

### **Product Summary**

BV <sub>DSS</sub>	RDS(on)	ID TA = +25°C
-200V	25Ω @ V <sub>GS</sub> = -10V	-200mA

# **Description and Applications**

This MOSFET is designed to minimize the on-state resistance yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Backlighting
- AC-DC converters

### **Features and Benefits**

- Low On-Resistance
- Fast Switching Speed
- Complementary Type DIODES™ ZVN2120G
- 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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please <u>contact us</u> or your local Diodes representative.

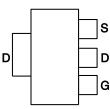
https://www.diodes.com/quality/product-definitions/

### **Mechanical Data**

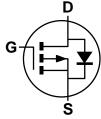
- Package: SOT223
- Package Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.112 grams (Approximate)

SOT223 (Type DN)

Top View



Pin Out - Top



Equivalent Circuit

### Ordering Information (Note 4)

Part Number	Pookago	Packing	
Fait Nulliber	Package	Qty.	Carrier
ZVP2120GTA	SOT223 (Type DN)	1,000	Tape & Reel

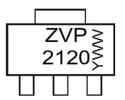
Notes: 1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied. 2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and

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**



ZVP 2120 = Product Type Marking Code YWW = Date Code Marking Y or  $\overline{Y}$  = Last Digit of Year (ex: 2 = 2022) WW or  $\overline{W}W$  = Week Code (01 to 53)



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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	Vds	-200	V
Continuous Drain Current	ID	-200	mA
Pulsed Drain Current	Ідм	-1.2	А

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

Characteristic	Symbol	Value	Unit
Power Dissipation	Ptot	2	W
Operating and Storage Temperature Range	TJ, T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Static Characteristics						
Drain-Source Breakdown Voltage	BVDSS	-200	—	—	V	$I_D = -1mA$ , $V_{GS} = 0V$
Gate-Source Threshold Voltage	VGS(th)	-1.5	_	-3.5	V	ID = -1mA, VDS = VGS
Gate-Body Leakage	lgss	_	_	-20	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
		_	_	-10	μA	V <sub>DS</sub> = -200V, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>			-100	μA	V <sub>DS</sub> = -160V, V <sub>GS</sub> = 0V, T = +125°C (Note 6)
On-State Drain Current (Note 5)	ID(on)	-300	_	_	mA	V <sub>DS</sub> = -25V, V <sub>GS</sub> = -10V
Static Drain-Source On-State Resistance (Note 5)	R <sub>DS(on)</sub>	_	_	25	Ω	$V_{GS} = -10V, I_D = -150mA$
Forward Transconductance (Notes 5 & 6)	<b>g</b> fS	50		—	mS	V <sub>DS</sub> = -25V, I <sub>D</sub> = -150mA
Dynamic Characteristics (Note 6)			•			
Input Capacitance	Ciss	_	_	100		V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V, f = 1MHz
Common Source Output Capacitance	Coss	—	_	25	pF	
Reverse Transfer Capacitance	Crss	_	_	7		
Turn-On Delay Time (Note 7)	td(on)			7		V <sub>DD</sub> = -25V, I <sub>D</sub> = -150mA
Rise Time (Note 7)	tr	_		15	1	
Turn-Off Delay Time (Note 7)	td(off)	_		12	ns	
Fall Time (Note 7)	tf	_		15		

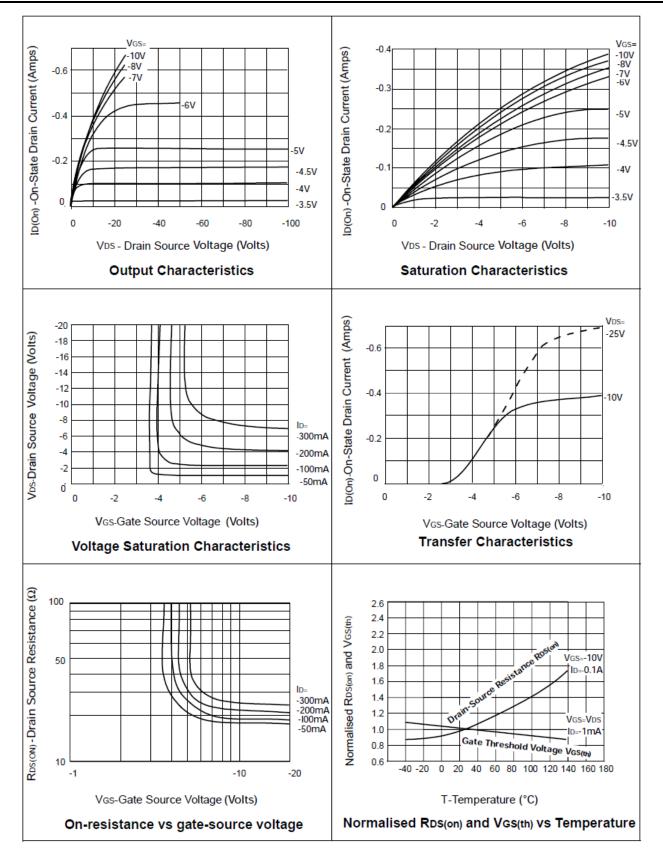
Notes: 5. Measured under pulsed conditions. Width=300 $\mu s.$  Duty cycle  $\leq 2\%.$ 

6. Sample Test. 7. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.



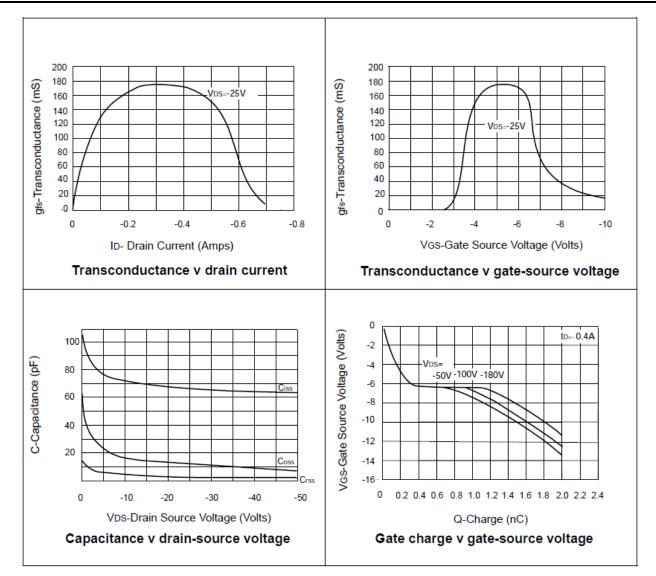
ZVP2120G

## **Typical Characteristics**





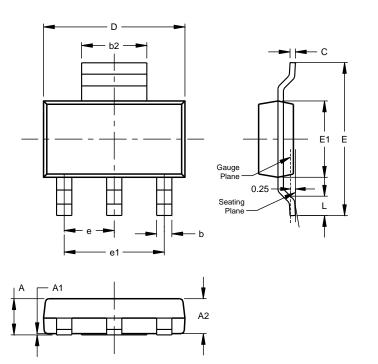
# Typical Characteristics (continued)





## **Package Outline Dimensions**

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



SOT223 (Type DN)				
Dim	Min	Max	Тур	
Α		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		
ш	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.

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Dimensions	Value (in mm)
С	2.30
C1	6.40
Х	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

### SOT223 (Type DN)

SOT223 (Type DN)



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