60V P-CHANNEL ENHANCEMENT MODE VERTICAL DMOSFET

Product Summary

BV_{DSS}	$R_{DS(on)}$	I_D T_A = +25°C
-60V	5Ω @ V_{GS}= -10V	-450mA

Description

This MOSFET is designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Load Switch
- DC-DC Converters

Features and Benefits

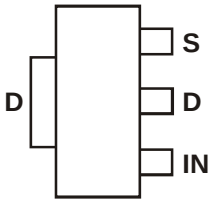
- Low On-Resistance
- Fast Switching Speed
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

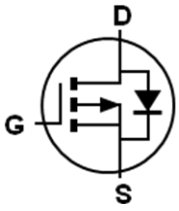
- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.112 grams (Approximate)

SOT223

Top View



Top view
Pin Out



Equivalent Circuit

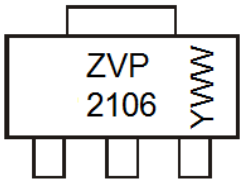
Ordering Information (Note 4)

Product	Case	Quantity per reel
ZVP2106GTA	SOT223	1,000

Note:
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 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



ZVP2106 = Product Type Marking Code
YWW = Date Code Marking
Y or Y= Year (ex: 5 = 2015)
WW or WW = Week (01 - 53)

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

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-450	M A
Pulsed Drain Current	I_{DM}	-4	A

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

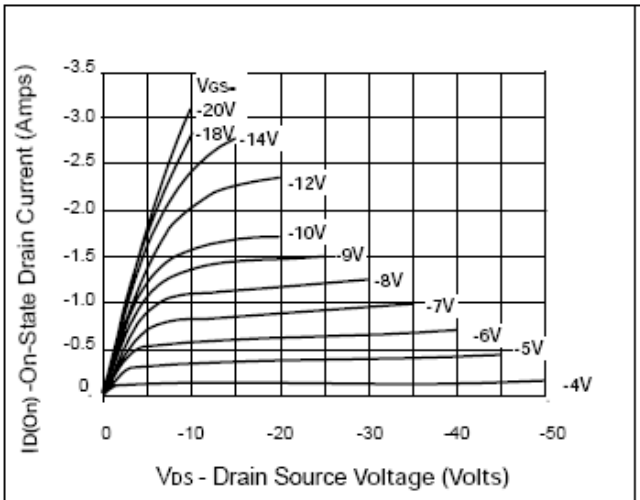
Characteristic	Symbol	Value	Units
Power Dissipation	P_{TOT}	2	W
Storage Temperature Range	T_{STG}	-55 to +150	°C

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

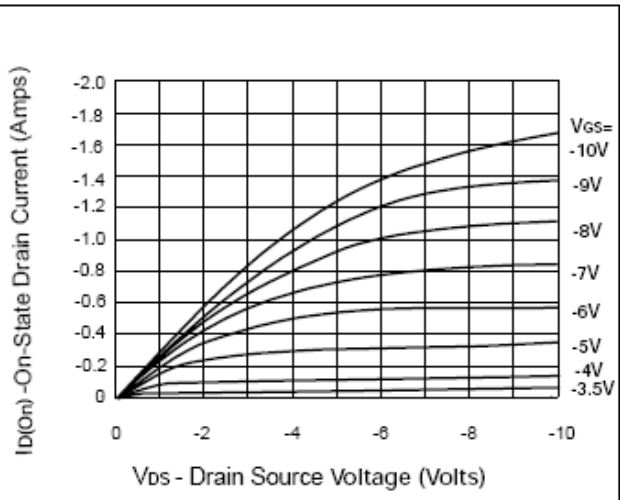
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	-60	—	—	V	I_D = -1mA, V_{GS} = 0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.5	—	-3.5	V	I_D = -1mA, V_{DS} = V_{GS}
Gate-Body Leakage	I_{GSS}	—	—	20	nA	V_{GS} = ±20V, V_{DS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-0.5	µA	V_{DS} = -60V, V_{GS} = 0V
				-100	µA	V_{DS} = -48V, V_{GS} = 0V, T= +125°C (Note 6)
On-State Drain Current (Note 5)	$I_{D(on)}$	-1	—	—	A	V_{DS} = -18V, V_{GS} = -10V
Static Drain-Source On-State Resistance (Note 5)	$R_{DS(on)}$	—	—	5	Ω	V_{GS} = -10V, I_D = -500mA
Forward Transconductance (Notes 5 & 6)	g_{fS}	150	—	—	mS	V_{DS} = -18V, I_D = -500mA
Dynamic Characteristics (Note 6)						
Input Capacitance	C_{iss}	—	—	100	pF	V_{DS} = -18V, V_{GS} = 0V, f=1MHz
Common Source Output Capacitance	C_{oss}	—	—	60		
Reverse Transfer Capacitance	C_{rss}	—	—	20		
Turn-On Delay Time (Note 7)	$t_{d(on)}$	—	—	7	ns	V_{DD} = -18V, I_D = -500mA
Rise Time (Note 7)	t_r	—	—	5		
Turn-Off Delay Time (Note 7)	$t_{d(off)}$	—	—	12		
Fall Time (Note 7)	t_f	—	—	15		

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.

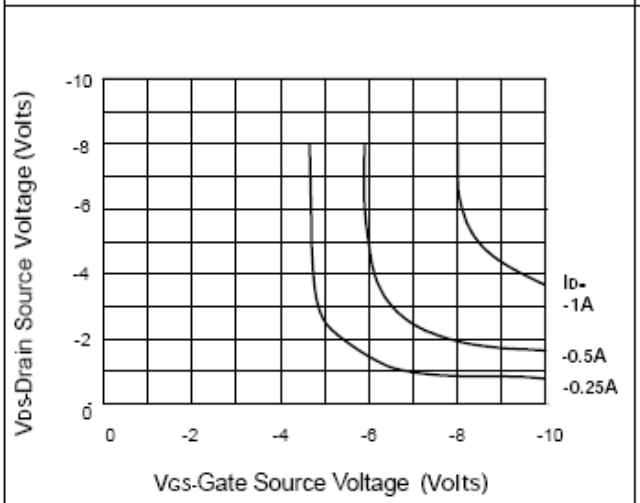
Typical Characteristics



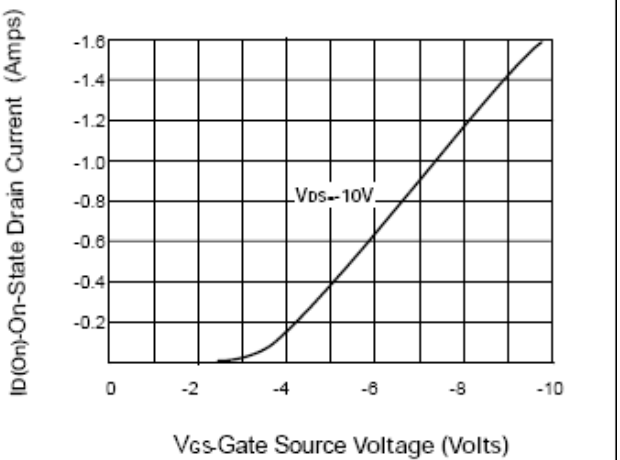
Output Characteristics



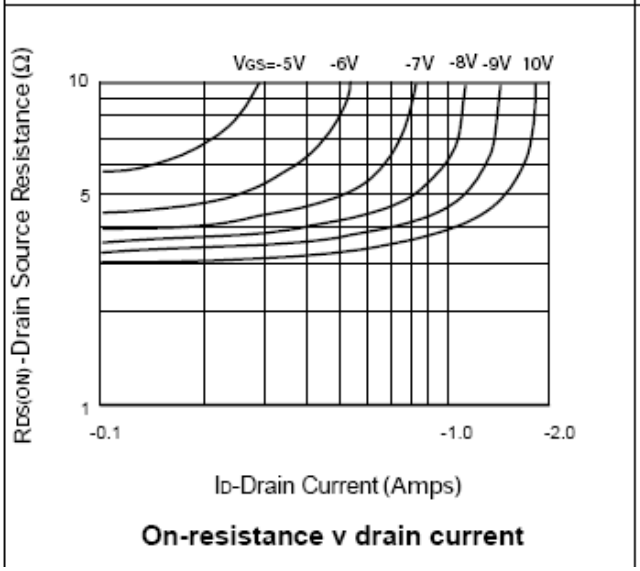
Saturation Characteristics



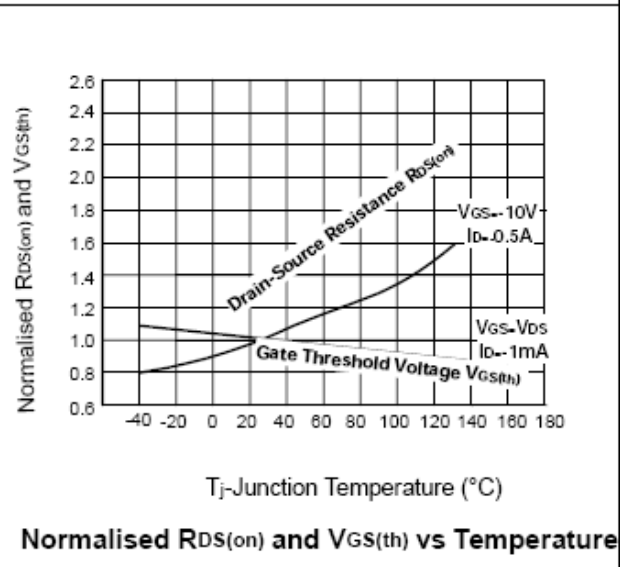
Voltage Saturation Characteristics



Transfer Characteristics

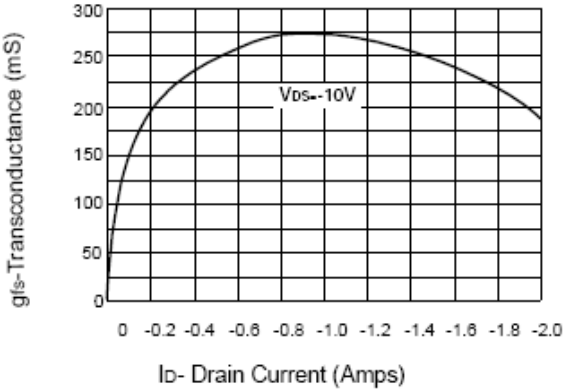


On-resistance v drain current

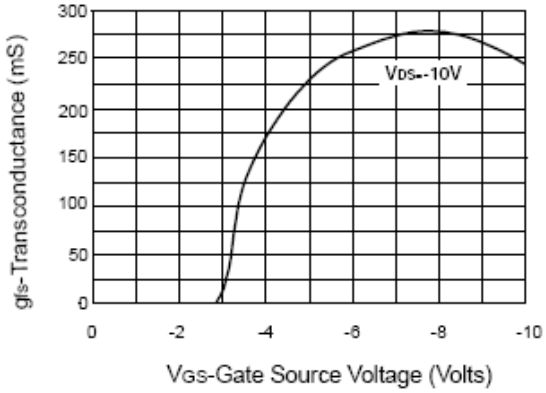


Normalised $R_{DS(on)}$ and $V_{GS(th)}$ vs Temperature

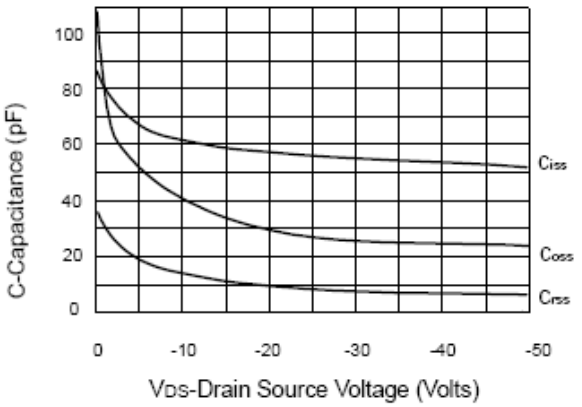
Typical Characteristics (cont.)



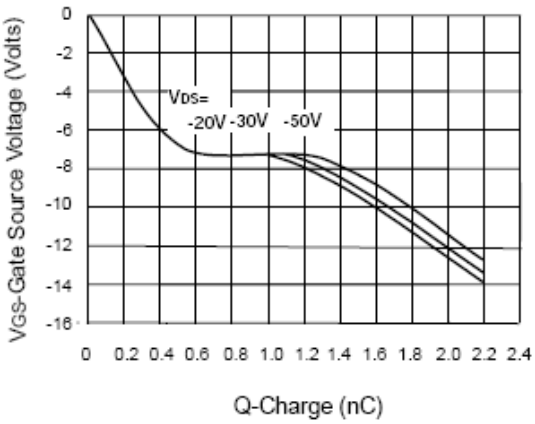
Transconductance v drain current



Transconductance v gate-source voltage



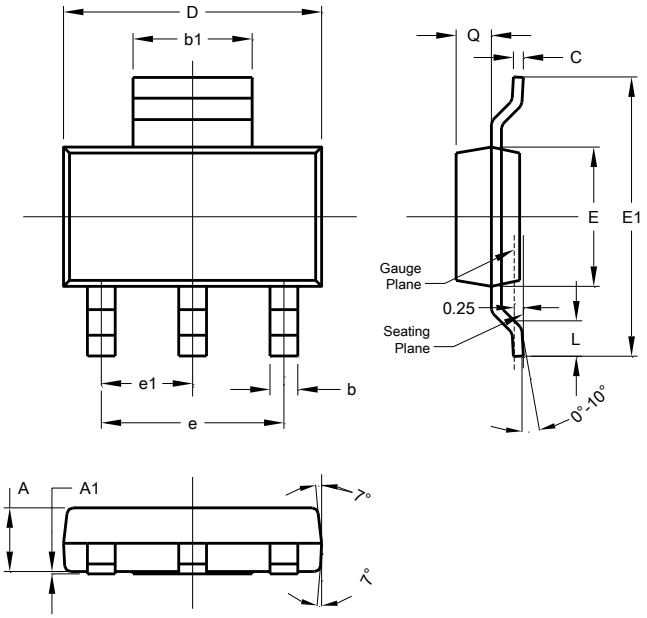
Capacitance v drain-source voltage



Gate charge v gate-source voltage

Package Outline Dimensions

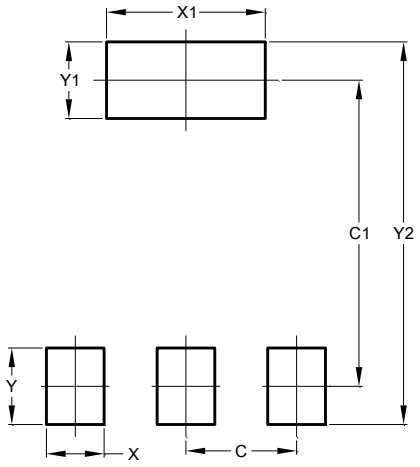
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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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