SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

Product Summary

BV_{DSS}	$R_{DS(on)}$	I_D T_A = +25°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)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, 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 MOSFET is designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high efficiency power management applications

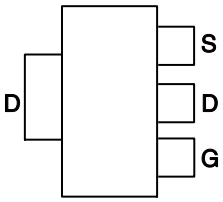
Mechanical Data

- Package: SOT223 (Type DN)
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

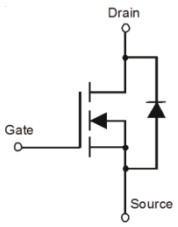
SOT223(Type DN)



Top View



Pin Out - Top View



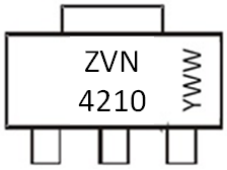
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
ZVN4210GTA	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



ZVN4210 = Product Type Marking Code
YWW = Date Code Marking
Y or Y= Year (ex: 1 = 2021)
WW or WW = Week (01 to 53)

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current V_{GS} = 10V	T_A = +25°C	I_D	800	mA
Pulsed Drain Current		I_{DM}	6	A

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation	T_A = +25°C	P_D	2	W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

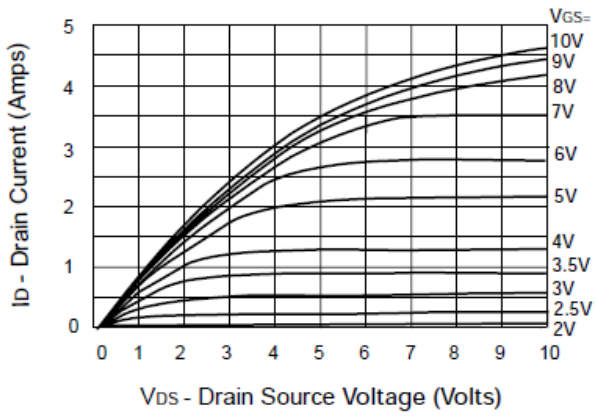
Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	100	–	–	V	V_{GS} = 0V, I_D =1mA
Zero Gate Voltage Drain Current	I_{DSS}	– –	– –	10 100	μA μA	V_{DS} = 100V, V_{GS} = 0V V_{DS}=80V, V_{GS}=0V, T=125°C (Note 6)
Gate-Source Leakage	I_{GSS}	–	–	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	–	2.4	V	V_{DS} = V_{GS}, I_D = 1mA
Static Drain-Source On-Resistance	$R_{DS(on)}$	–	–	1.5	Ω	V_{GS} = 10V, I_D = 1.5A
		–	–	1.8	Ω	V_{GS} = 5V, I_D = 0.5A
Diode Forward Voltage (Note 5)	V_{SD}	– –	0.79 0.89	– –	V	I_S =0.32A, V_{GS} =0V I_S =1.0A, V_{GS} =0V
On-State Drain Current (Note 5)	$I_{D(on)}$	2.5	–	–	A	V_{DS} =25V, V_{GS} =10V
Forward Transconductance (Notes 5, 6)	g_{fs}	250	–	–	mS	V_{DS} =25V,I_D =1.5A
Reverse Recovery Time (to I_R =10%)	t_{RR}	–	135	–	ns	I_F =0.45A, V_{GS} =0V, I_R =100mA, V_R =10V
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	–	–	100	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	–	–	40	pF	
Reverse Transfer Capacitance	C_{rss}	–	–	12	pF	
Turn-On Delay Time (Note 7)	$t_{D(on)}$	–	–	4	ns	V_{DD} = 25V, I_D=1.5A
Turn-On Rise Time (Note 7)	t_R	–	–	8	ns	
Turn-Off Delay Time (Note 7)	$t_{D(off)}$	–	–	20	ns	
Turn-Off Fall Time (Note 7)	t_F	–	–	30	ns	

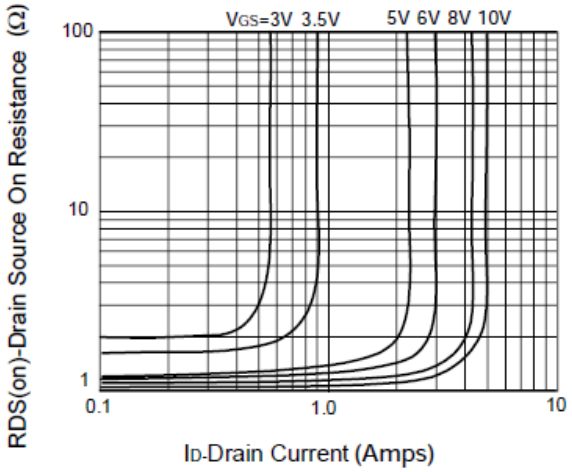
Notes:
5. Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2%.
6. Sample test.
7. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator. Spice parameter data is available upon request for this device

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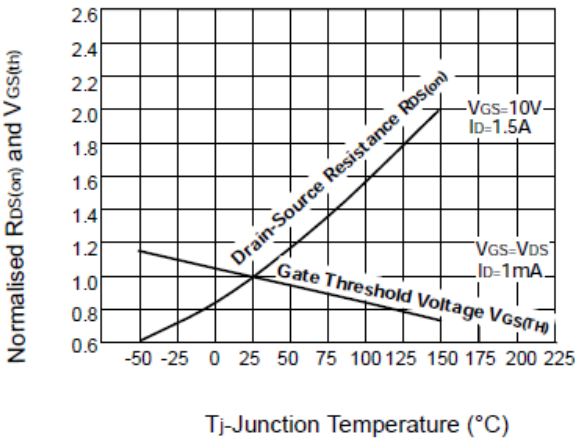
Electrical Characteristics



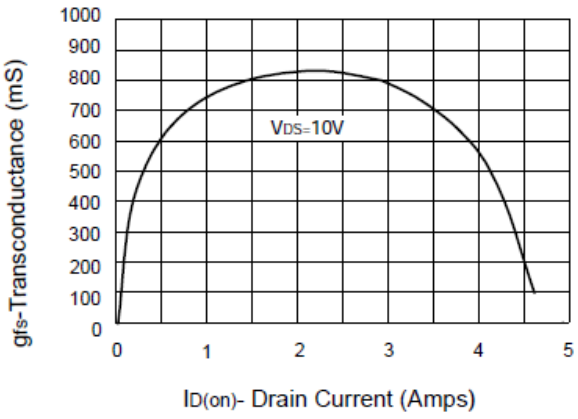
Saturation Characteristics



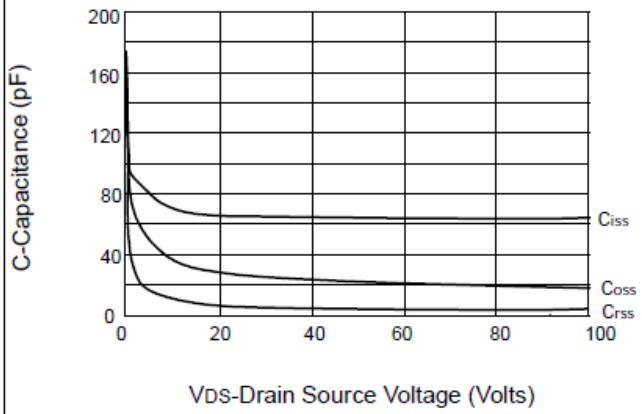
On-resistance v drain current



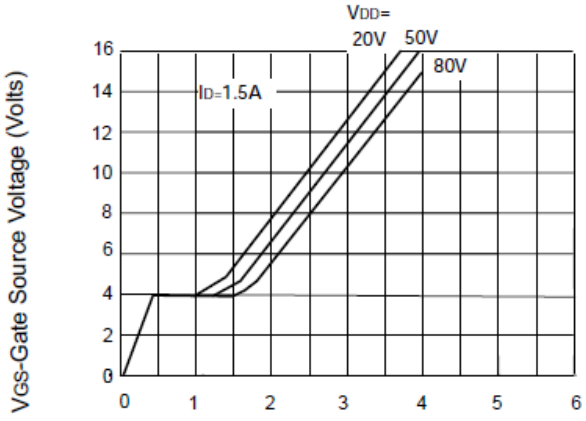
Normalised RDS(on) and VGS(th) v Temperature



Transconductance v drain current



Capacitance v drain-source voltage



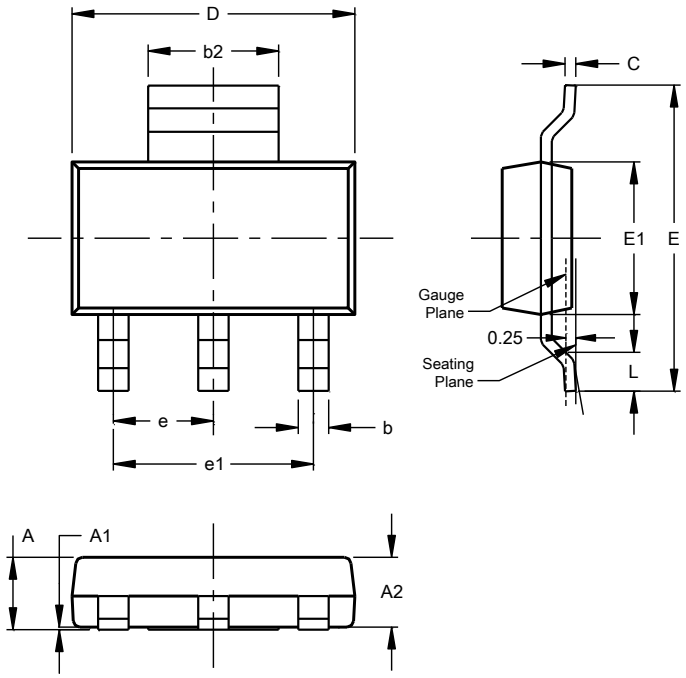
Gate charge v gate-source voltage

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Package Outline Dimensions

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

SOT223 (Type DN)

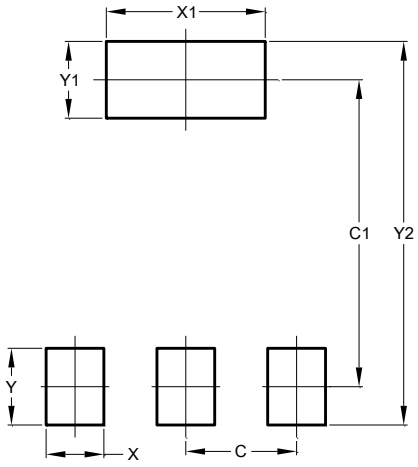


SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

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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