

## Product Summary

BV <sub>DSS</sub>	Max R <sub>DS(ON)</sub>	Max I <sub>D</sub> T <sub>A</sub> = +25°C
240V	5.5Ω @ V <sub>GS</sub> = 10V	500mA

## Description and Applications

This MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Earth Recall and Dialing Switches
- Electronic Hook Switches
- Battery Powered Equipment
- Telecoms and High Voltage DC-DC Convertors

## Features and Benefits

- 240 Volt BV<sub>DSS</sub>
- Extremely Low R<sub>DS(ON)</sub>=4.3Ω
- Low Threshold and Fast Switching
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

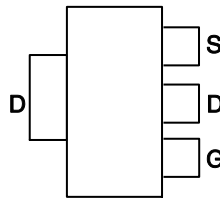
## Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208
- Weight: 0.112 grams (Approximate)

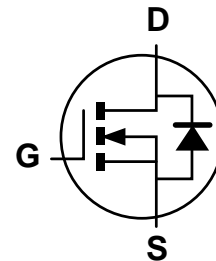
SOT223 (Type DN)



Top View



Pin Out Top-View



Equivalent Circuit

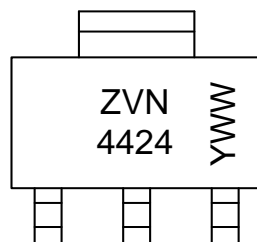
## Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
ZVN4424GTA	Standard	SOT223 (Type DN)	1,000
ZVN4424GQTA	Automotive	SOT223 (Type DN)	1,000

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

SOT223 (Type DN)



ZVN 4424 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or Ȳ = Last Digit of Year (ex: 8 = 2018)  
 WW or WW = Week Code (01 to 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	240	V
Gate-Source Voltage	V <sub>GS</sub>	±40	V
Continuous Drain Current	I <sub>D</sub>	500	mA
Pulsed Drain Current	I <sub>DM</sub>	1.5	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

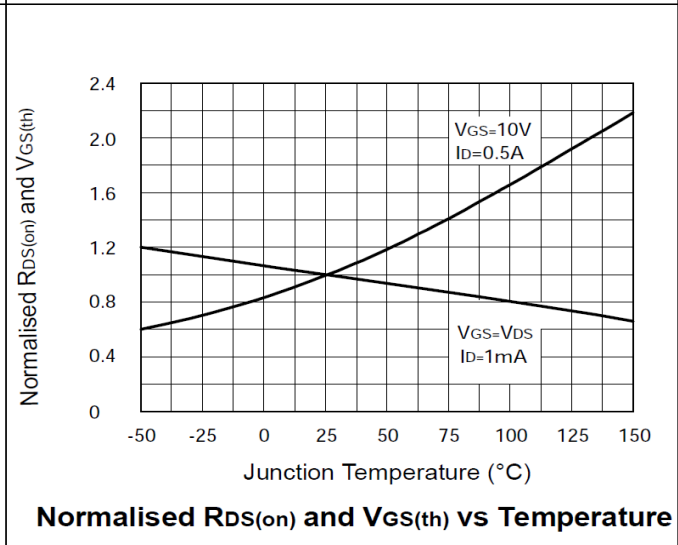
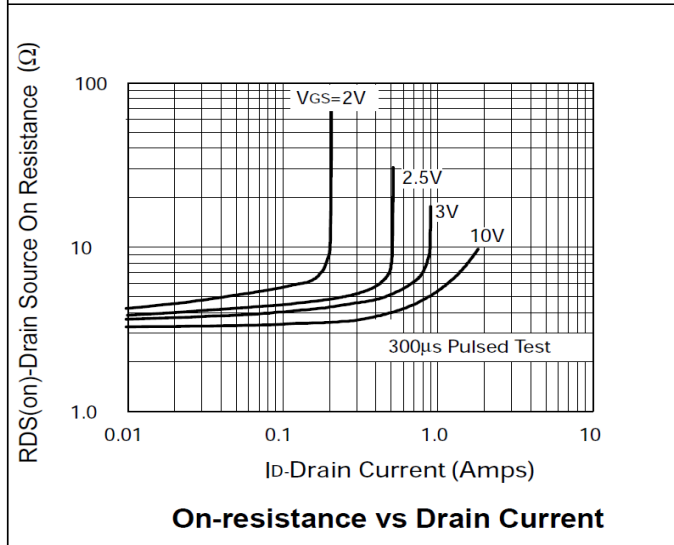
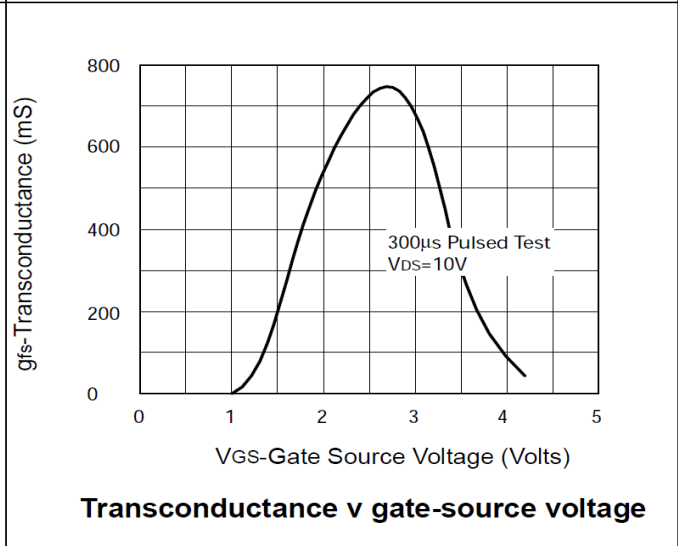
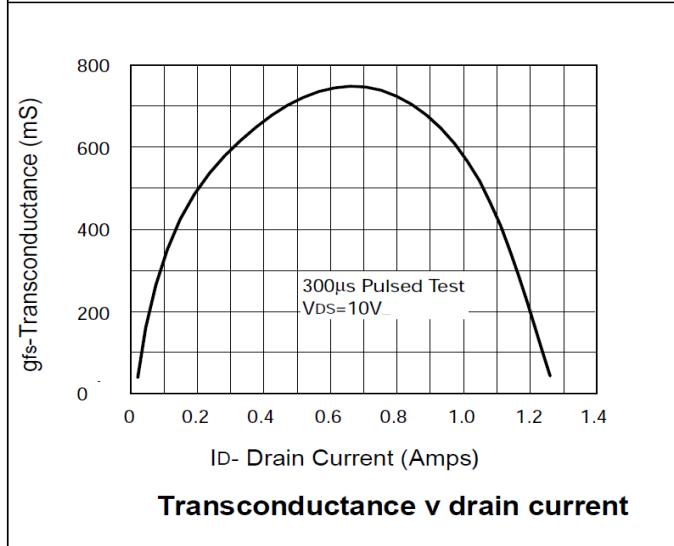
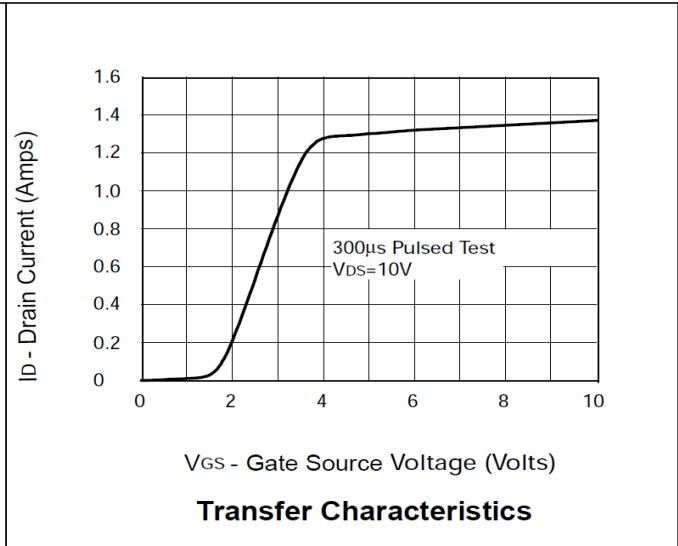
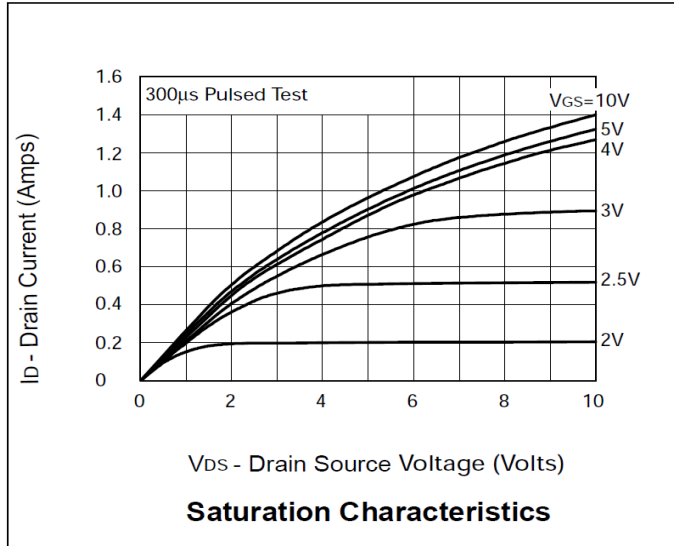
Characteristic	Symbol	Value	Unit
Power Dissipation at T <sub>A</sub> = +25°C	P <sub>TOT</sub>	2.5	W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

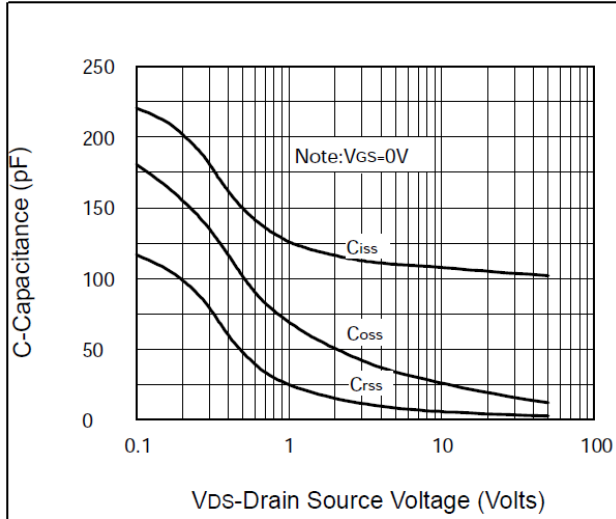
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	240	—	—	V	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	10 100	μA	V <sub>DS</sub> = 240V, V <sub>GS</sub> = 0V V <sub>DS</sub> = 190V, V <sub>GS</sub> = 0V, T <sub>A</sub> = +125°C
Gate-Body Leakage	I <sub>GSS</sub>	—	—	100	nA	V <sub>GS</sub> = ±40V, V <sub>DS</sub> = 0V
Gate-Source Threshold Voltage	V <sub>GS(TH)</sub>	0.8	1.3	1.8	V	I <sub>D</sub> = 1mA, V <sub>DS</sub> = V <sub>GS</sub>
<b>ON CHARACTERISTICS</b>						
On-State Drain Current (Note 6)	I <sub>D(ON)</sub>	0.8	1.4	—	A	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V
Static Drain-Source On-State Resistance (Note 6)	R <sub>DS(ON)</sub>	—	4	5.5	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 500mA
		—	4.3	6		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 500mA
Forward Transconductance (Notes 6 & 7)	g <sub>fs</sub>	0.4	0.75	—	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.5A
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance (Note 7)	C <sub>ISS</sub>	—	110	200	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V f = 1MHz
Output Capacitance (Note 7)	C <sub>OSS</sub>	—	15	25	pF	
Reverse Transfer Capacitance (Note 7)	C <sub>RSS</sub>	—	3.5	15	pF	
Turn-On Delay Time (Notes 7 & 8)	t <sub>D(ON)</sub>	—	2.5	5	ns	V <sub>DD</sub> = 50V, V <sub>GEN</sub> = 10V I <sub>D</sub> = 0.25A
Turn-On Rise Time (Notes 7 & 8)	t <sub>R</sub>	—	5	8	ns	
Turn-Off Delay Time (Notes 7 & 8)	t <sub>D(OFF)</sub>	—	40	60	ns	
Turn-Off Fall Time (Notes 7 & 8)	t <sub>F</sub>	—	16	25	ns	

- Notes:
6. Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2%.
  7. Sample test.
  8. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.

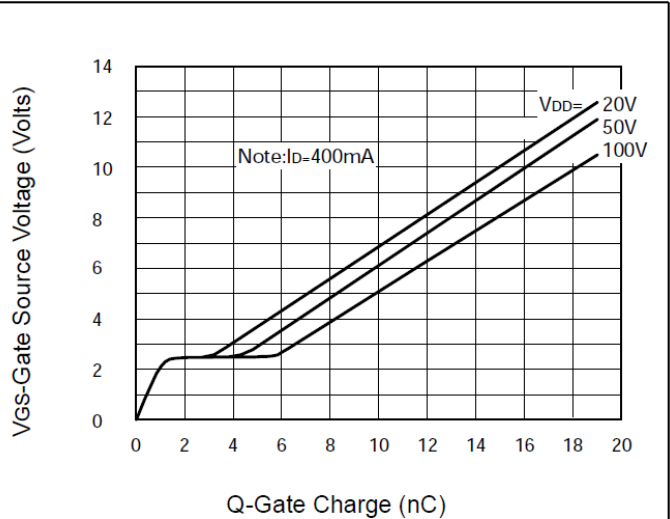
**Typical Characteristics**



**Typical Characteristics (Cont.)**



**Capacitance v drain-source voltage**

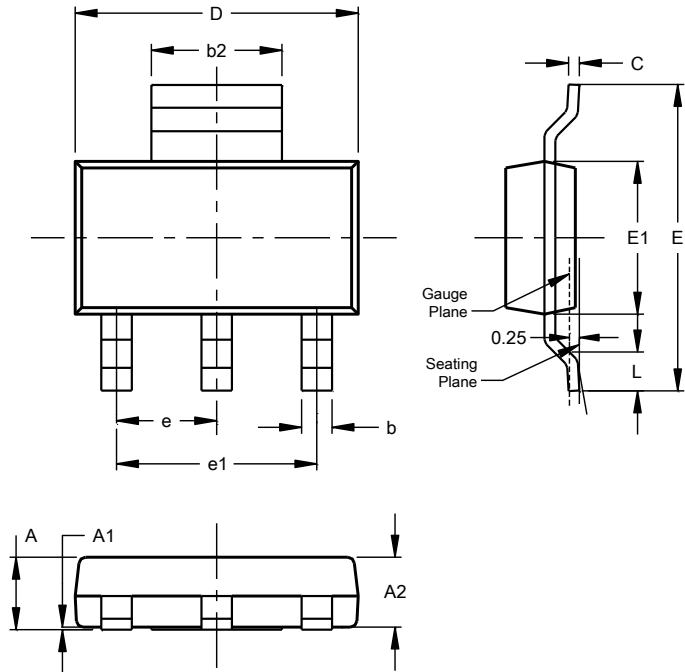


**Gate charge v gate-source voltage**

**Package Outline Dimensions**

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

**SOT223 (Type DN)**



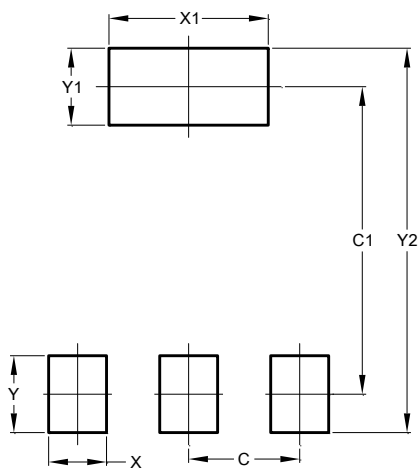
SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--

**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
C2	8.00

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