SOT223 P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

Features and Benefits

- 240 Volt VDS
- $R_{DS(on)}$= 8.8W typical at VGS=-3.5V
- Low Threshold and Fast Switching
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

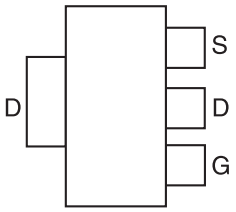
- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish e3
- Weight: 0.112 grams (Approximate)

Applications

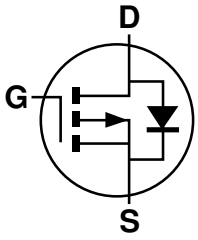
- Electronic Hook Switches
- Telecoms and Battery Powered Equipment

SOT223

Top View



Pin Out - Top



Equivalent Circuit

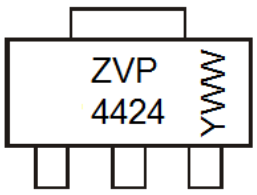
Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZVP4424GTA	ZVP4424	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 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



ZVP4424 = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 5= 2015)
WW or $\overline{WW}$ = Week Code (01~53)

ABSOLUTE MAXIMUM RATINGS

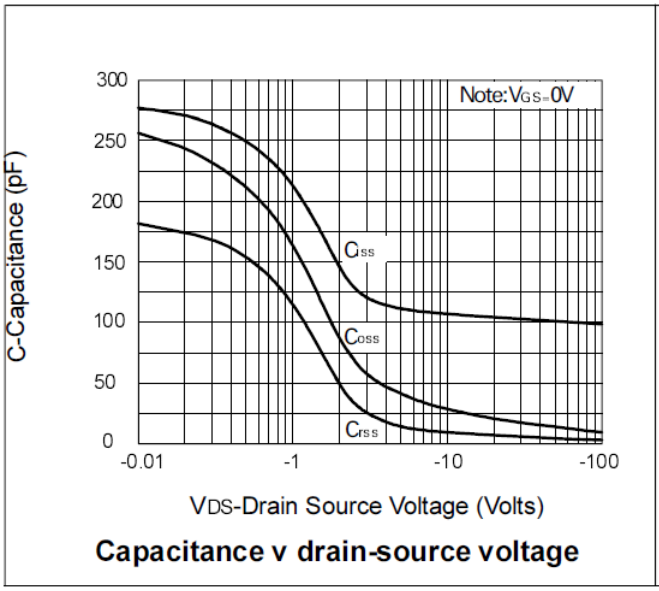
Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-240	V
Gate-Source Voltage	V_{GSS}	±40	V
Continuous Drain Current (@ T_A =+25°C)	I_D	-480	mA
Pulsed Drain Current	I_{DM}	-1.0	A
Power Dissipation (@ T_A =+25°C)	P_D	2.5	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (@ T_A = +25°C, unless otherwise stated.)

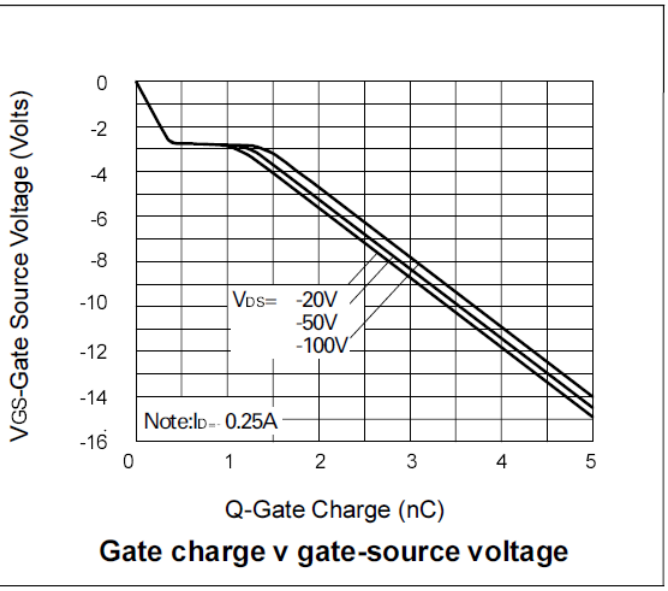
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-240	-	-	V	V_{GS} = 0V, I_D = -1mA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	-	-	-10 -100	µA µA	V_{DS} = -240V, V_{GS} = 0V V_{DS} = -190V, V_{GS} = 0V, T_A=+125°C
Gate-Source Leakage	I_{GSS}	-	-	100	nA	V_{GS} = ±40V, V_{DS} = 0V
On-State Drain Current	$I_{D(ON)}$	-0.75	-1.0	-	A	V_{GS} = -10V, V_{DS} = -10V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.7	-1.4	-2.0	V	V_{DS} = V_{GS}, I_D = -1mA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	7.1 8.8	9 11	Ω Ω	V_{GS} = -10V, I_D = -200mA V_{GS} = -3.5V, I_D = -100mA
Forward Transconductance (Notes 5 & 6)	g_{fs}	125	-	-	mS	V_{DS} = -10V, I_D = -0.2A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	100	200	pF	V_{DS} = -25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	18	25	pF	
Reverse Transfer Capacitance	C_{rss}	-	5	15	pF	
Turn-On Delay Time (Note 7)	$t_{D(ON)}$	-	8	15	ns	V_{DD} ≈ -50V, I_D = -0.25A, V_{GEN} = -10V
Turn-On Rise Time (Note 7)	t_R	-	8	15	ns	
Turn-Off Delay Time (Note 7)	$t_{D(OFF)}$	-	26	40	ns	
Turn-Off Fall Time (Note 7)	t_F	-	20	30	ns	

Notes: 5. Measured under pulsed conditions. Width=300ms. 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.

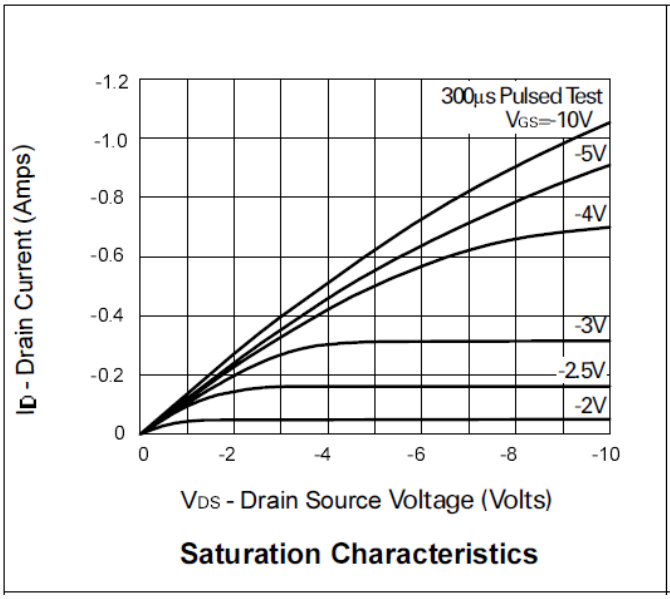
Typical Characteristics



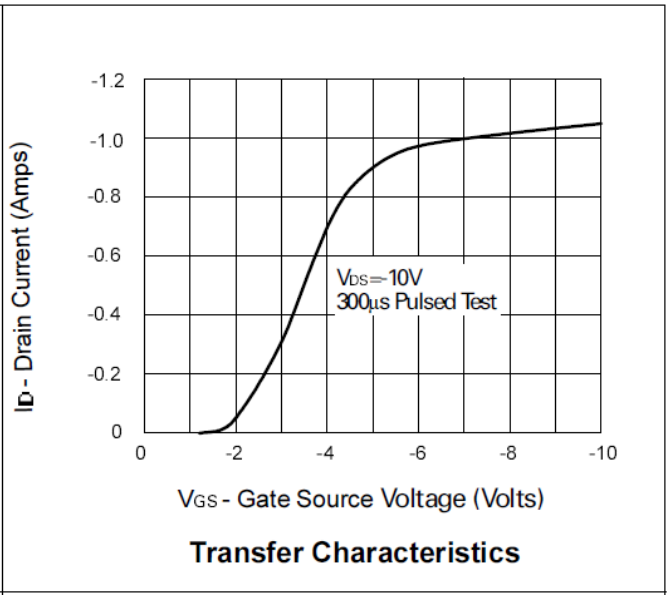
Capacitance v drain-source voltage



Gate charge v gate-source voltage

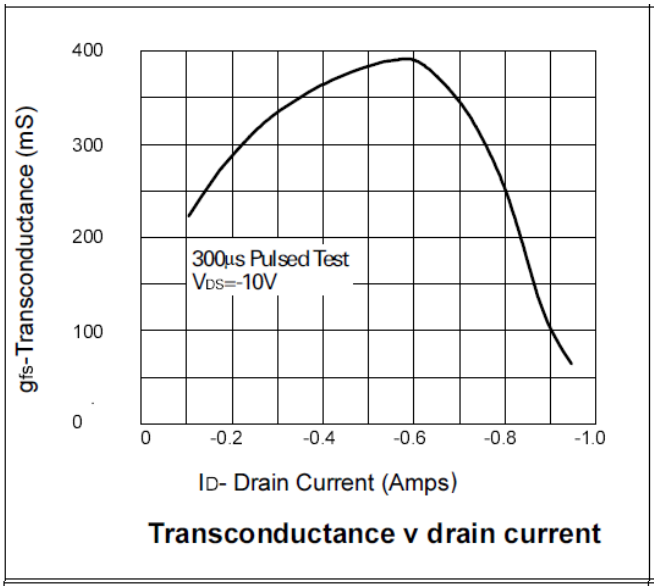


Saturation Characteristics

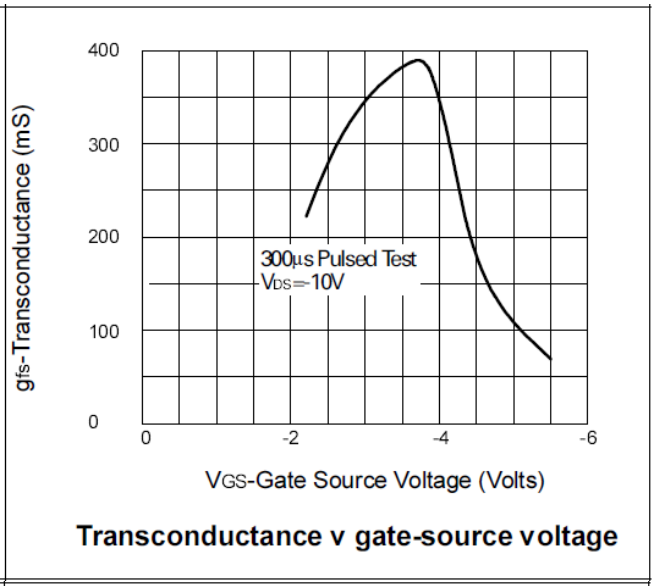


Transfer Characteristics

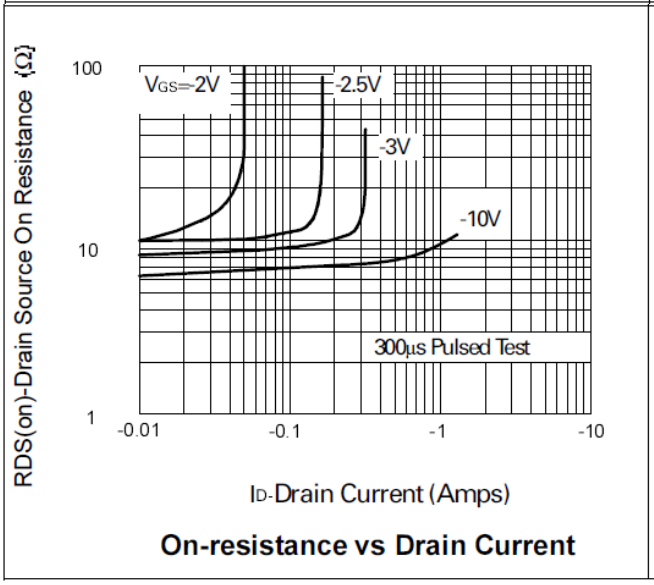
Typical Characteristics (continued)



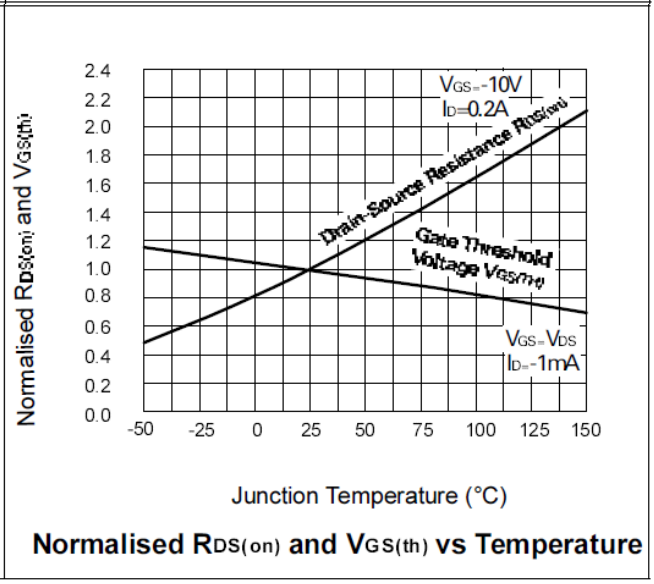
Transconductance v drain current



Transconductance v gate-source voltage



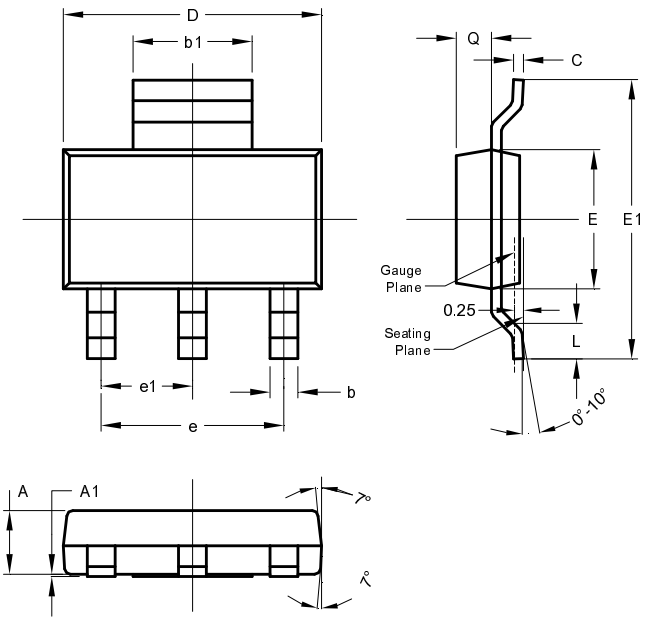
On-resistance vs Drain Current



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

Package Outline Dimensions

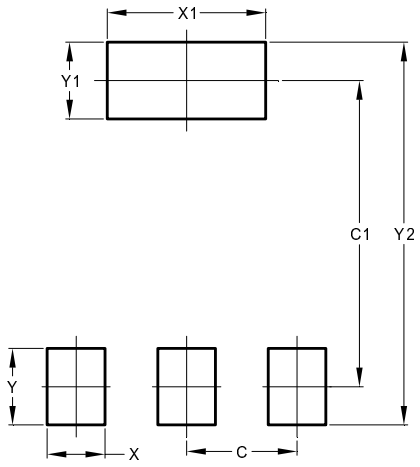
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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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