

# ZVP2120GTC Datasheet

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DiGi Electronics Part Number	ZVP2120GTC-DG
Manufacturer	<a href="#">Diodes Incorporated</a>
Manufacturer Product Number	ZVP2120GTC
Description	MOSFET P-CH 200V 200MA SOT223
Detailed Description	P-Channel 200 V 200mA (Ta) 2W (Ta) Surface Mount SOT-223-3

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## Purchase and inquiry

Manufacturer Product Number:

ZVP2120GTC

Series:

-

FET Type:

P-Channel

Drain to Source Voltage (Vdss):

200 V

Drive Voltage (Max Rds On, Min Rds On):

10V

Vgs(th) (Max) @ Id:

3.5V @ 1mA

Input Capacitance (Ciss) (Max) @ Vds:

100 pF @ 25 V

Power Dissipation (Max):

2W (Ta)

Mounting Type:

Surface Mount

Package / Case:

TO-261-4, TO-261AA

Manufacturer:

Diodes Incorporated

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

200mA (Ta)

Rds On (Max) @ Id, Vgs:

250hm @ 150mA, 10V

Vgs (Max):

-

FET Feature:

-

Operating Temperature:

-55°C ~ 150°C (TJ)

Supplier Device Package:

SOT-223-3

Base Product Number:

ZVP2120

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99





ZVP2120G

## SOT223 P-CHANNEL ENHANCEMENT MODE VERTICAL DMOSFET

## Product Summary

BV <sub>DSS</sub>	R <sub>DS(on)</sub>	I <sub>D</sub> T <sub>A</sub> = +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 [contact us](#) or your local Diodes representative.**

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

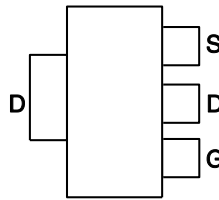
## Mechanical Data

- 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)

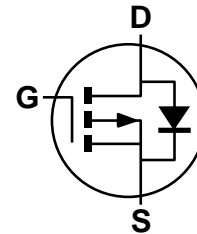
SOT223 (Type DN)



Top View



Pin Out - Top



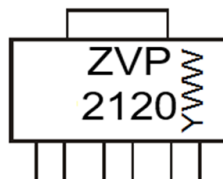
Equivalent Circuit

## Ordering Information (Note 4)

Part Number	Package	Packing	
		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  $\bar{Y}$  = Last Digit of Year (ex: 2 = 2022)  
 WW or  $\bar{W}W$  = Week Code (01 to 53)



ZVP2120G

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-200	V
Continuous Drain Current	I <sub>D</sub>	-200	mA
Pulsed Drain Current	I <sub>DM</sub>	-1.2	A

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

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

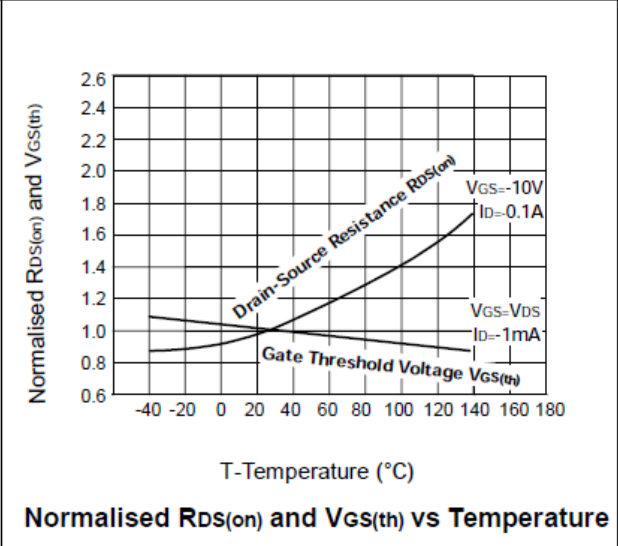
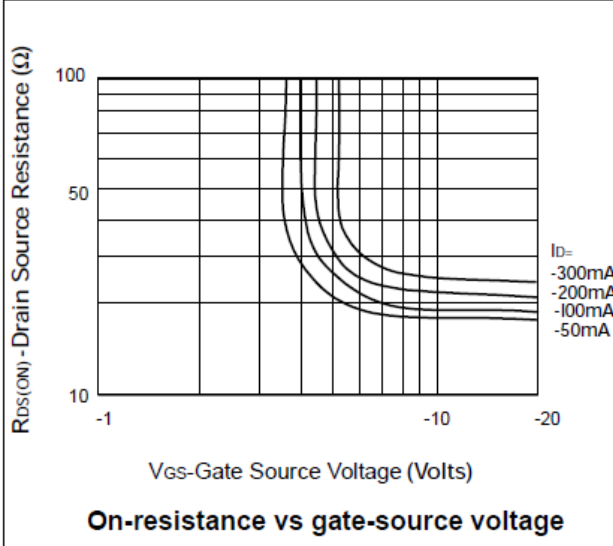
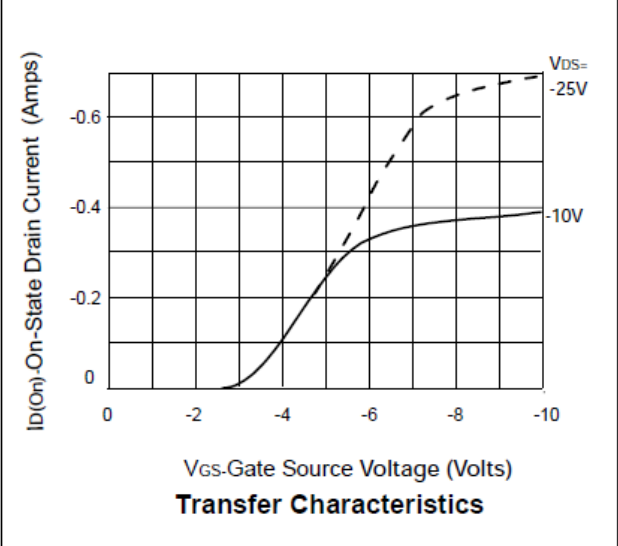
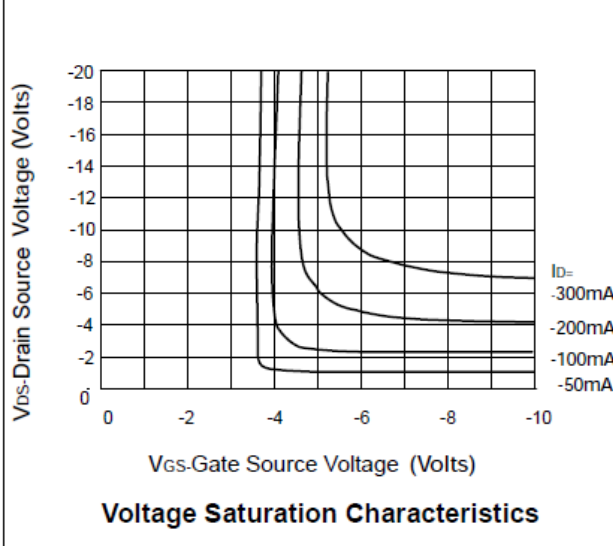
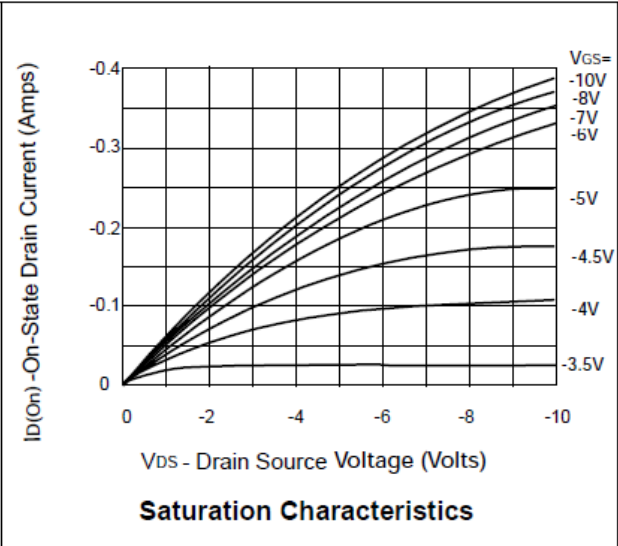
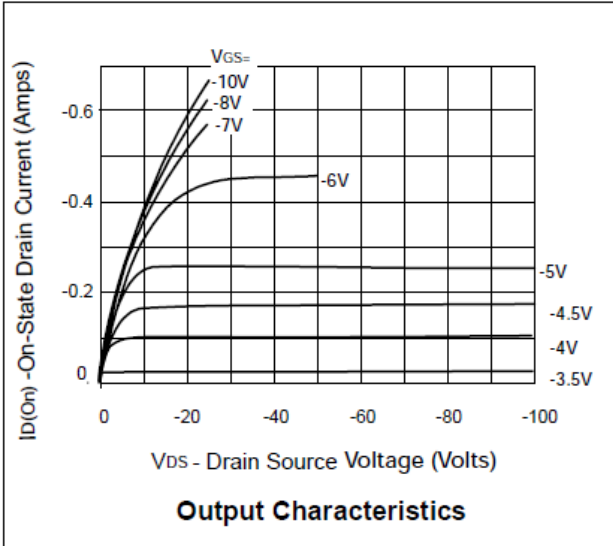
### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-200	—	—	V	I <sub>D</sub> = -1mA, V <sub>GS</sub> = 0V
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	-1.5	—	-3.5	V	I <sub>D</sub> = -1mA, V <sub>DS</sub> = V <sub>GS</sub>
Gate-Body Leakage	I <sub>GSS</sub>	—	—	-20	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	-10	μA	V <sub>DS</sub> = -200V, V <sub>GS</sub> = 0V
				-100	μA	V <sub>DS</sub> = -160V, V <sub>GS</sub> = 0V, T = +125°C (Note 6)
On-State Drain Current (Note 5)	I <sub>D(on)</sub>	-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 <sub>GS</sub> = -10V, I <sub>D</sub> = -150mA
Forward Transconductance (Notes 5 & 6)	g <sub>fS</sub>	50	—	—	mS	V <sub>DS</sub> = -25V, I <sub>D</sub> = -150mA
<b>Dynamic Characteristics (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	—	—	100	pF	V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0V, f = 1MHz
Common Source Output Capacitance	C <sub>oss</sub>	—	—	25		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	—	7		
Turn-On Delay Time (Note 7)	t <sub>d(on)</sub>	—	—	7	ns	V <sub>DD</sub> = -25V, I <sub>D</sub> = -150mA
Rise Time (Note 7)	t <sub>r</sub>	—	—	15		
Turn-Off Delay Time (Note 7)	t <sub>d(off)</sub>	—	—	12		
Fall Time (Note 7)	t <sub>f</sub>	—	—	15		

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



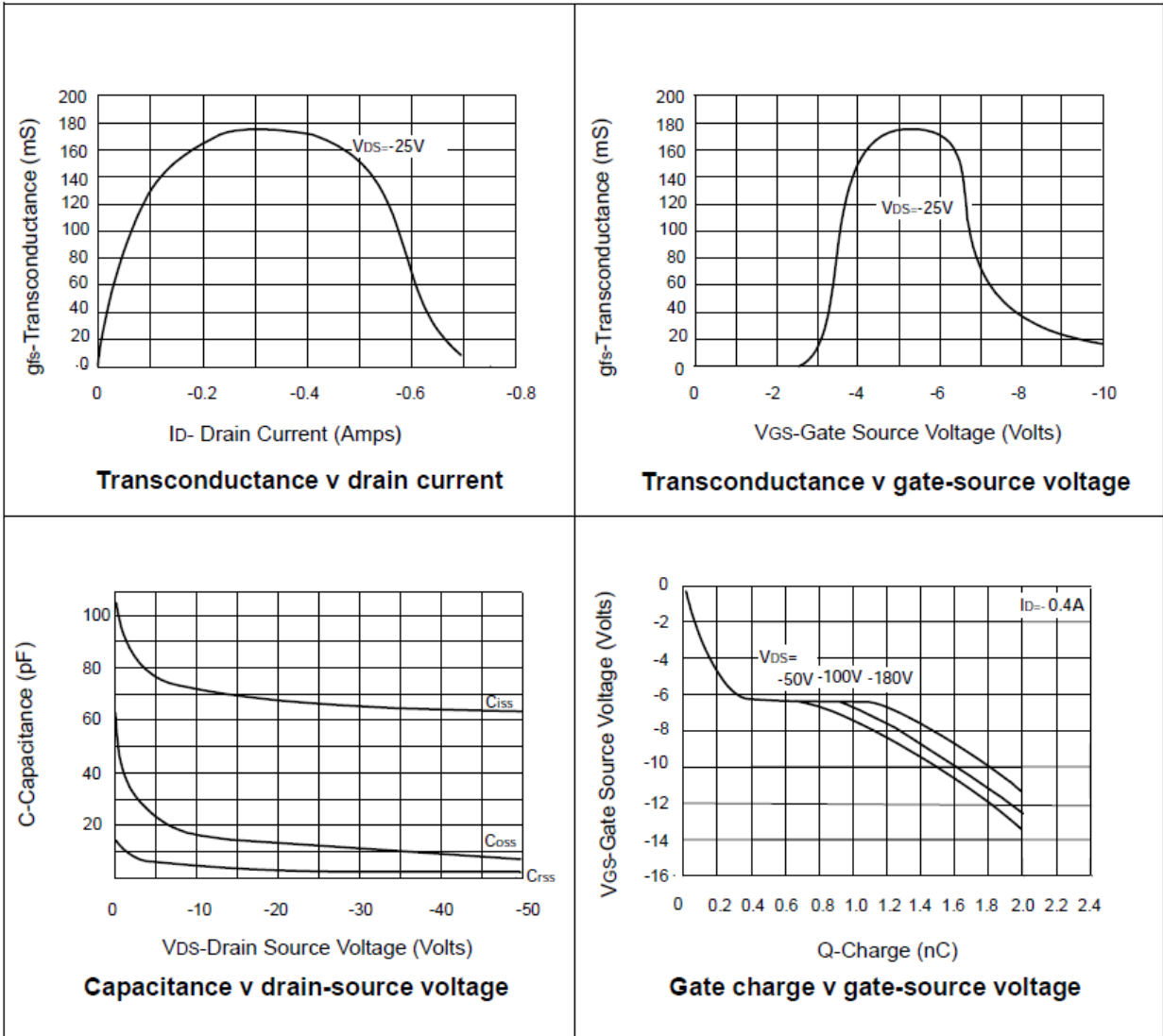
Typical Characteristics





ZVP2120G

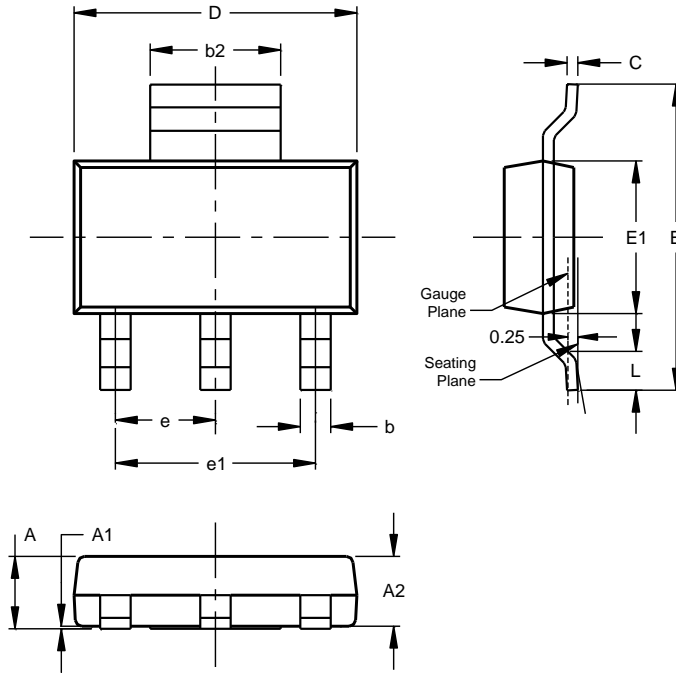
**Typical Characteristics** (continued)



## Package Outline Dimensions

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

SOT223 (Type DN)

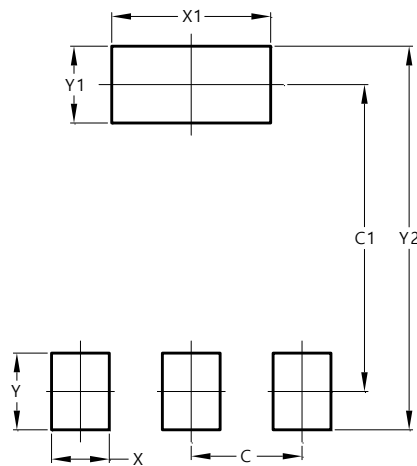


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

## 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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