

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
-100V	150mΩ @ V _{GS} = -10V	-3.7A
	190mΩ @ V _{GS} = -6V	-3.3A

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.

- Motor control
- DC-DC converters
- Power-management functions
- Relay and solenoid driving

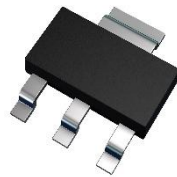
Features and Benefits

- Low On-Resistance
- Fast Switching Speed
- 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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

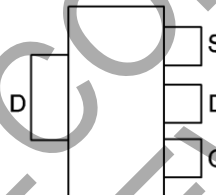
Mechanical Data

- Package: SOT223
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.112 grams (Approximate)

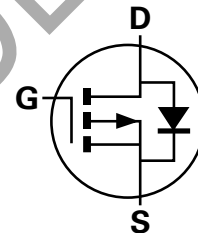
SOT223 (Type DN)



Top View



Pinout - Top View



Equivalent Circuit

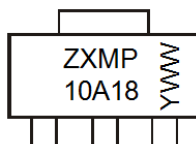
Ordering Information (Note 4)

Orderable Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
				Qty.	Carrier
ZXMP10A18GTA	ZXMP10A18	7	12	1,000	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

SOT223 (Type DN)



ZXMP10A18 = Product Type Marking Code
YWW = Date Code Marking
Y or Y = Last Digit of Year (ex: 6 = 2026)
WW or WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

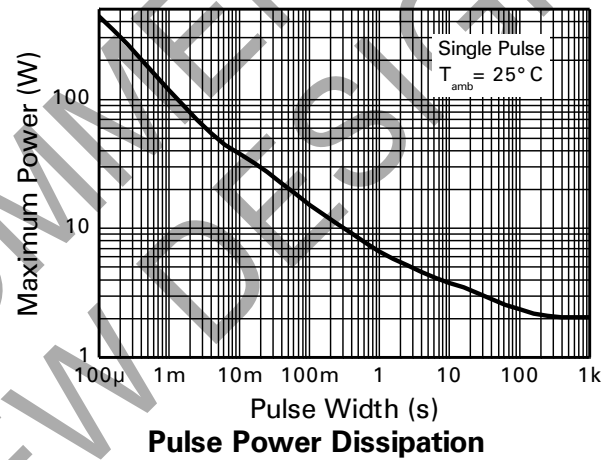
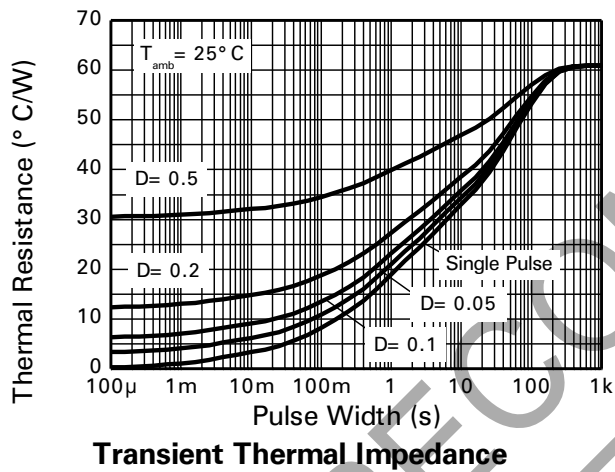
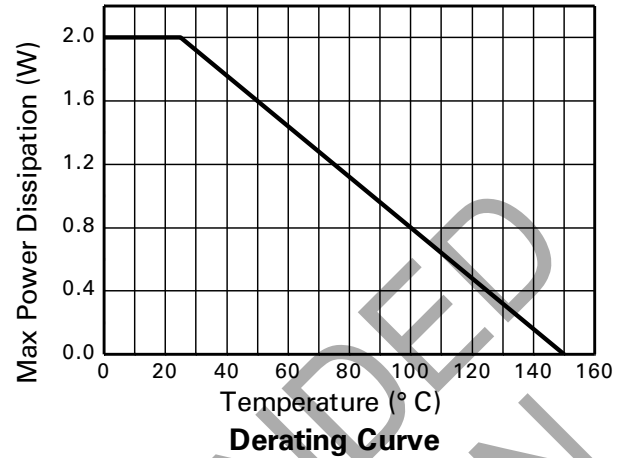
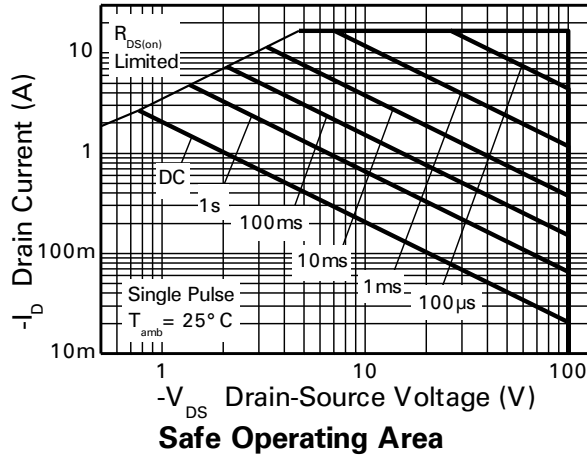
Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	-100	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current	V _{GS} = 10V	(Note 6)	I _D	-3.7	A
		T _A = +70°C (Note 6)		-3.0	
		(Note 5)		-2.6	
Pulsed Drain Current	V _{GS} = 10V	(Note 7)	I _{DM}	-16.5	A
Continuous Source Current (Body Diode)			I _S	-3.7	A
Pulsed Source Current (Body Diode)			I _{SM}	-16.5	A

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

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P _D	2.0	W
			16	
	(Note 6)		3.9	
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	62.5	°C/W
	(Note 6)		32.2	
Thermal Resistance, Junction to Lead	(Note 8)	R _{θJL}	7.65	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

- Notes:
5. For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 6. Same as Note 5, except the device is measured at t ≤ 10 seconds.
 7. Same as Note 5, except the device is pulsed with D = 0.02 and pulse width 300μs. The pulse current is limited by the maximum junction temperature.
 8. Thermal resistance from junction to solder point (at the end of the drain lead).

Thermal Characteristics

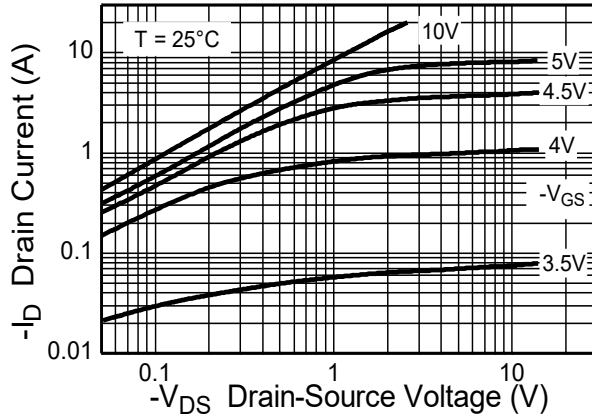


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

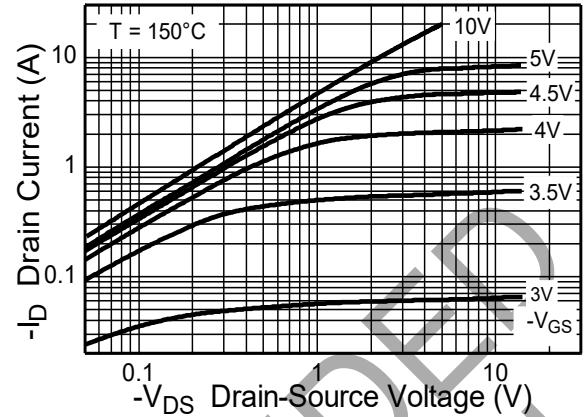
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	-100	—	—	V	I _D = -250μA, V _{GS} = 0
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	μA	V _{DS} = -100V, V _{GS} = 0
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	-2.0	—	-4.0	V	I _D = -250μA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 9)	R _{DS(ON)}	—	—	150	mΩ	V _{GS} = -10V, I _D = -2.8A
				190		V _{GS} = -6V, I _D = -2.4A
Forward Transconductance (Notes 9 & 10)	g _{fs}	—	6.0	—	S	V _{DS} = -15V, I _D = -2.8A
Diode Forward Voltage (Note 9)	V _{SD}	—	-0.85	-0.95	V	I _S = -3.5A, V _{GS} = 0, T _J = +25°C
Reverse-Recovery Time (Note 10)	t _{rr}	—	49	—	ns	I _S = -2.8A, di/dt = 100A/μs,
Reverse-Recovery Charge (Note 10)	Q _{rr}	—	107	—	nC	T _J = +25°C
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	1055	—	pF	V _{DD} = -50V, V _{GS} = 0, f = 1MHz
Output Capacitance	C _{oss}	—	90	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	76	—	pF	
Total Gate Charge (Note 11)	Q _g	—	26.9	—	nC	V _{GS} = -10V, V _{DS} = -50V, I _D = -2.8A
Gate-Source Charge (Note 11)	Q _{gs}	—	3.9	—	nC	
Gate-Drain Charge (Note 11)	Q _{gd}	—	10.2	—	nC	
Turn-On Delay Time (Note 11)	t _{D(ON)}	—	4.6	—	ns	V _{DD} = -50V, V _{GS} = -10V, I _D = -1A, R _G = 6.0Ω
Turn-On Rise Time (Note 11)	t _r	—	6.8	—	ns	
Turn-Off Delay Time (Note 11)	t _{D(OFF)}	—	33.9	—	ns	
Turn-Off Fall Time (Note 11)	t _f	—	17.9	—	ns	

Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.
10. For design aid only, not subject to production testing.
11. Switching characteristics are independent of operating junction temperatures.

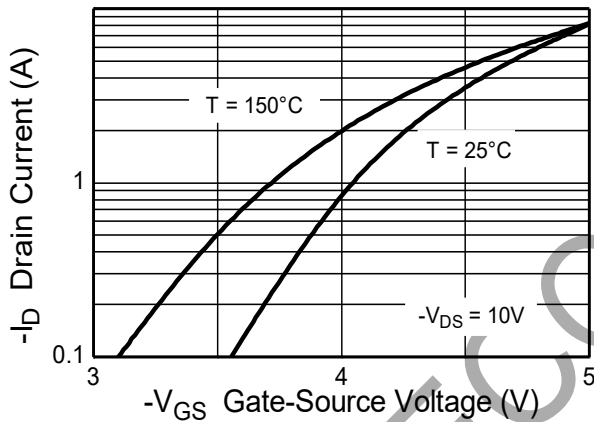
Typical Characteristics



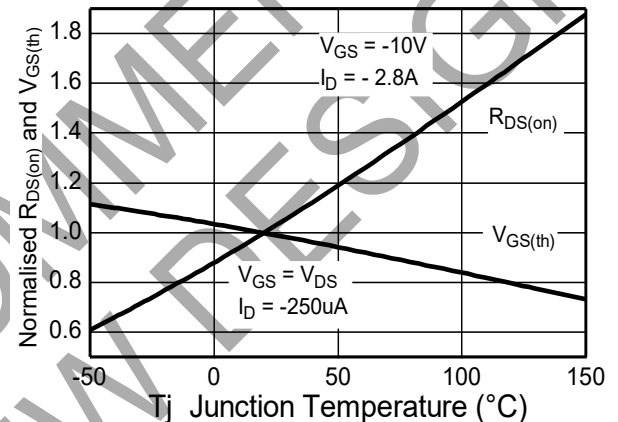
Output Characteristics



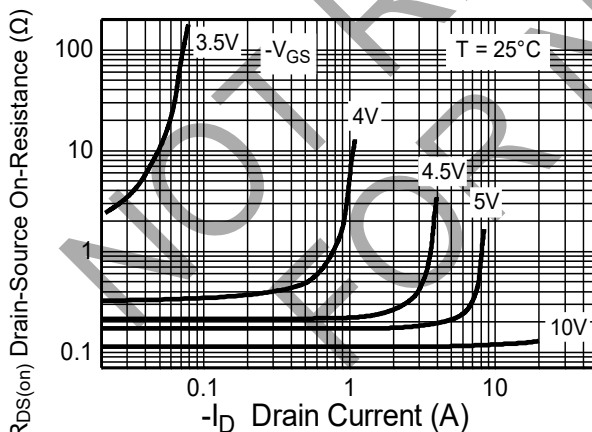
Output Characteristics



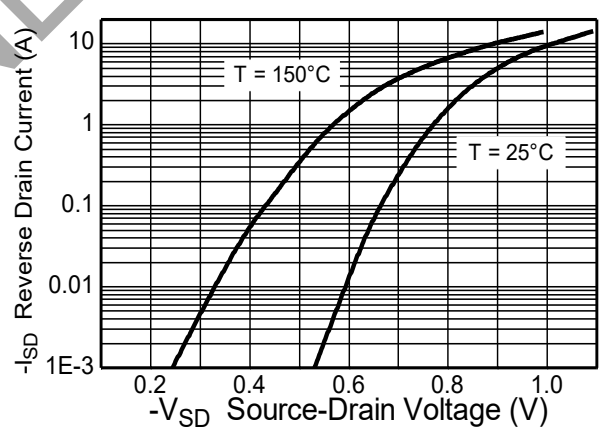
Typical Transfer Characteristics



Normalised Curves v Temperature

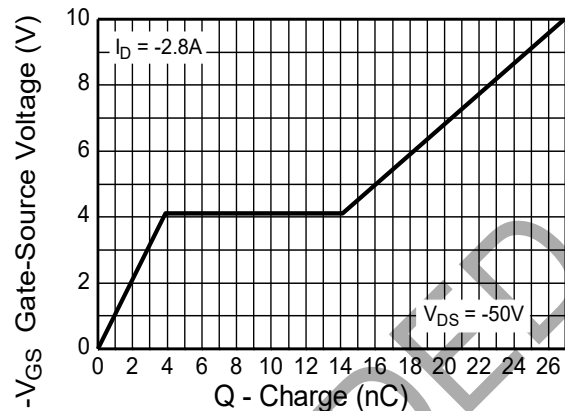
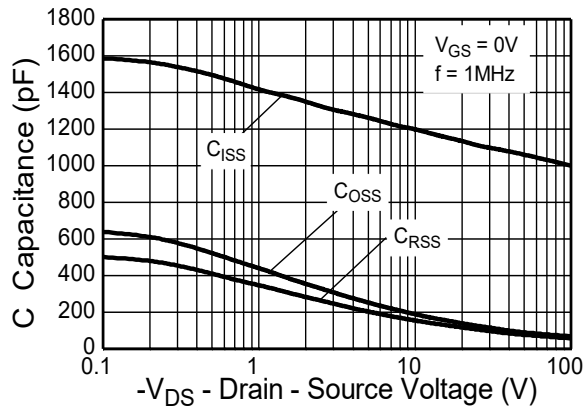


On-Resistance v Drain Current

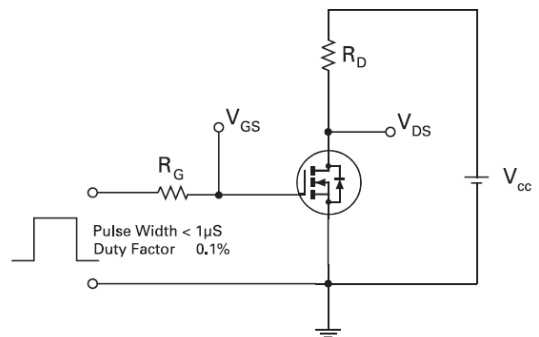
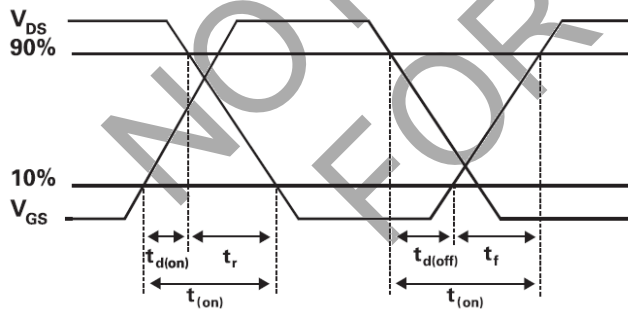
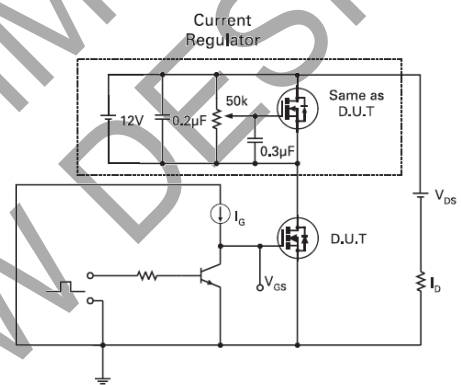
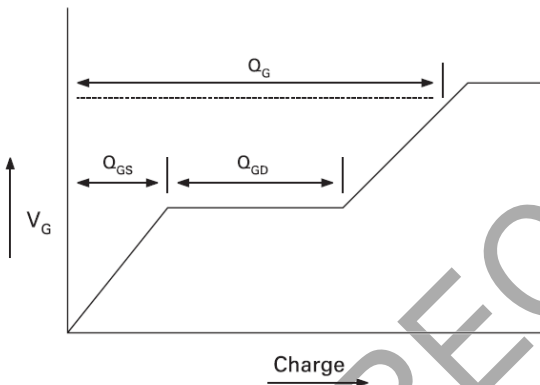


Source-Drain Diode Forward Voltage

Typical Characteristics (continued)



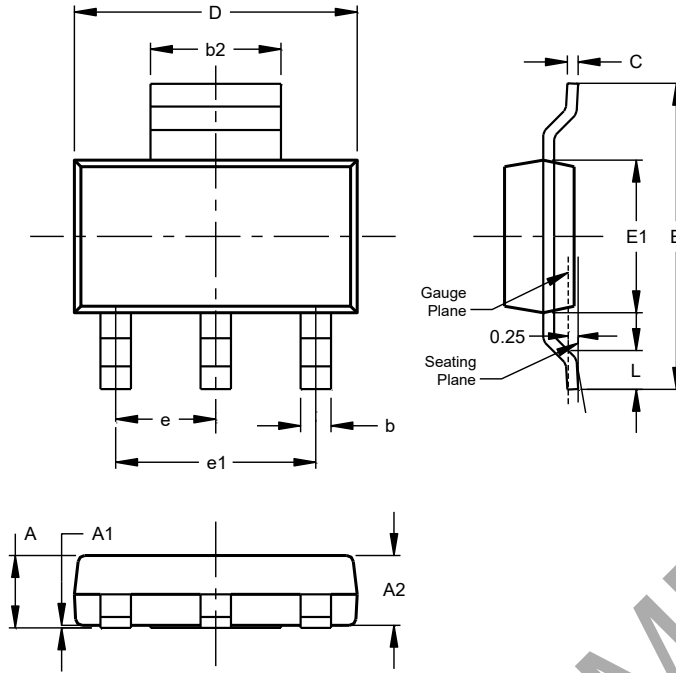
Test Circuits



Package Outline Dimensions

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

SOT223 (Type DN)

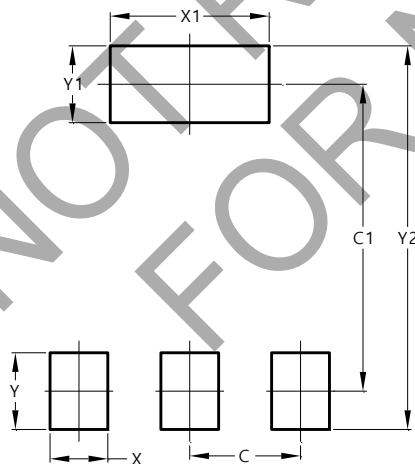


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

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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