

## Features and Benefits

- $V_{(BR)DSS} > 60V$
- $R_{DS(ON)} \leq 2\Omega @ V_{GS} = 10V$
- Maximum Continuous Drain Current  $I_D = 0.71A$
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

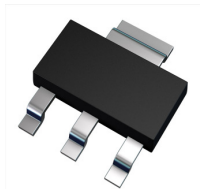
## Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish (Ⓔ3)
- Weight: 0.112 grams (Approximate)

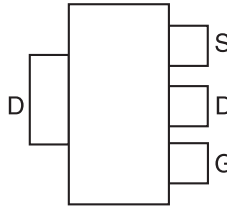
## Applications

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

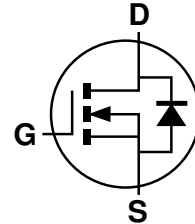
SOT223



Top View



Pin Out - Top



Equivalent Circuit

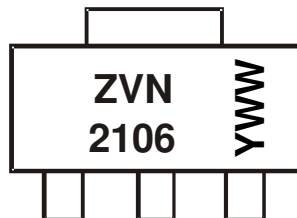
## Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZVN2106GTA	ZVN2106	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



ZVN2106 = 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)

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	0.71	A
Pulsed Drain Current (Note 6)	$I_{DM}$	8	A

**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

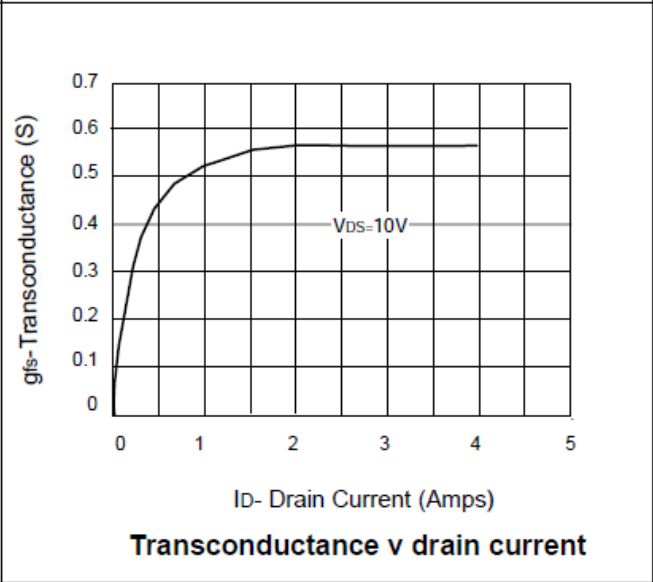
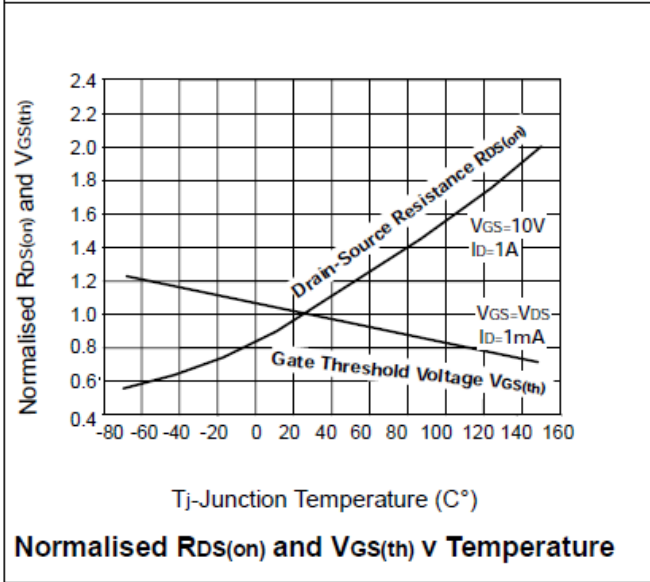
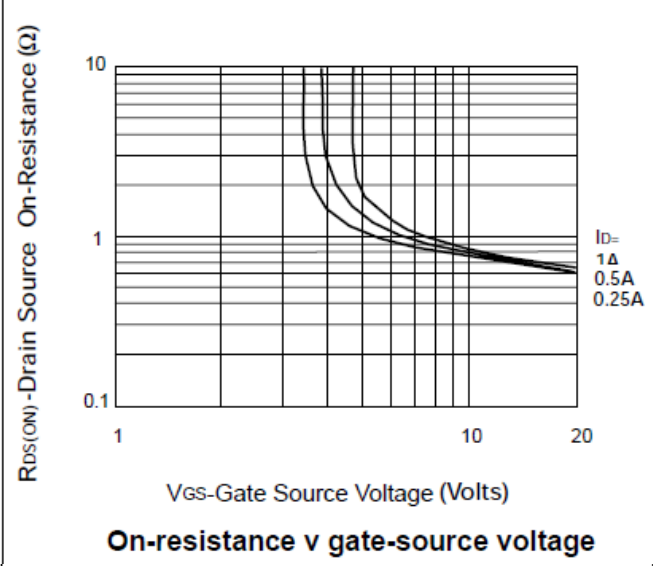
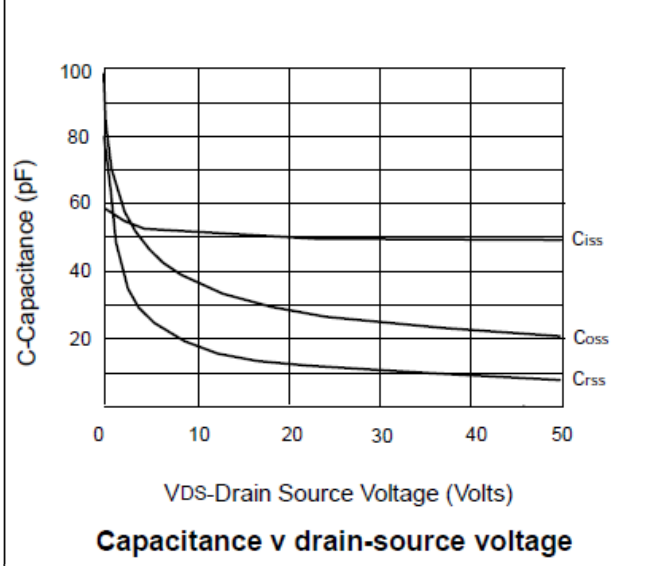
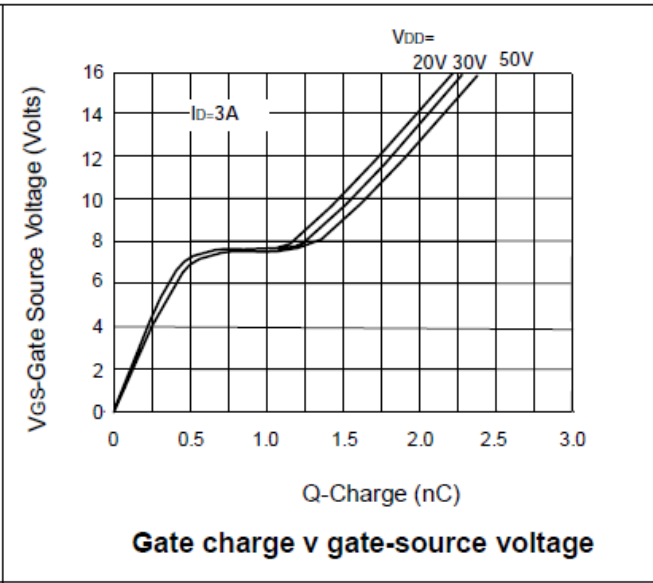
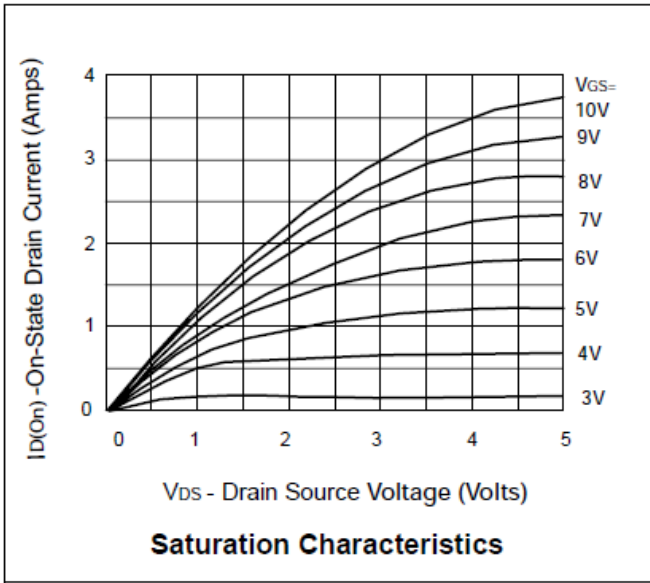
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	2	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	60	-	-	V	$V_{GS} = 0V, I_D = 1mA$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	$I_{DSS}$	-	-	500 100	nA $\mu\text{A}$	$V_{DS} = 60V, V_{GS} = 0V$ $V_{DS} = 48V, V_{GS} = 0V, T_A = +125^\circ\text{C}$
Gate-Source Leakage	$I_{GSS}$	-	-	$\pm 20$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
On-State Drain Current	$I_{D(ON)}$	2	-	-	A	$V_{GS} = 10V, V_{DS} = 18V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	0.8	-	2.4	V	$V_{DS} = V_{GS}, I_D = 1mA$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	2	$\Omega$	$V_{GS} = 10V, I_D = 1.0A$
Forward Transconductance	$g_{fs}$	0.3	-	-	S	$V_{DS} = 18V, I_D = 1.0A$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	-	-	75	pF	$V_{DS} = 18V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	-	-	45	pF	
Reverse Transfer Capacitance	$C_{rss}$	-	-	20	pF	
Turn-On Delay Time	$t_{D(ON)}$	-	-	7	ns	$V_{DD} = 18V, I_D = 1A, V_{GEN} = 10V,$ $R_{GS} = 50\Omega$
Turn-On Rise Time	$t_R$	-	-	8	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	-	-	12	ns	
Turn-Off Fall Time	$t_F$	-	-	15	ns	

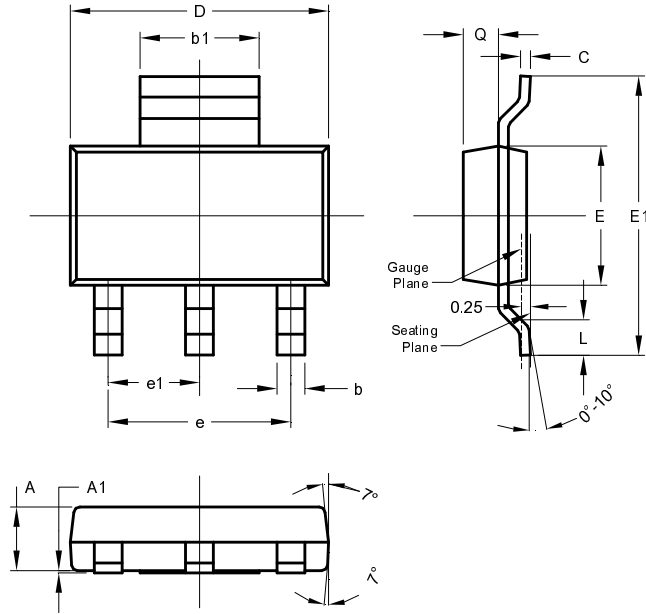
- Notes:
5. For a device mounted on 50mm x 50mm x 1.6mm FR-4 PCB with high coverage of single sided 2oz copper, in still air condition.
  6. Device mounted on minimum recommended pad layout test board, 10 $\mu\text{s}$  pulse duty cycle = 1%.
  7. Short duration pulse test used to minimize self-heating effect.
  8. Guaranteed by design. Not subject to production testing.

**Typical Characteristics**



**Package Outline Dimensions**

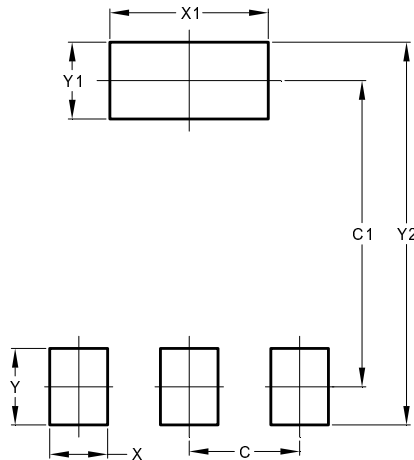
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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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