

## Product Summary

BV <sub>DSS</sub>	Max R <sub>DS(ON)</sub>	Max I <sub>D</sub> T <sub>A</sub> = +25°C
-450V	150Ω @ V <sub>GS</sub> = -10V	-75mA

## Features and Benefits

- 450 Volt V<sub>DS</sub>
- R<sub>DS(ON)</sub> = 150Ω
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Description and Applications

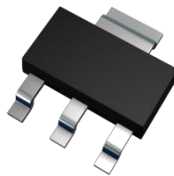
This new generation MOSFET has been designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- High-voltage power MOSFET drivers

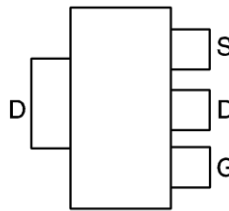
## Mechanical Data

- Package: SOT223
- Package Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208
- Weight: 0.112 grams (Approximate)

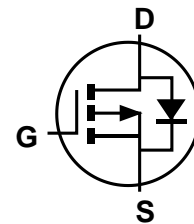
SOT223 (Type DN)



Top View



Pinout - Top View



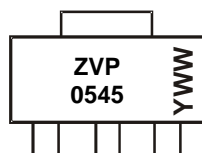
Equivalent Circuit

## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
ZVP0545GTA	SOT223 (Type DN)	1,000	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



ZVP0545 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or Ȳ = Last Digit of Year (ex: 4 = 2024)  
 WW or W̄W = Week Code (01 to 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	-450	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	-75	mA
Pulsed Drain Current	I <sub>DM</sub>	-150	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	2	W
Operating and Storage 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	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-450	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current (T <sub>J</sub> = +25°C)	I <sub>DSS</sub>	—	—	-20 -2	μA mA	V <sub>DS</sub> = -450V, V <sub>GS</sub> = 0V V <sub>DS</sub> = -360V, V <sub>GS</sub> = 0V, T <sub>A</sub> = +125°C (Note 6)
Gate-Source Leakage	I <sub>GSS</sub>	—	—	20	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
On-State Drain Current (Note 5)	I <sub>D(ON)</sub>	-100	—	—	mA	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -25V
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	-1.5	—	-4.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -1mA
Static Drain-Source On-Resistance (Note 5)	R <sub>DS(ON)</sub>	—	—	150	Ω	V <sub>GS</sub> = -10V, I <sub>D</sub> = -50mA
Forward Transconductance (Note 5) (Note 6)	g <sub>fs</sub>	40	—	—	mS	V <sub>DS</sub> = -25V, I <sub>D</sub> = -50mA
<b>DYNAMIC CHARACTERISTICS (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	—	—	120	pF	V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	—	20	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	—	5	pF	
Turn-On Delay Time (Note 7)	t <sub>D(ON)</sub>	—	—	10	ns	V <sub>DD</sub> = -25V, I <sub>D</sub> = -50mA
Turn-On Rise Time (Note 7)	t <sub>r</sub>	—	—	15	ns	
Turn-Off Delay Time (Note 7)	t <sub>D(OFF)</sub>	—	—	15	ns	
Turn-Off Fall Time (Note 7)	t <sub>f</sub>	—	—	20	ns	

- Notes:
5. Measured under pulsed conditions. Width=300μs. Duty cycle ≤2%.
  6. Sample test.
  7. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.

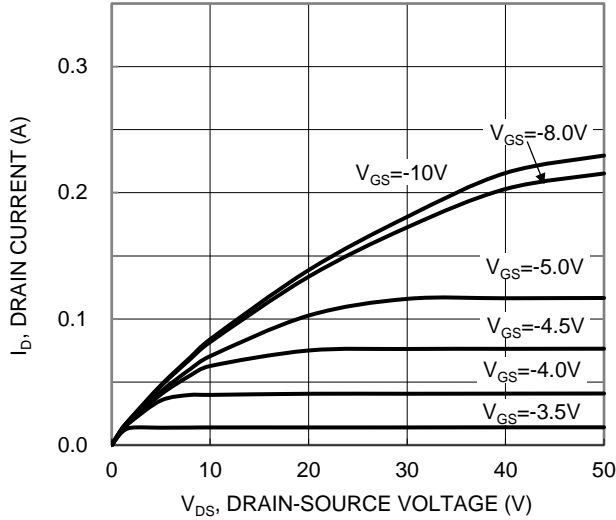


Figure 1. Typical Output Characteristic

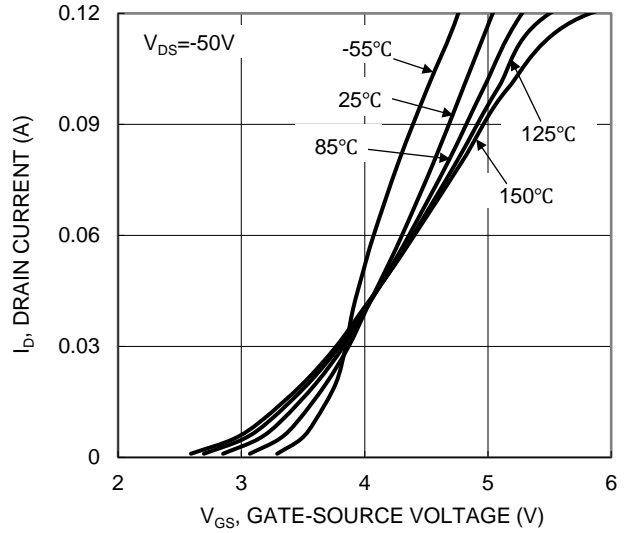


Figure 2. Typical Transfer Characteristic

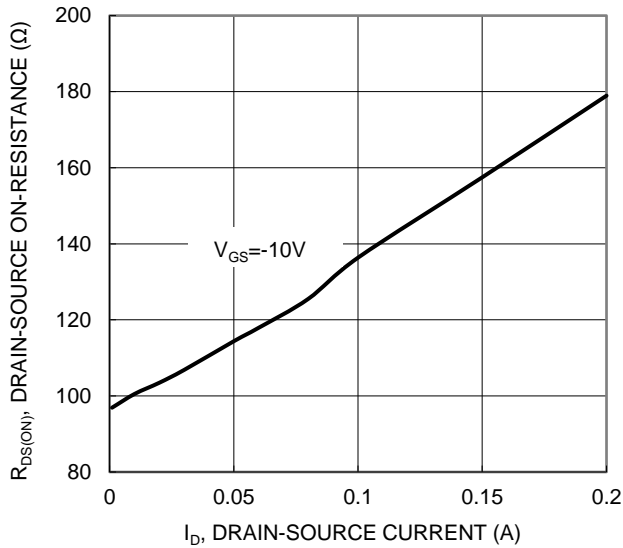


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

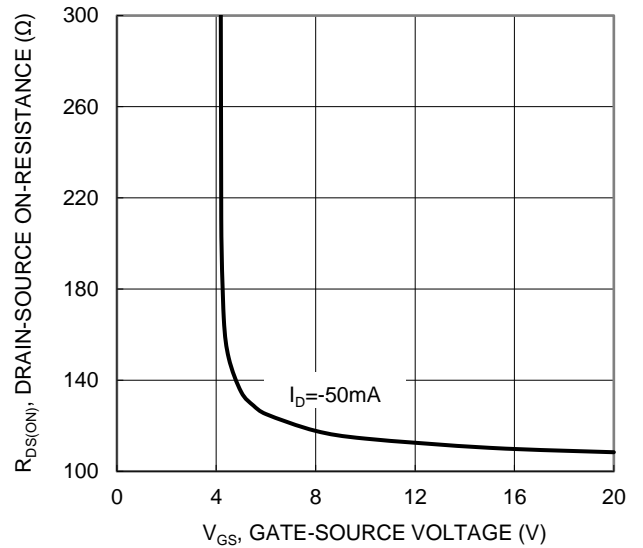


Figure 4. Typical Transfer Characteristic

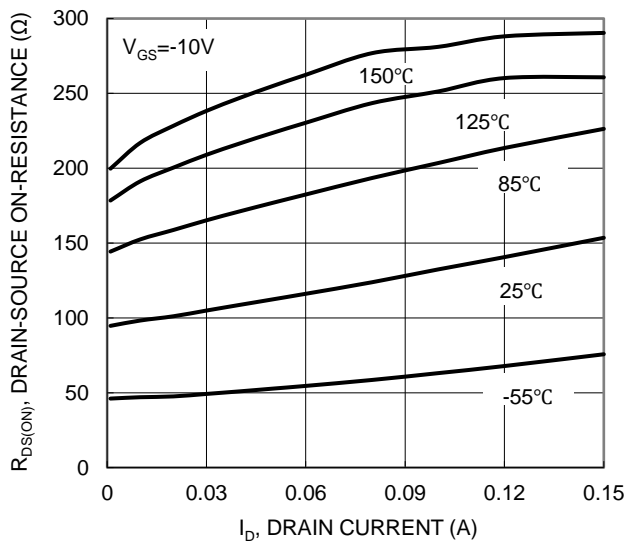


Figure 5. Typical On-Resistance vs Drain Current and Junction Temperature

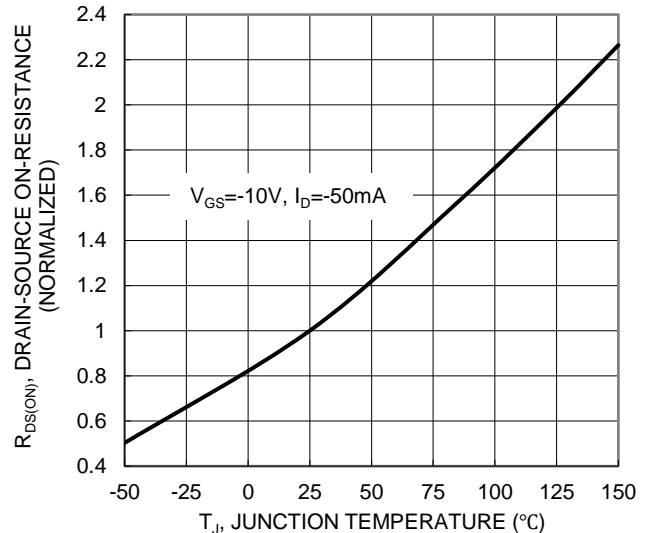


Figure 6. On-Resistance Variation with Junction Temperature

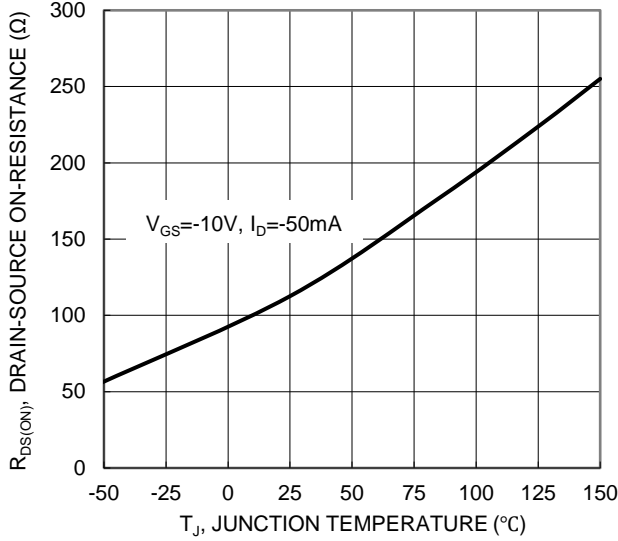


Figure 7. On-Resistance Variation with Junction Temperature

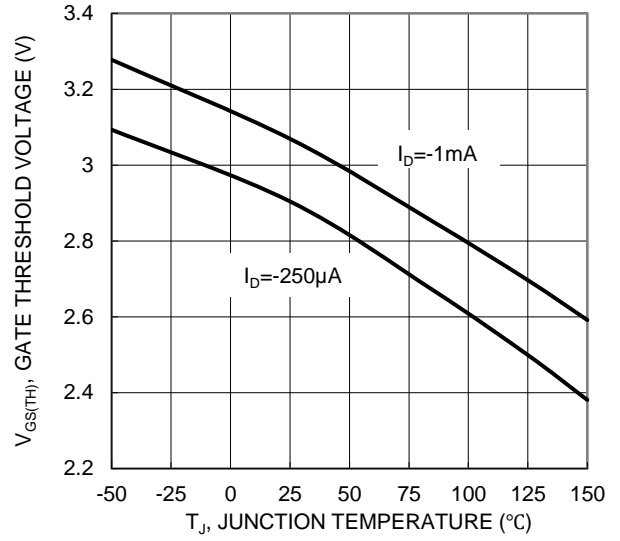


Figure 8. Gate Threshold Variation vs Junction Temperature

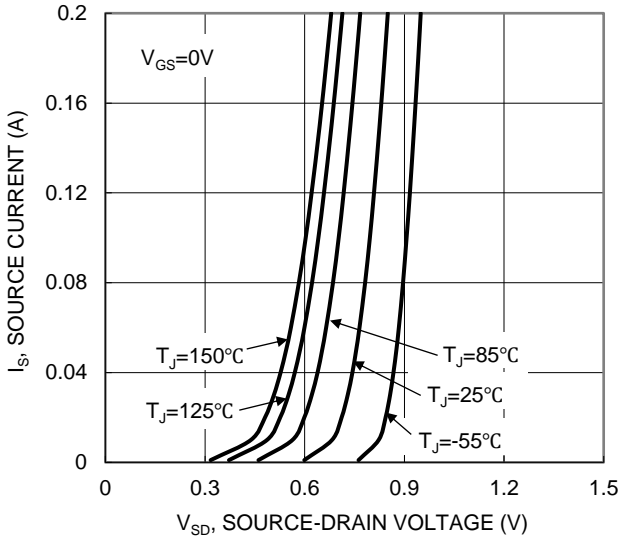


Figure 9. Diode Forward Voltage vs Current

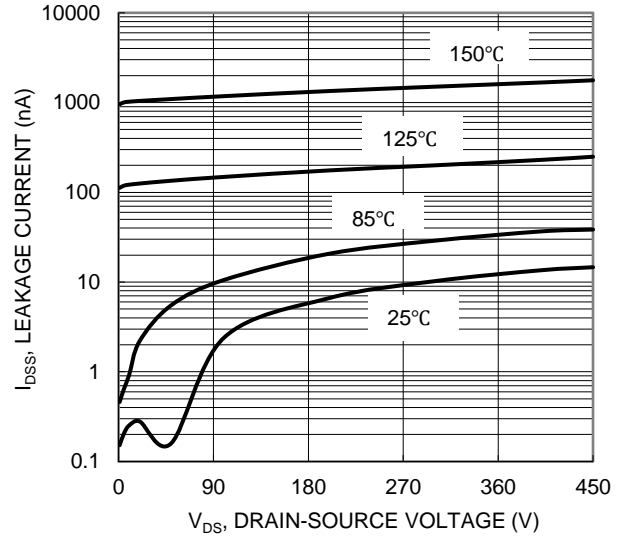


Figure 10. Typical Drain-Source Leakage Current vs Voltage

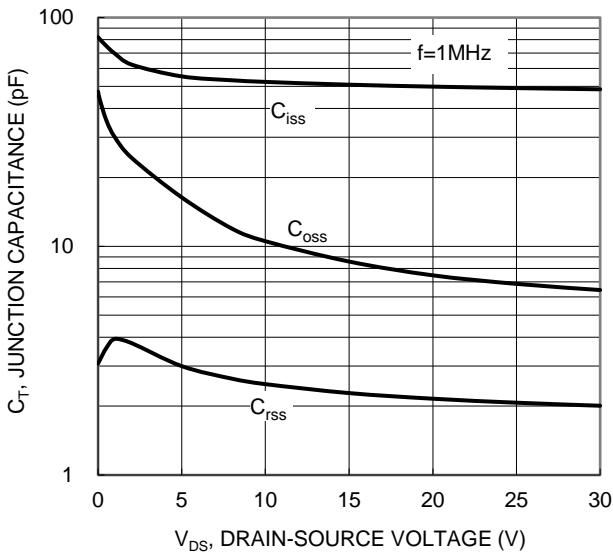


Figure 11. Typical Junction Capacitance

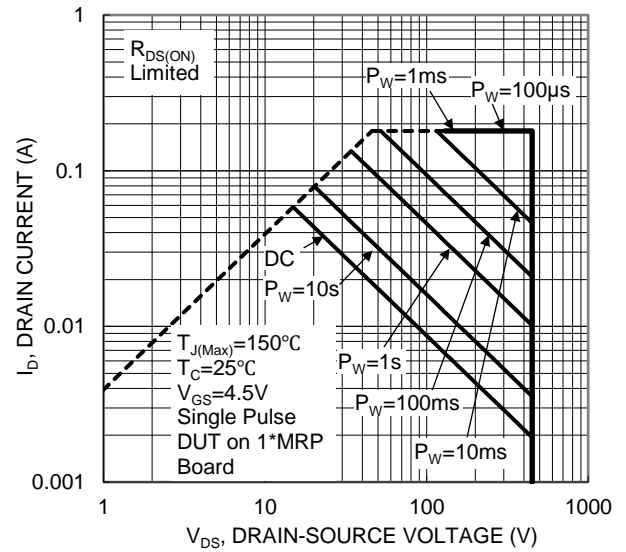


Figure 12. SOA, Safe Operation Area

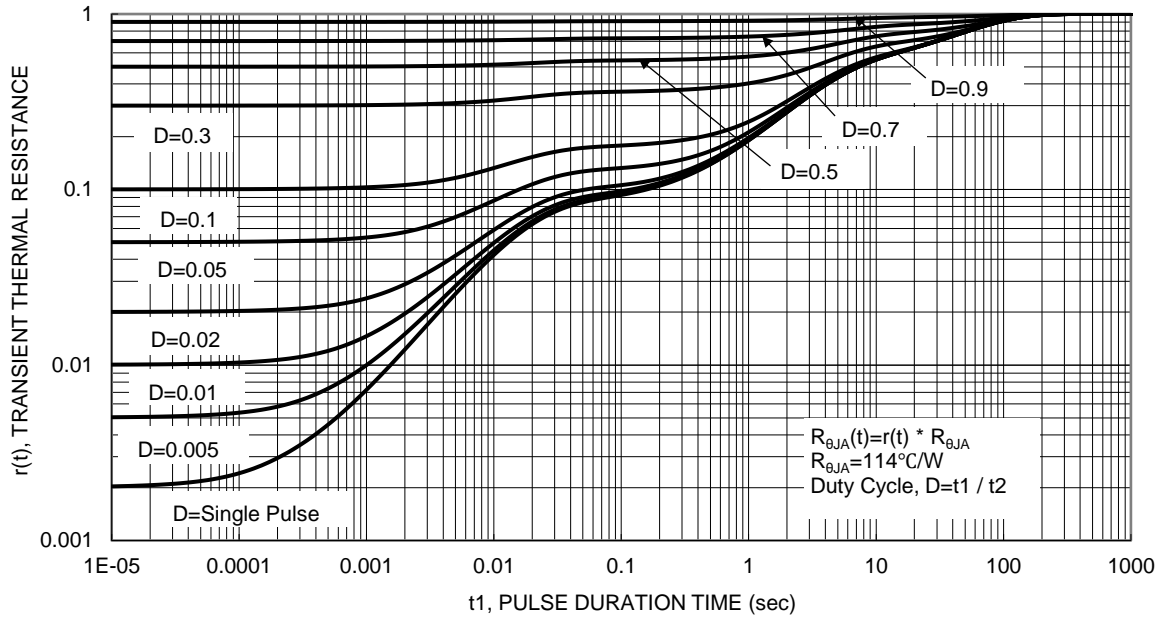
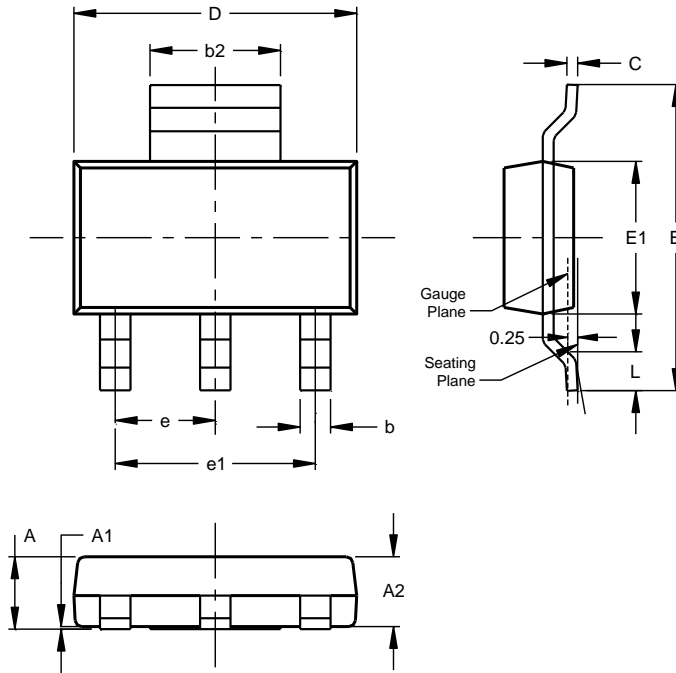


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223 (Type DN)

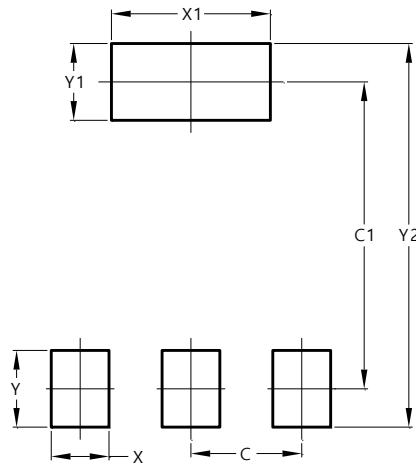


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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