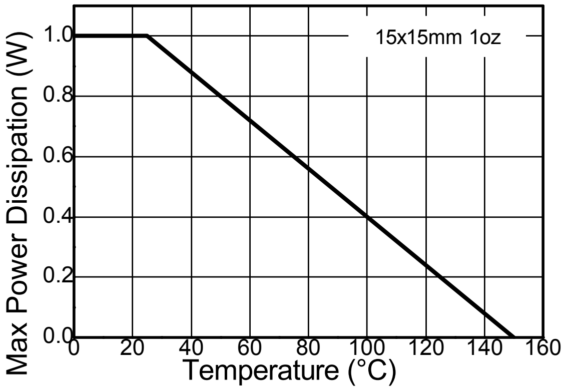
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	19	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
5. For a device surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Thermal resistance from junction to solder-point (on the exposed collector pad).

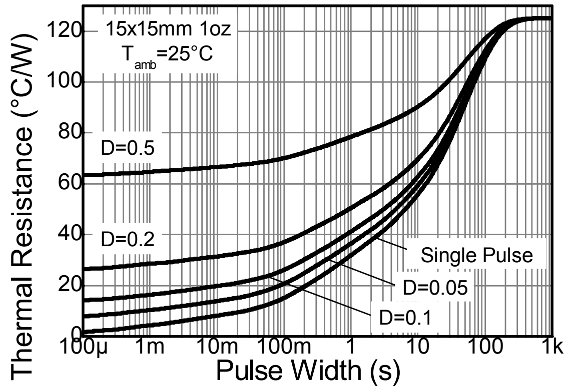
Thermal Characteristics and Derating Information



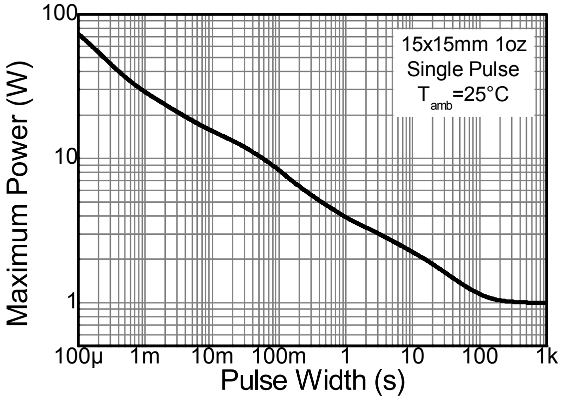
Safe Operating Area



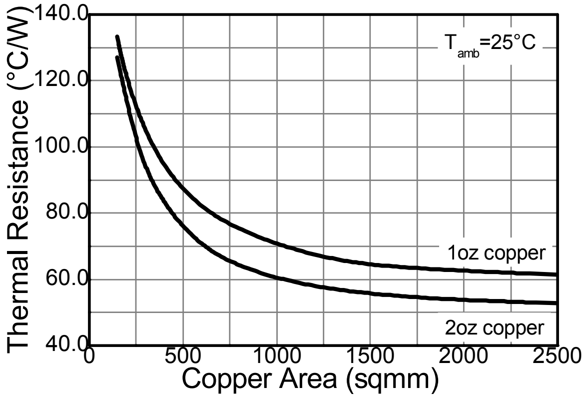
Derating Curve



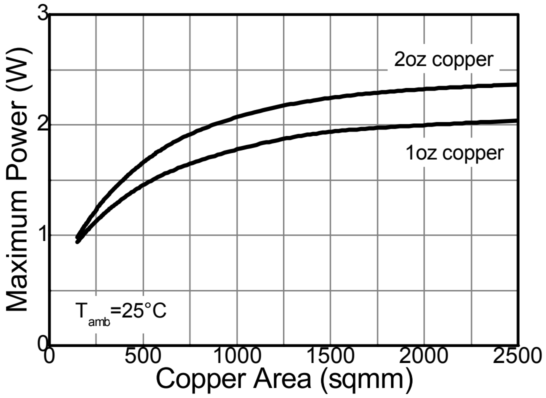
Transient Thermal Impedance



Pulse Power Dissipation



R_{TH} vs Area



P_D vs Area

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)							
Collector-Base Breakdown Voltage		BV_{CBO}	-40	—	—	V	I_C = -100μA, I_E = 0
Collector-Emitter Breakdown Voltage		BV_{CEO}	-32	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage		BV_{EBO}	-6	—	—	V	I_E = -100μA, I_C = 0
Collector Cutoff Current		I_{CBO}	—	—	-100	nA	V_{CB} = -20V, I_E = 0
Emitter Cutoff Current		I_{EBO}	—	—	-100	nA	V_{EB} = - 5V, I_C = 0
ON CHARACTERISTICS (Note 7)							
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	-0.35	-0.8	V	I_C = -2A, I_B = -0.2A
DC Current Gain	2DB1188P	h_{FE}	82	—	180	—	V_{CE} = -3V, I_C = -0.5A
	2DB1188Q		120		270		
	2DB1188R		180		390		
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product		f_T	—	120	—	MHz	V_{CE} = -5V, I_C = -0.1A, f = 30MHz
Output Capacitance		C_{obo}	—	20	—	pF	V_{CB} = -10V, f = 1MHz

Notes: 7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

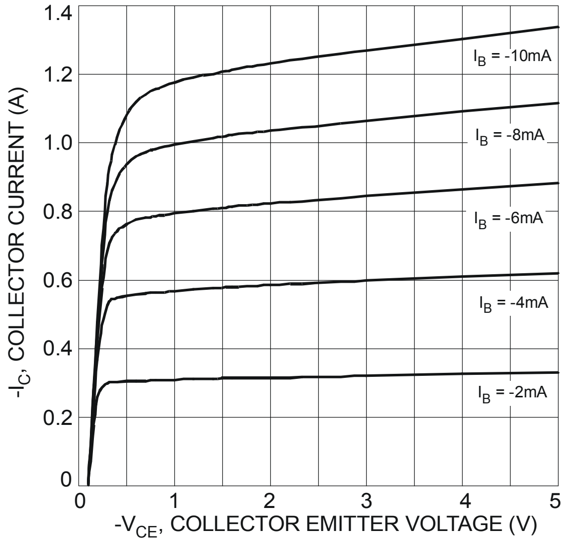


Figure 1. Typical Collector Current vs. Collector-Emitter Voltage

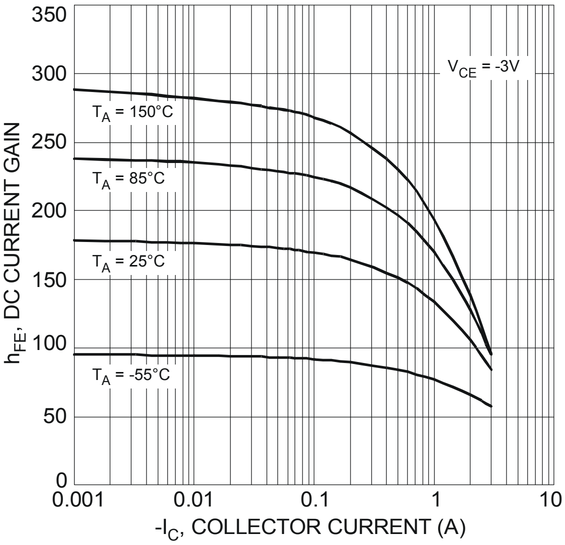


Figure 2. Typical DC Current Gain vs. Collector Current (2DB1188Q)

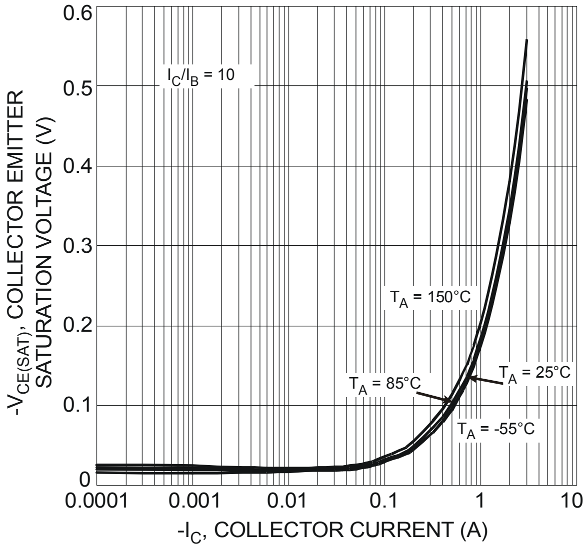


Figure 3. Typical Collector-Emitter Saturation Voltage vs. Collector Current

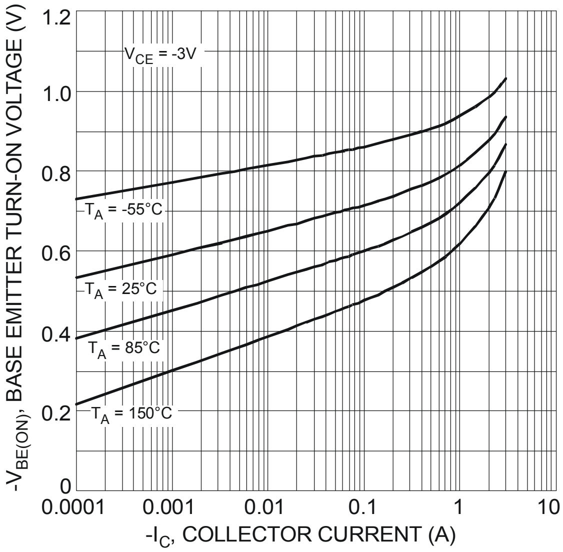


Figure 4. Typical Base-Emitter Turn-On Voltage vs. Collector Current

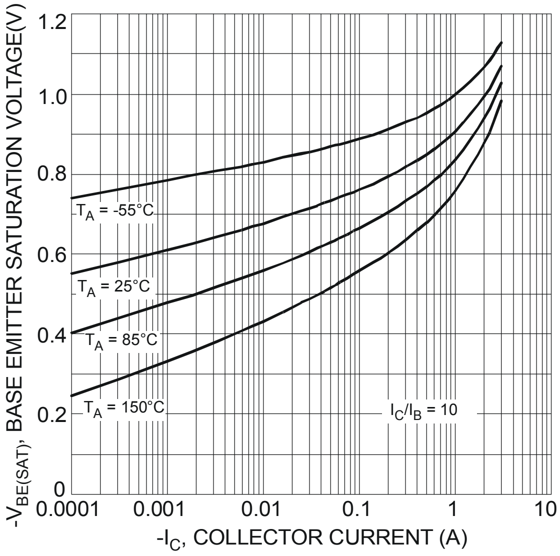


Figure 5. Typical Base-Emitter Saturation Voltage vs. Collector Current

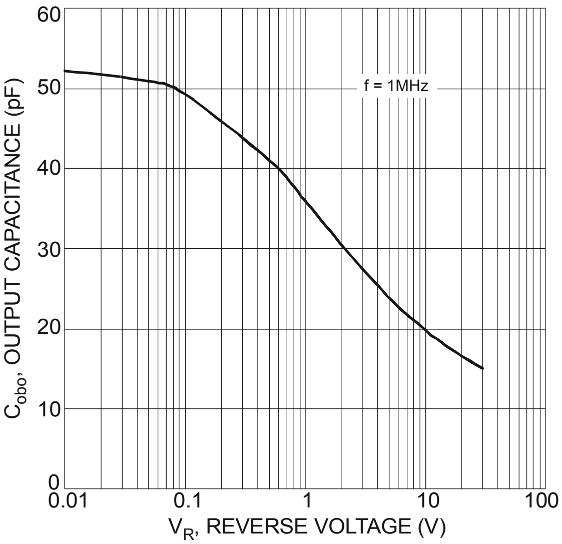


Figure 6. Typical Output Capacitance Characteristics

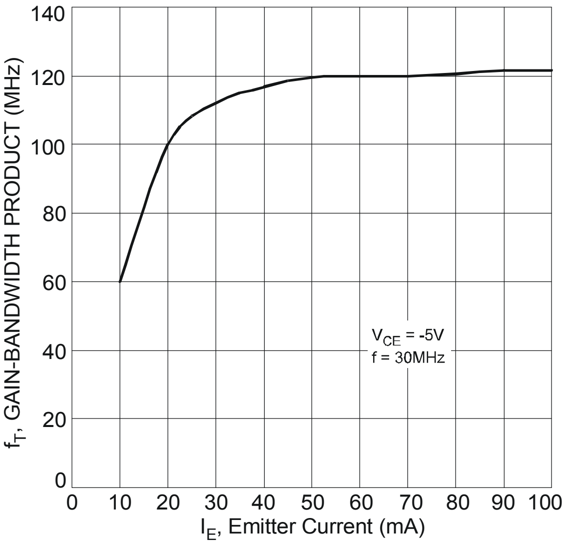
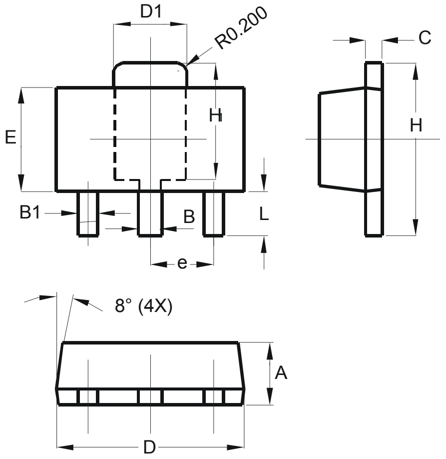


Figure 7. Typical Gain-Bandwidth Product vs. Emitter Current

Package Outline Dimensions

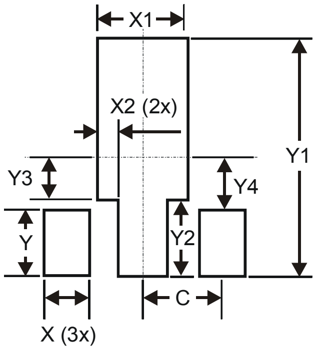
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT89		
Dim	**Min**	**Max**
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	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
C	1.500

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