

**SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET**
**Features and Benefits**

- 6A Pulse Drain Current
- Fast Switching Speed
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Applications**

- DC-DC Converters
- Solenoids / Relay Driver for Automotive

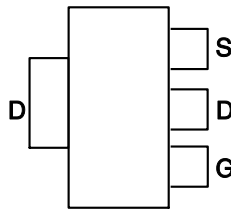
**Mechanical Data**

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.112 grams (Approximate)

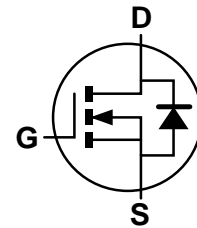
SOT223



Top View



Pin Out - Top



Equivalent Circuit

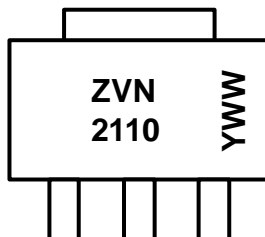
**Ordering Information** (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZVN2110GTA	ZVN2110	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**

SOT223



ZVN2110 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 5= 2015)  
 WW or  $\bar{W}W$  = Week Code (01~53)

**ABSOLUTE MAXIMUM RATINGS** (@T<sub>A</sub> = +25°C, unless otherwise stated.)

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	I <sub>D</sub>	500	mA
Pulsed Drain Current	I <sub>DM</sub>	6	A
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 stated.)

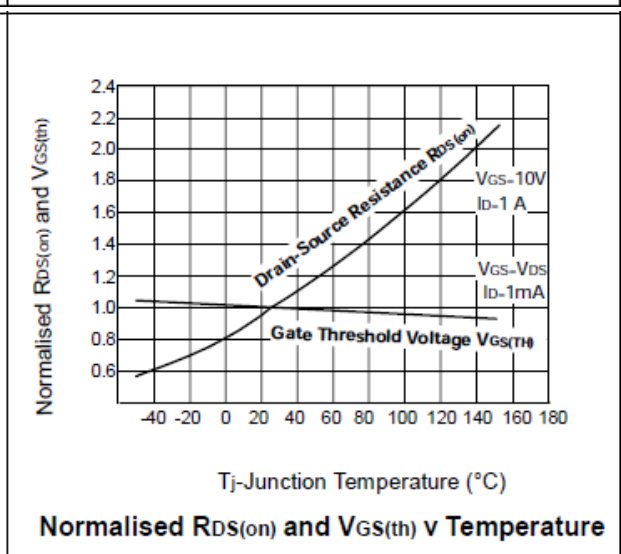
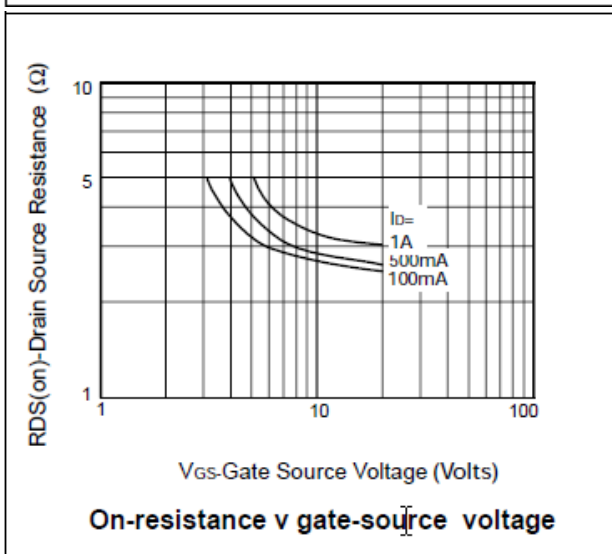
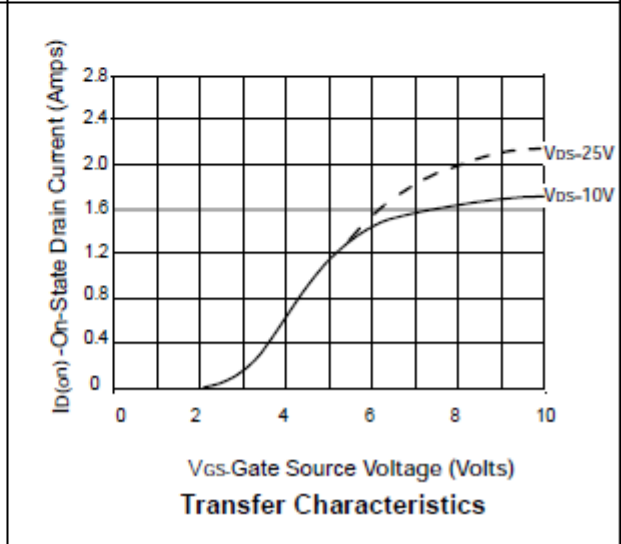
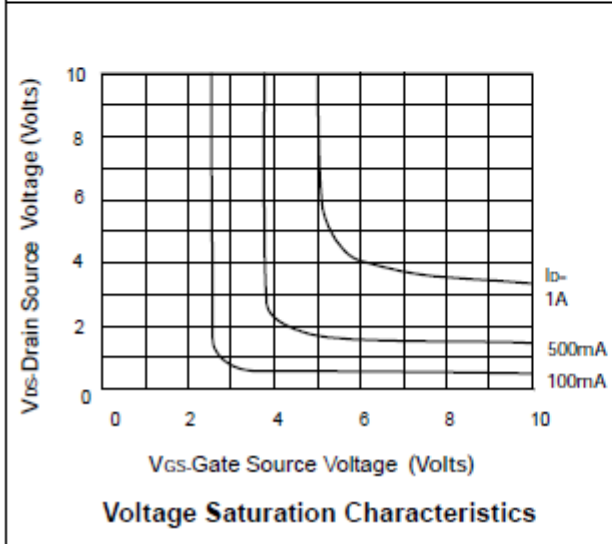
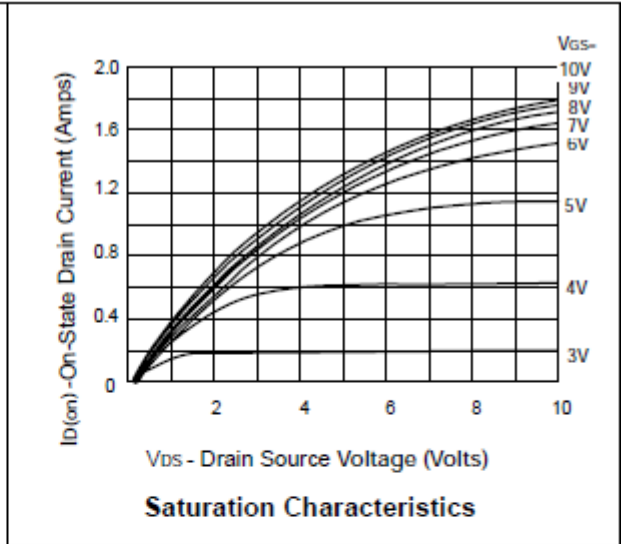
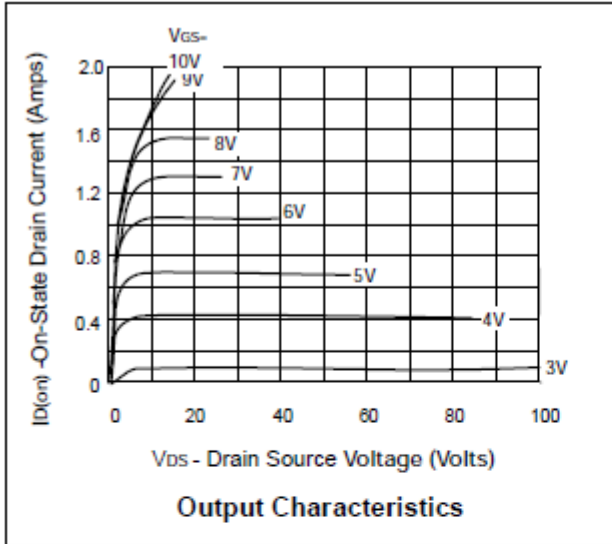
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	1 100	μA μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V, T = +125°C(6)
Gate-Body Leakage	I <sub>GSS</sub>	-	0.1	20	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
On-State Drain Current (Note 5)	I <sub>D(ON)</sub>	1.5	2	-	A	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 25V
<b>ON CHARACTERISTICS</b>						
Gate-Source 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-State Resistance (Note 5)	R <sub>DS(ON)</sub>	-	-	4	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1A
Forward Transconductance (Notes 5 & 6)	g <sub>fs</sub>	250	350	-	mS	V <sub>DS</sub> = 25V, I <sub>D</sub> = 1A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance (Note 6)	C <sub>iss</sub>	-	59	75	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz
Common Source Output Capacitance (Note 6)	C <sub>oss</sub>	-	16	25	pF	
Reverse Transfer Capacitance (Note 6)	C <sub>rss</sub>	-	4	8	pF	
Turn-On Delay Time (Notes 6 & 7)	t <sub>D(ON)</sub>	-	4	7	ns	V <sub>DD</sub> = 25V, I <sub>D</sub> = 1A
Rise Time (Notes 6 & 7)	t <sub>R</sub>	-	4	8	ns	
Turn-Off Delay Time (Notes 6 & 7)	t <sub>D(OFF)</sub>	-	8	13	ns	
Fall Time (Notes 6 & 7)	t <sub>F</sub>	-	8	13	ns	

**DRAIN-SOURCE DIODE CHARACTERISTICS**

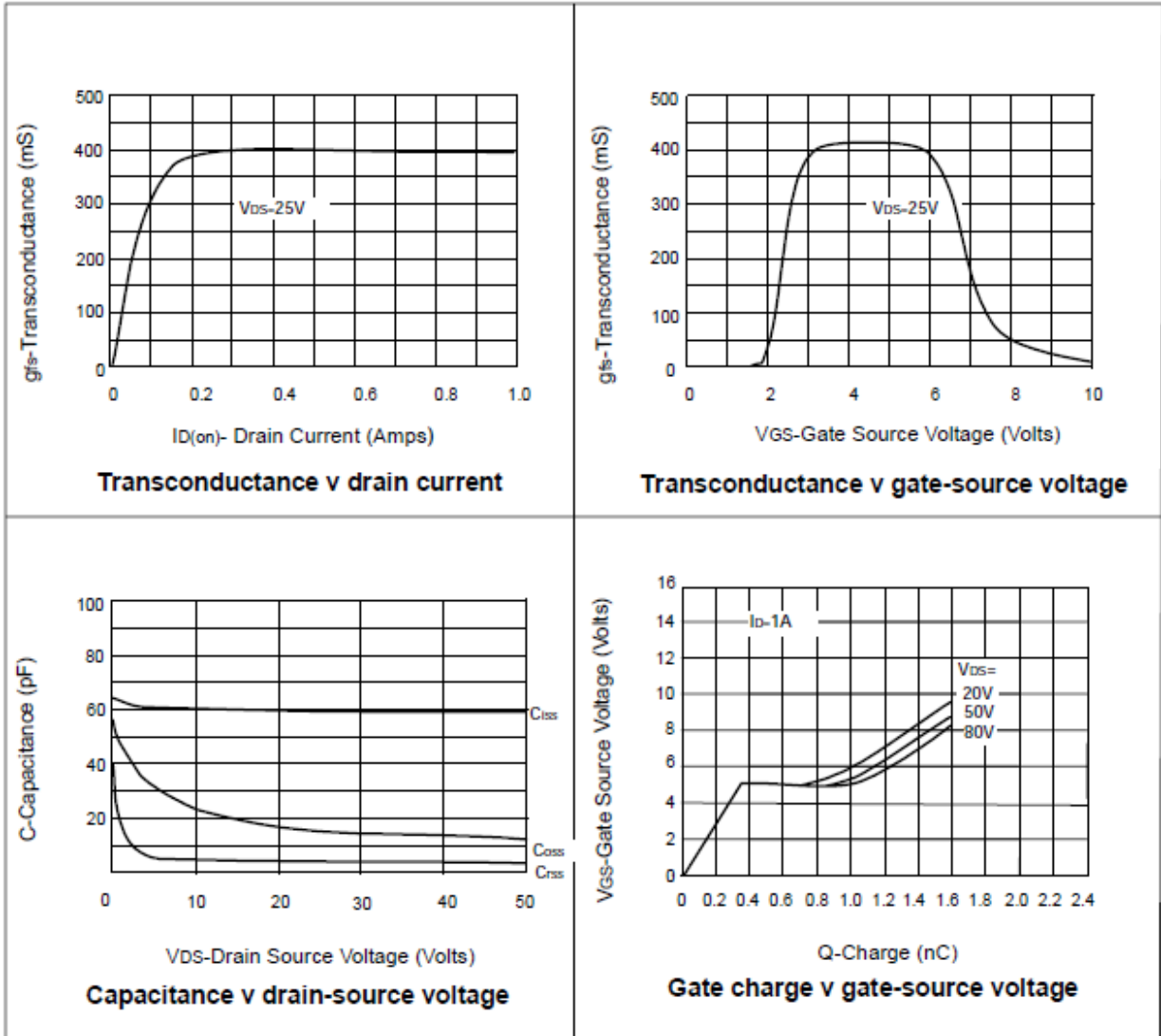
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	-	0.82	-	V	I <sub>S</sub> = 0.32A, V <sub>GS</sub> = 0
Reverse Recovery Time	T <sub>RR</sub>	-	112	-	ns	I <sub>F</sub> = 0.32A, V <sub>GS</sub> = 0, I <sub>R</sub> = 0.1A

- 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.

## TYPICAL CHARACTERISTICS

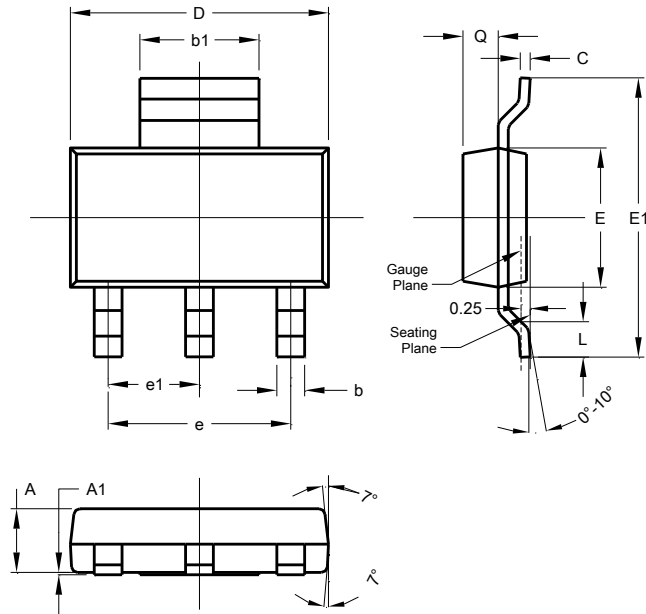


## TYPICAL CHARACTERISTICS



**Package Outline Dimensions**

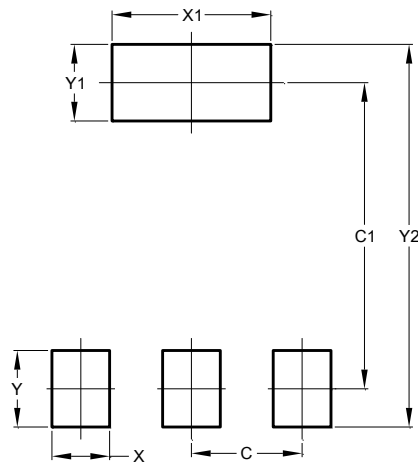
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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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