

SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET
Product Summary

BV _{DSS}	R _{DS(on)}	I _D T _A = +25°C
60V	0.33Ω @ V _{GS} = 10V	2.1A

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.

- DC-DC converters
- Solenoids/relay driver for automotive applications
- Stepper motor drivers

Features and Benefits

- BV_{DSS} = 60V
- R_{DS(on)} = 0.33Ω
- 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](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>

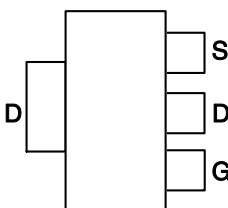
Mechanical Data

- 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 Ⓔ3
- Weight: 0.112 grams (Approximate)

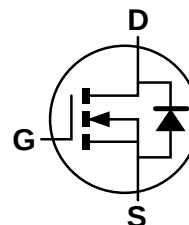
SOT223(Type DN)



Top View



Pin Out - Top View

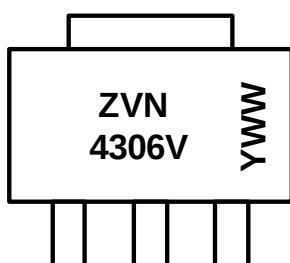


Equivalent Circuit

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
ZVN4306GVTA	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


ZVN4306V = Product Type Marking Code
 YWW = Date Code Marking
 Y or Y̅ = Last Digit of Year (ex: 1= 2021)
 WW or WW = Week Code (01-53)

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	2.1	A
Pulsed Drain Current	I_{DM}	15	A
Power Dissipation	P_{tot}	3	W
Avalanche Current-Repetitive	I_{AR}	1	A
Avalanche Energy-Repetitive	E_{AR}	25	mJ
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 stated.)

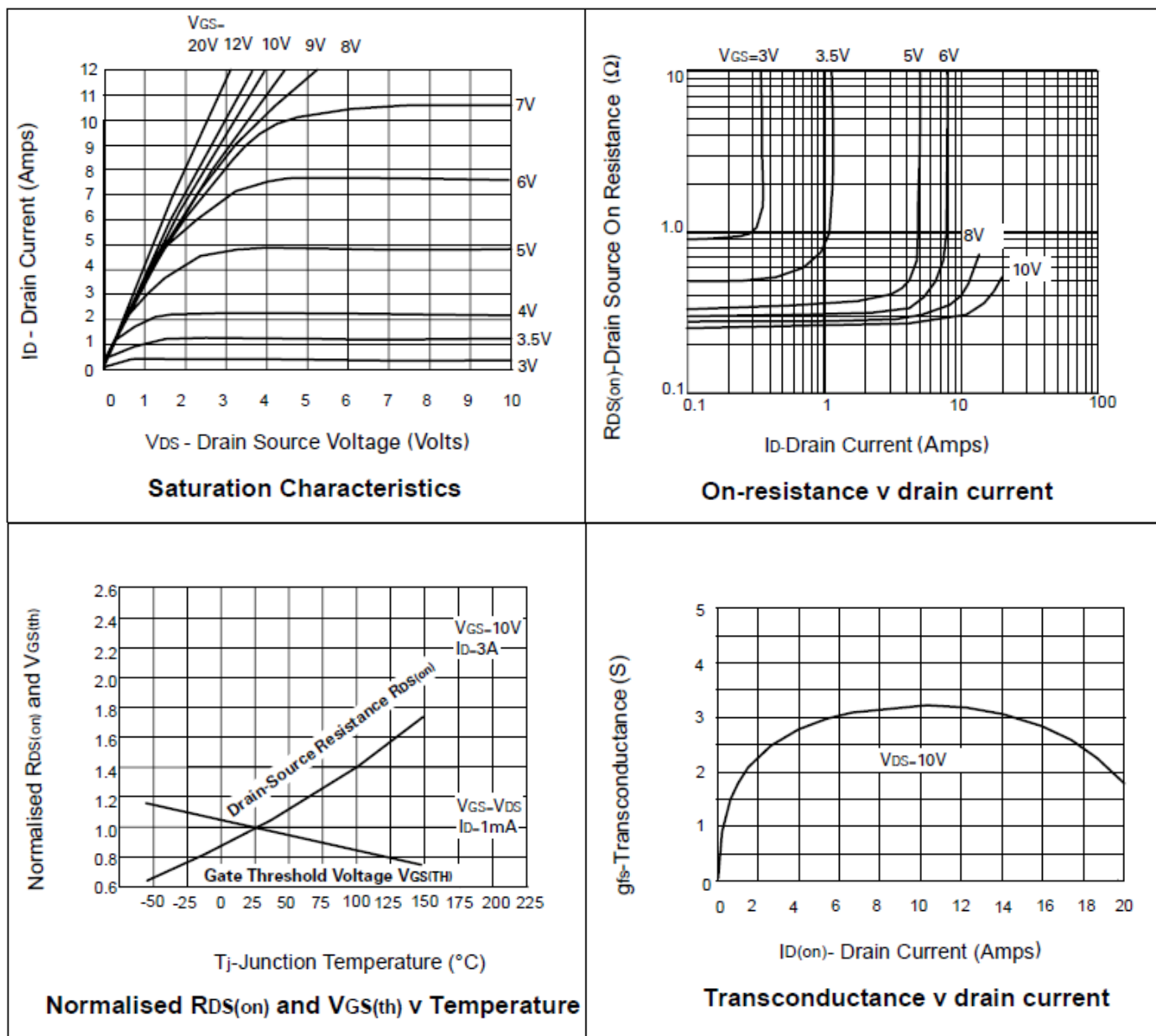
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	$V_{GS} = 0V, I_D = 1mA$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	10 100	μA μA	$V_{DS} = 60V, V_{GS} = 0V$ $V_{DS} = 48V, V_{GS} = 0V, T = +125^{\circ}\text{C}$ (Note 6)
Gate-Body Leakage	I_{GSS}	-	-	20	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
On-State Drain Current (Note 5)	$I_{D(on)}$	12	-	-	A	$V_{GS} = 10V, V_{DS} = 10V$
ON CHARACTERISTICS						
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.3	-	3	V	$V_{DS} = V_{GS}, I_D = 1mA$
Static Drain-Source On-State Resistance (Note 5)	$R_{DS(on)}$	-	0.22	0.33	Ω	$V_{GS} = 10V, I_D = 3A$
		-	0.32	0.45	Ω	$V_{GS} = 5V, I_D = 1.5A$
Forward Transconductance (Notes 5, 6)	g_{fs}	0.7	-	-	S	$V_{DS} = 25V, I_D = 3A$
DYNAMIC CHARACTERISTICS						
Input Capacitance (Note 6)	C_{iss}	-	-	350	pF	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$
Common Source Output Capacitance (Note 6)	C_{oss}	-	-	140	pF	
Reverse Transfer Capacitance (Note 6)	C_{rss}	-	-	30	pF	
Turn-On Delay Time (Notes 6, 7)	$t_{D(on)}$	-	-	8	ns	$V_{DD} \approx 25V, V_{GEN} = 10V, I_D = 3A$
Rise Time (Notes 6, 7)	t_R	-	-	25	ns	
Turn-Off Delay Time (Notes 6, 7)	$t_{D(off)}$	-	-	30	ns	
Fall Time (Notes 6, 7)	t_F	-	-	16	ns	

Drain-Source Diode Characteristics

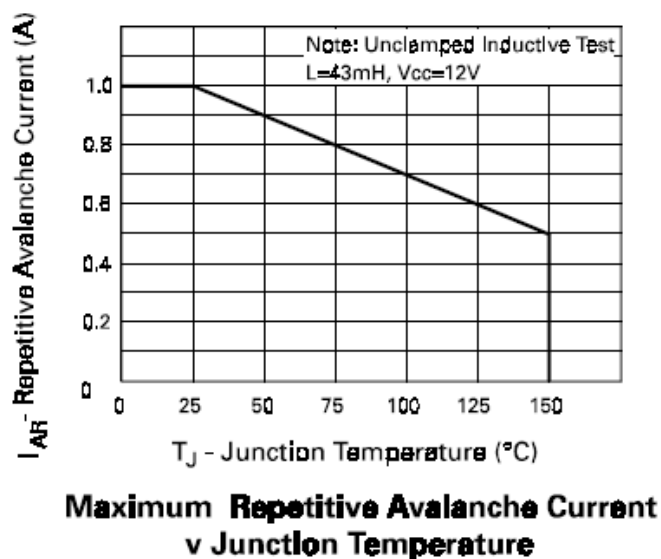
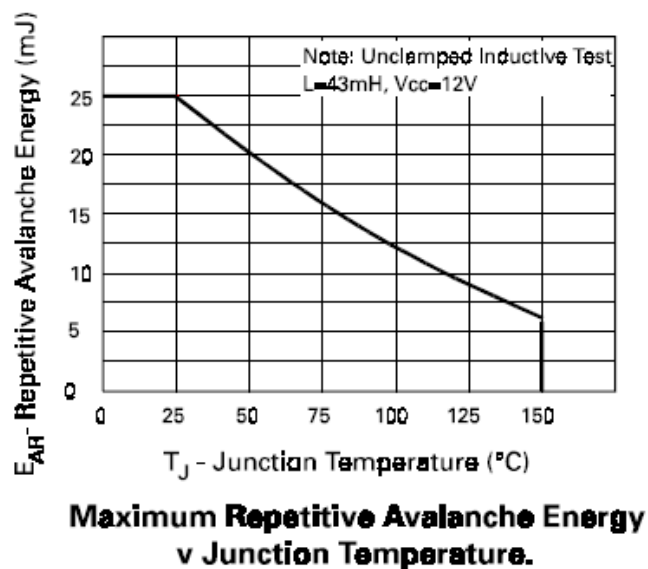
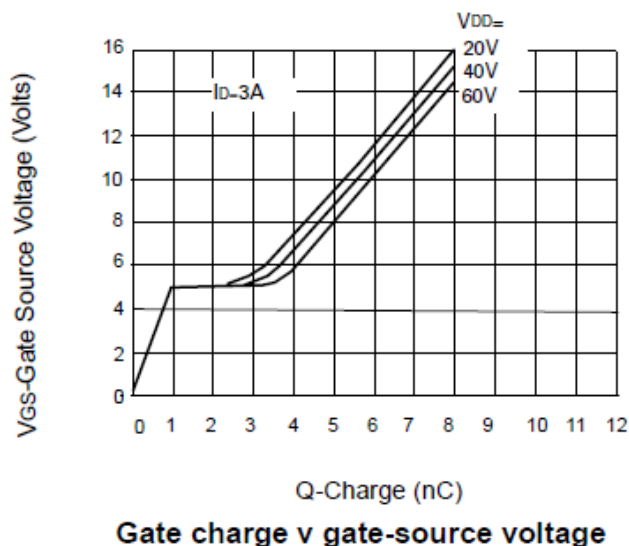
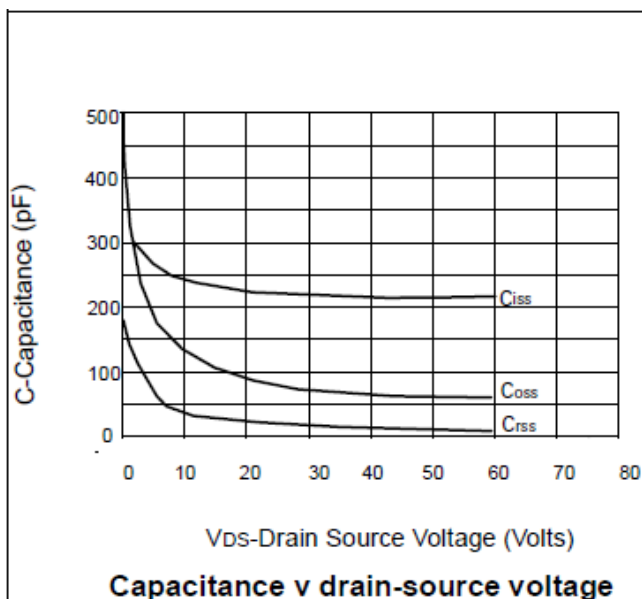
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Diode Forward Voltage (Note 5)	V_{SD}	-	0.82	-	V	$I_S = 0.32A, V_{GS} = 0$
Reverse Recovery Time	T_{RR}	-	112	-	ns	$I_F = 0.32A, V_{GS} = 0, I_R = 0.1A$

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

Typical Characteristics



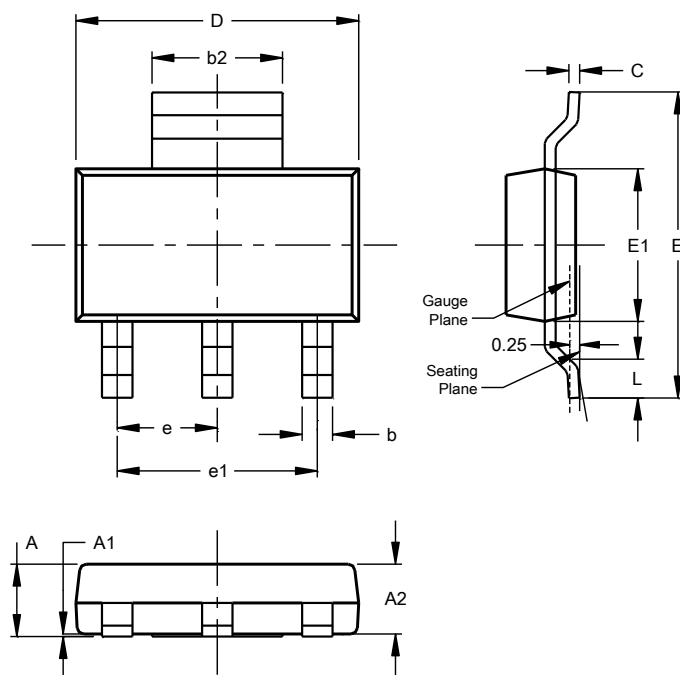
Typical Characteristics



Package Outline Dimensions

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

SOT223 (Type DN)

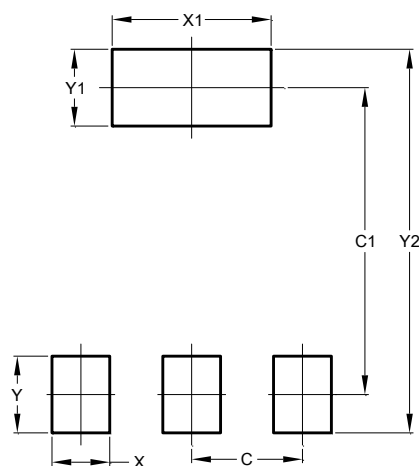


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

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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