

**SOT23 P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET**

**Product Summary**

$BV_{DS}$	$R_{DS(ON)}$ max	$I_D$ max
-100V	20 $\Omega$ @ $V_{GS} = -10V$	-75mA

**Description and Applications**


This MOSFET is designed to minimize the on-state resistance ( $R_{DS(ON)}$ ) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Load Switching

**Features and Benefits**

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([ZVP3310FQ](#))**

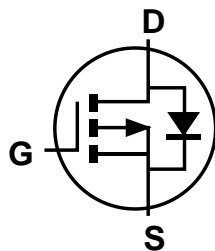
**Mechanical Data**

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. 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 
- Terminals Connections: See Diagram Below
- Weight: 0.008 grams (Approximate)

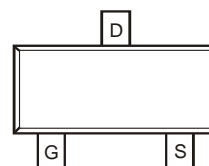
SOT23



Top View



Internal Schematic



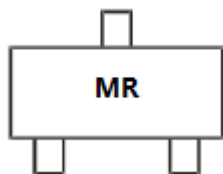
Top View

**Ordering Information** (Note 4)

Part Number	Case	Packaging
ZVP3310FTA	SOT23	3000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  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**



MR = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	-100	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	-75	mA
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I <sub>DM</sub>	-1.2	A
Pulsed Source Current (10µs Pulse, Duty Cycle = 1%)	I <sub>SM</sub>	-1.2	A

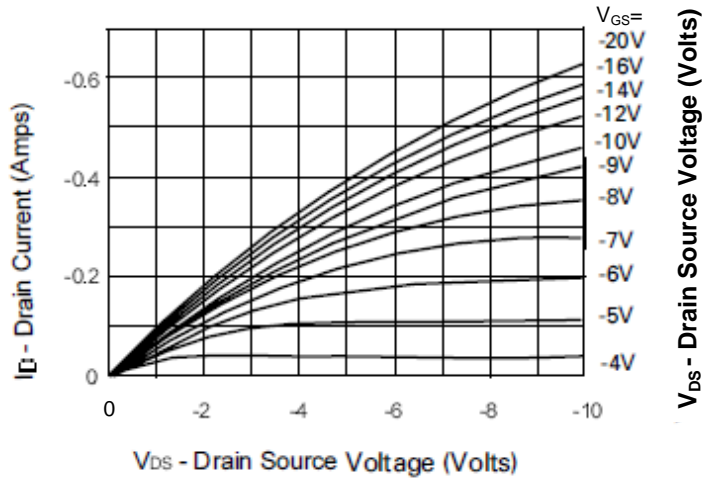
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (@T <sub>A</sub> = +25°C)	P <sub>D</sub>	330	mW
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

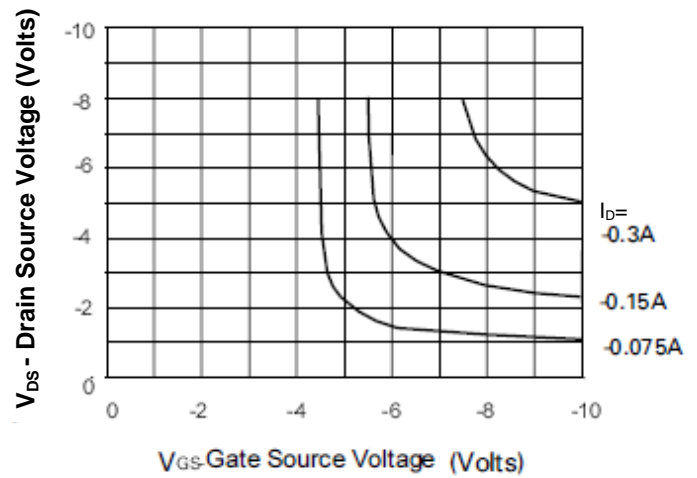
**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-100	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	-1	µA	V <sub>DS</sub> = -100V, V <sub>GS</sub> = 0V
		—	—	-50	µA	V <sub>DS</sub> = -80V, V <sub>GS</sub> = 0V, T = +125°C
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±20	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	-1.5	—	-3.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -1mA
Static Drain-Source On-Resistance (Note 5)	R <sub>DS(ON)</sub>	—	—	20	Ω	V <sub>GS</sub> = -10V, I <sub>D</sub> = -150mA
On-State Drain Current (Note 5)	I <sub>D(ON)</sub>	-300	—	—	mA	V <sub>DS</sub> = -25V, V <sub>GS</sub> = -10V
Forward Transconductance (Note 5)	g <sub>fs</sub>	50	—	—	mS	V <sub>DS</sub> = -25V, I <sub>D</sub> = -150mA
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iss</sub>	—	—	50	pF	V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V, f = 1MHz
Output Capacitance	C <sub>oss</sub>	—	—	15		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	—	5		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	—	8	ns	V <sub>DD</sub> = -25V, I <sub>D</sub> = -150mA
Turn-On Rise Time	t <sub>r</sub>	—	—	8		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	—	8		
Turn-Off Fall Time	t <sub>f</sub>	—	—	8		

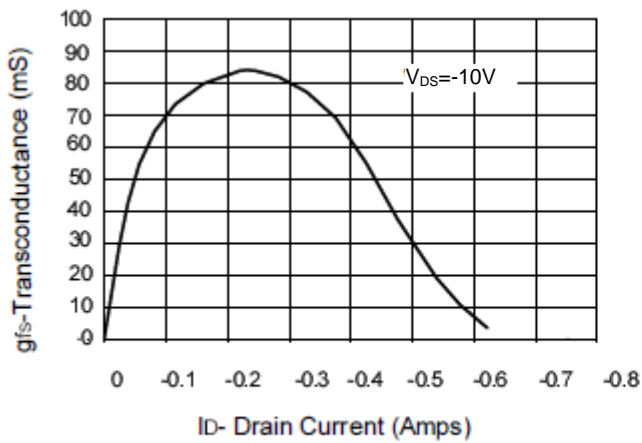
Notes: 5. Measured under pulsed conditions. Width = 300ms. Duty cycle ≤2%.  
6. Short duration pulse test used to minimize self-heating effect.  
7. Guaranteed by design. Not subject to product testing.



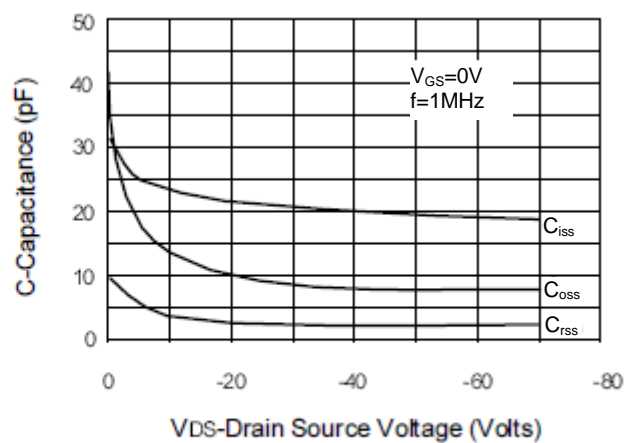
**Saturation Characteristics**



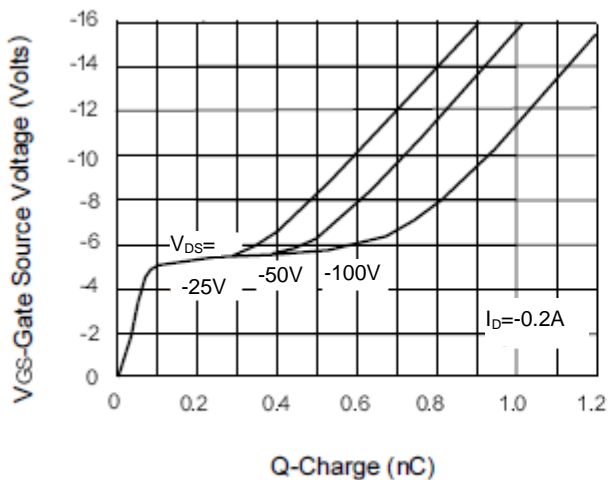
**Voltage Saturation Characteristics**



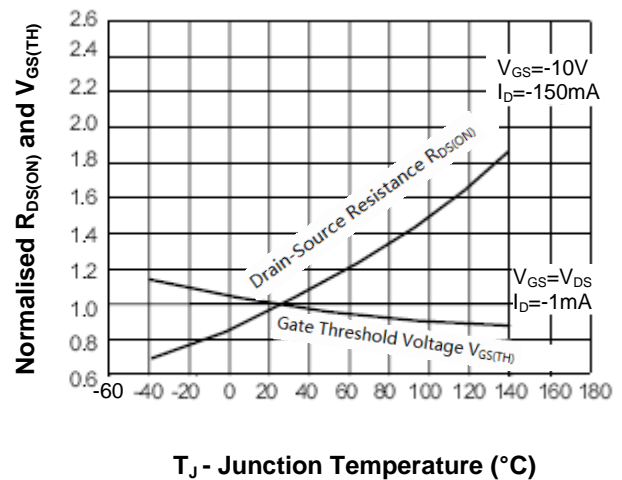
**Transconductance v Drain Current**



**Capacitance v Drain-Source Voltage**



**Gate Charge v Gate-Source Voltage**

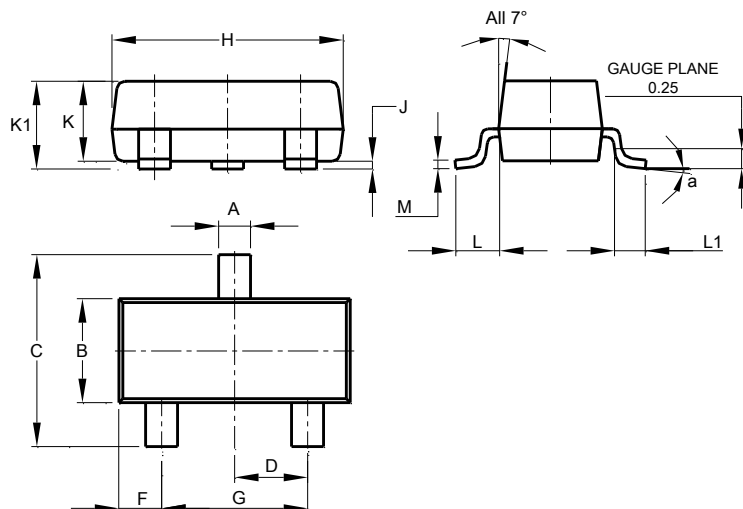


**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  v Temperature**

## Package Outline Dimensions

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

### SOT23

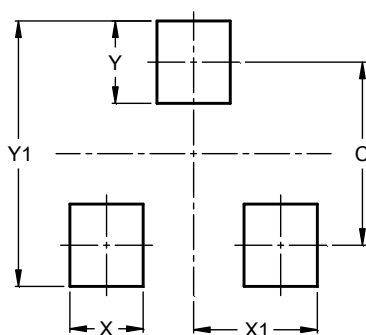


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

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

### SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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