

## Product Summary

$BV_{DSS}$	$R_{DS(ON)}$	$I_D$ $T_A = +25^\circ C$
100V	1.5Ω @ $V_{GS} = 10V$	800mA

## Features and Benefits

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

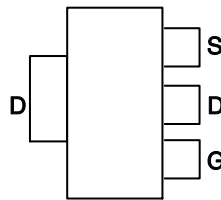
## Mechanical Data

- Case: SOT223
- Case 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 Lead Frame.  
Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.112 grams (Approximate)

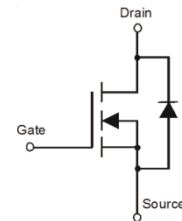
SOT223



Top View



Pin Out - Top View



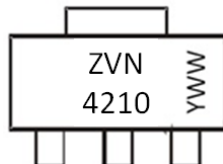
Equivalent Circuit

## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
ZVN4210GTA	ZVN4210	7	8	1,000

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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



ZVN4210 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or Y= Year (ex: 5 = 2015)  
 WW or WW = Week (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>	100	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current V <sub>GS</sub> = 10V	I <sub>D</sub>	800	mA
Pulsed Drain Current	I <sub>DM</sub>	6	A

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

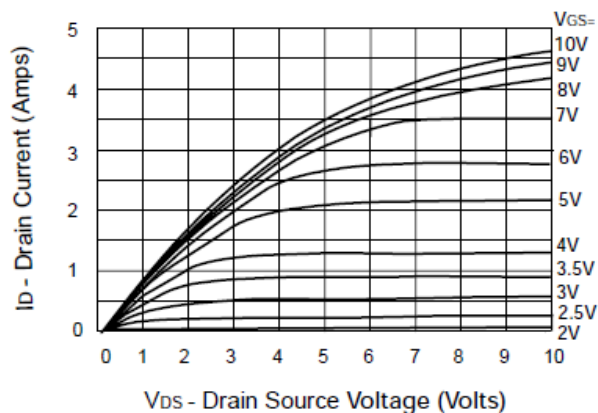
Characteristic	Symbol	Value	Unit
Total Power Dissipation	P <sub>D</sub>	2	W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

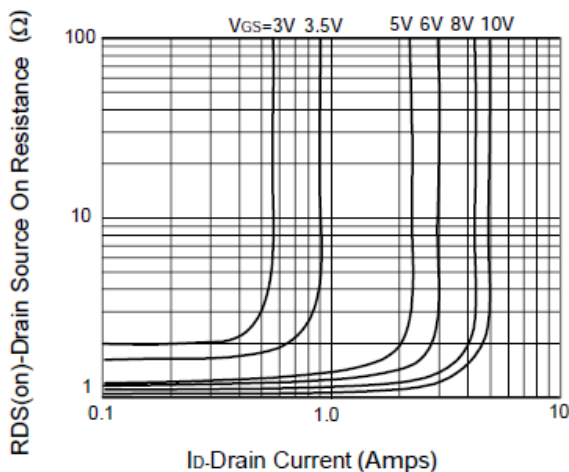
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	10	μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	0.8	—	2.4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	—	1.5	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.5A
		—	—	1.8	Ω	V <sub>GS</sub> = 5V, I <sub>D</sub> = 0.5A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	—	0.79 0.89	—	V	I <sub>S</sub> = 0.32A, V <sub>GS</sub> = 0V I <sub>S</sub> = 1.0A, V <sub>GS</sub> = 0V
On-State Drain Current (Note 5)	I <sub>D(ON)</sub>	2.5	—	—	A	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 10V
Forward Transconductance (Notes 5 and 6)	g <sub>fs</sub>	250	—	—	mS	V <sub>DS</sub> = 25V, I <sub>D</sub> = 1.5A
Reverse Recovery Time (to I <sub>R</sub> = 10%)	t <sub>RR</sub>	—	135	—	ns	I <sub>F</sub> = 0.45A, V <sub>GS</sub> = 0V, I <sub>R</sub> = 100mA, V <sub>R</sub> = 10V
<b>DYNAMIC CHARACTERISTICS</b> (Note 6)						
Input Capacitance	C <sub>iSS</sub>	—	—	100	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz
Output Capacitance	C <sub>oss</sub>	—	—	40	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	—	12	pF	
Turn-On Delay Time (Note 7)	t <sub>D(ON)</sub>	—	—	4	ns	V <sub>DD</sub> = 25V, I <sub>D</sub> = 1.5A
Turn-On Rise Time (Note 7)	t <sub>R</sub>	—	—	8	ns	
Turn-Off Delay Time (Note 7)	t <sub>D(OFF)</sub>	—	—	20	ns	
Turn-Off Fall Time (Note 7)	t <sub>F</sub>	—	—	30	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. Spice parameter data is available upon request for this device

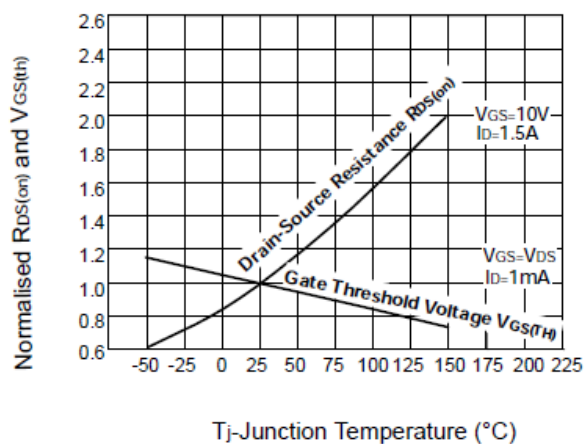
# Electrical Characteristics



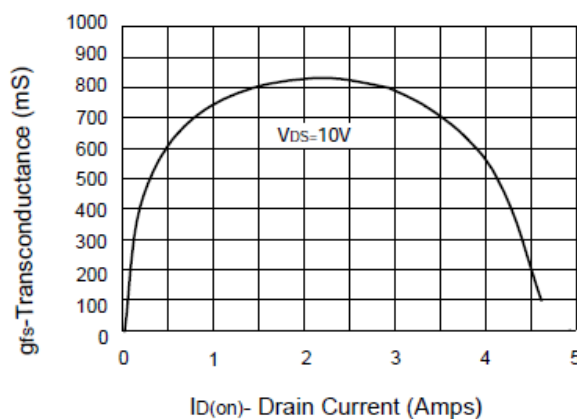
**Saturation Characteristics**



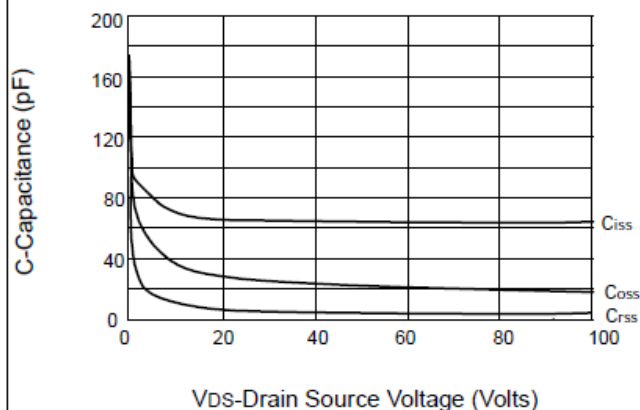
**On-resistance v drain current**



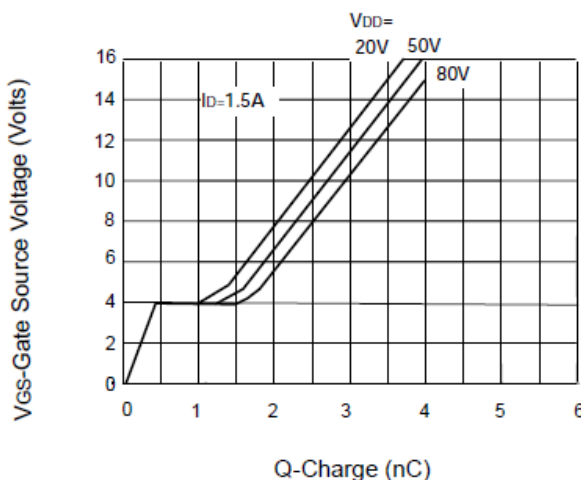
**Normalised RDS(on) and VGS(th) v Temperature**



**Transconductance v drain current**



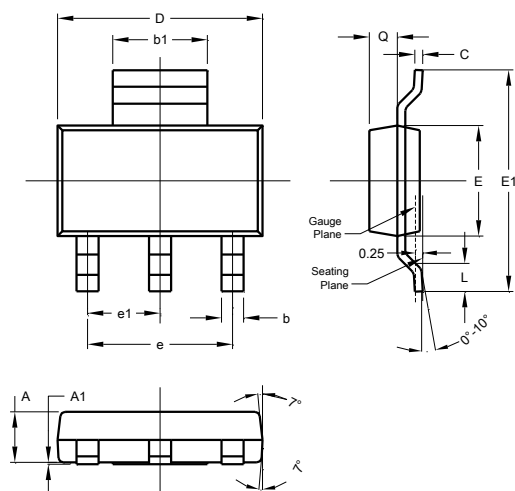
**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**

## Package Outline Dimensions

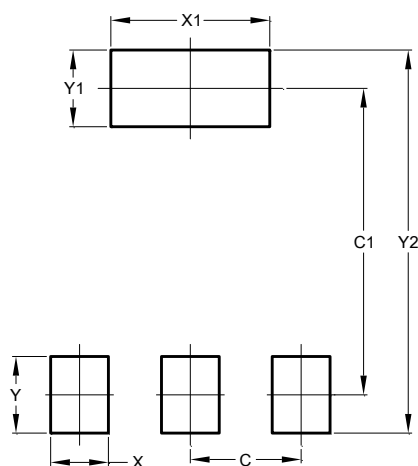
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
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)
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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