

ZXMP10A18G
100V P-CHANNEL ENHANCEMENT MODE MOSFET
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D max $T_A = 25^\circ C$ (Notes 3)
-100V	150m Ω @ $V_{GS} = -10V$	-3.7A
	190m Ω @ $V_{GS} = -6V$	-3.3A

Features and Benefits

- Low on-resistance
- Fast switching speed
- "Green" component. Lead Free Finish / RoHS compliant (Note 1)
- Qualified to AEC-Q101 Standards for High Reliability

Description and Applications

This MOSFET has been designed to minimize the on-state resistance and 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

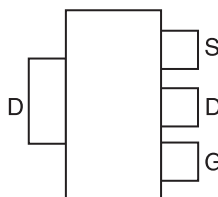
Mechanical Data

- Case: SOT223
- Case 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
- Weight: 0.112 grams (approximate)

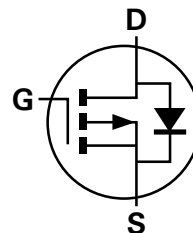
SOT223



Top View



Pin Out - Top View

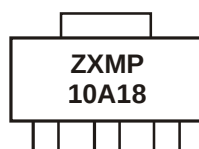


Equivalent Circuit

Ordering Information (Note 1)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMP10A18GTA	ZXMP10A18	7	12	1,000

Note: 1. Diodes, Inc. defines "Green" products as those which are RoHS compliant and contain no halogens or antimony compounds. All applicable RoHS exemptions applied. Further information about Diodes Inc.'s "Green" Policy can be found on our website.

Marking Information


ZXMP = Product Type Marking Code, Line 1
 10A18 = Product Type Marking Code, Line 2

Maximum Ratings @T_A = 25°C unless otherwise specified

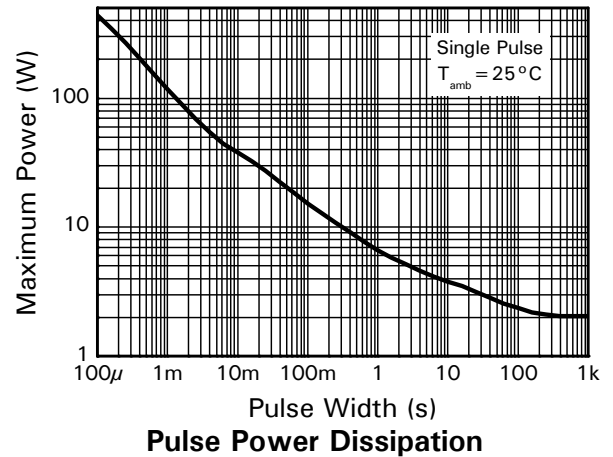
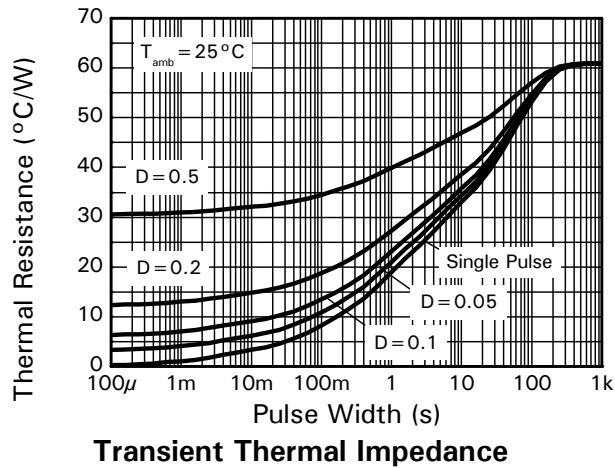
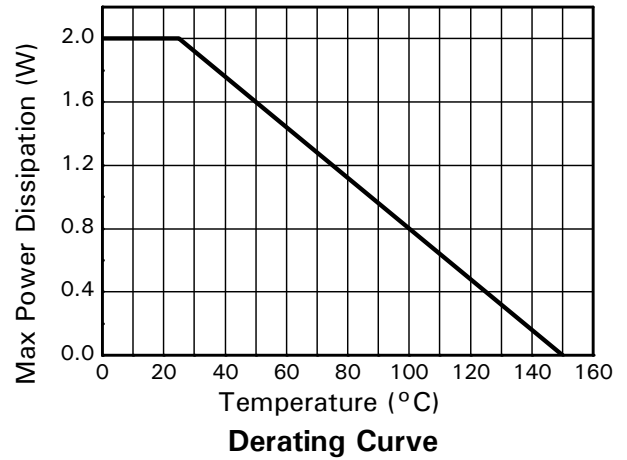
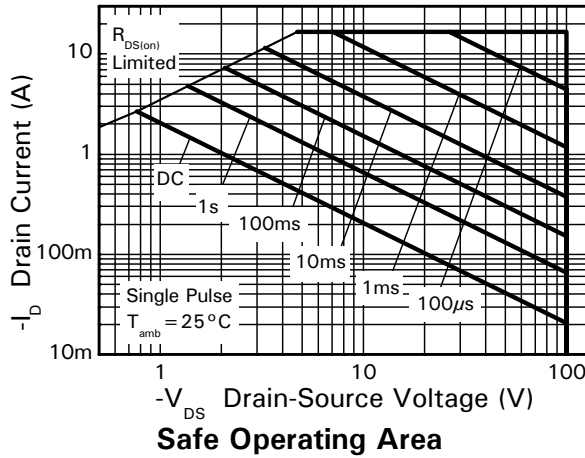
Characteristic			Symbol	Value	Unit
Drain-Source voltage			V _{DSS}	-100	V
Gate-Source voltage			V _{GS}	±20	V
Continuous Drain current	V _{GS} = 10V	(Note 3)	I _D	-3.7	A
		T _A = 70°C (Note 3)		-3.0	
		(Note 2)		-2.6	
Pulsed Drain current	V _{GS} = 10V	(Note 4)	I _{DM}	-16.5	A
Continuous Source current (Body diode)		(Note 3)	I _S	-5.3	A
Pulsed Source current (Body diode)		(Note 4)	I _{SM}	-16.5	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Power dissipation Linear derating factor	(Note 2)	P _D		2.0	W
				16	
	(Note 3)			3.9	
Thermal Resistance, Junction to Ambient	(Note 2)	R _{θJA}		62.5	°C/W
	(Note 3)			32.2	
Thermal Resistance, Junction to Lead	(Note 5)	R _{θJL}		7.65	
Operating and storage temperature range			T _J , T _{STG}	-55 to 150	°C

- Notes:
2. 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.
 3. Same as note (2), except the device is measured at t ≤ 10 sec.
 4. Same as note (2), except the device is pulsed with D = 0.02 and pulse width 300μs. The pulse current is limited by the maximum junction temperature.
 5. Thermal resistance from junction to solder-point (at the end of the drain lead).

Thermal Characteristics

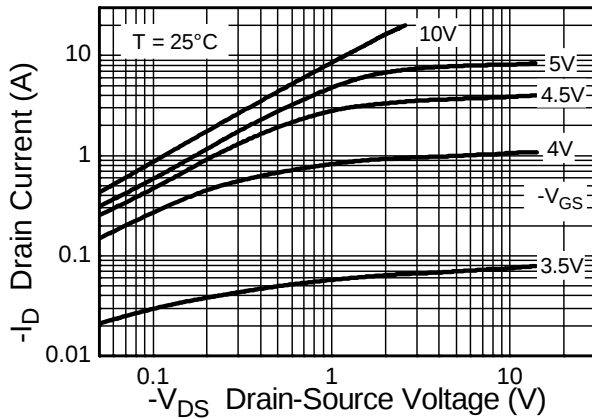


Electrical Characteristics @T_A = 25°C unless otherwise specified

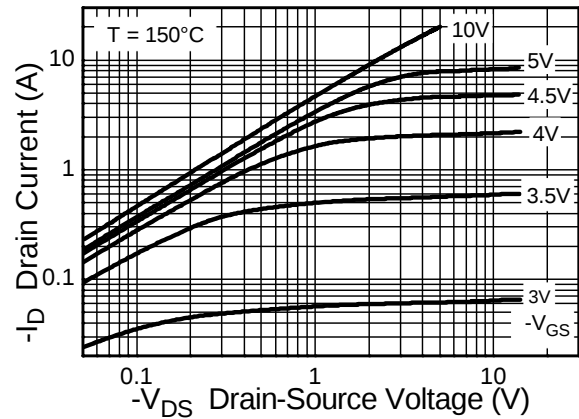
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	-100	—	—	V	I _D = -250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	μA	V _{DS} = -100V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
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 6)	R _{DS(on)}	—	—	150	mΩ	V _{GS} = -10V, I _D = -2.8A
				190		V _{GS} = -6V, I _D = -2.4A
Forward Transconductance (Notes 6 & 7)	g _{fs}	—	6.0	—	S	V _{DS} = -15V, I _D = -2.8A
Diode Forward Voltage (Note 6)	V _{SD}	—	-0.85	-0.95	V	I _S = -3.5A, V _{GS} = 0V, T _J = 25°C
Reverse recovery time (Note 7)	t _{rr}	—	49	—	ns	I _S = -2.8A, di/dt = 100A/μs,
Reverse recovery charge (Note 7)	Q _{rr}	—	107	—	nC	T _J = 25°C
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	1055	—	pF	V _{DD} = -50V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	90	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	76	—	pF	
Total Gate Charge (Note 8)	Q _g	—	26.9	—	nC	V _{GS} = -10V, V _{DS} = -50V I _D = -2.8A
Gate-Source Charge (Note 8)	Q _{gs}	—	3.9	—	nC	
Gate-Drain Charge (Note 8)	Q _{gd}	—	10.2	—	nC	
Turn-On Delay Time (Note 8)	t _{D(on)}	—	4.6	—	ns	V _{DD} = -50V, V _{GS} = -10V I _D = -1A, R _G = 6.0Ω
Turn-On Rise Time (Note 8)	t _r	—	6.8	—	ns	
Turn-Off Delay Time (Note 8)	t _{D(off)}	—	33.9	—	ns	
Turn-Off Fall Time (Note 8)	t _f	—	17.9	—	ns	

Notes: 6. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%
7. For design aid only, not subject to production testing.
8. Switching characteristics are independent of operating junction temperatures.

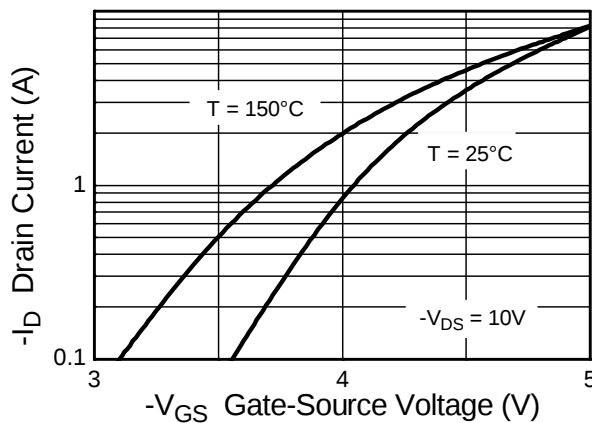
Typical Characteristics



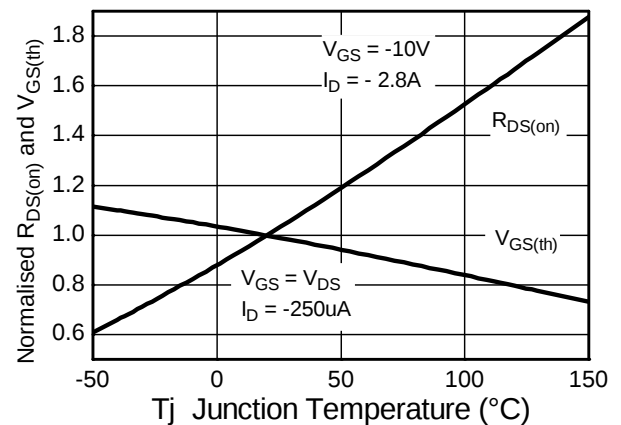
Output Characteristics



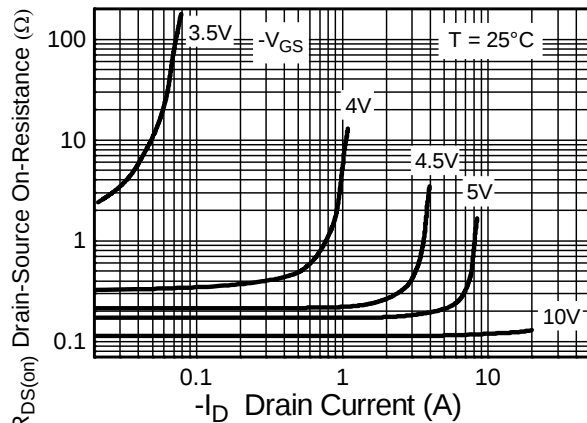
Output Characteristics



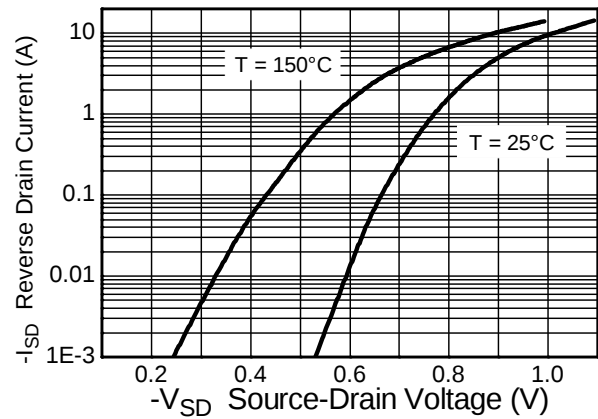
Typical Transfer Characteristics



Normalised Curves v Temperature

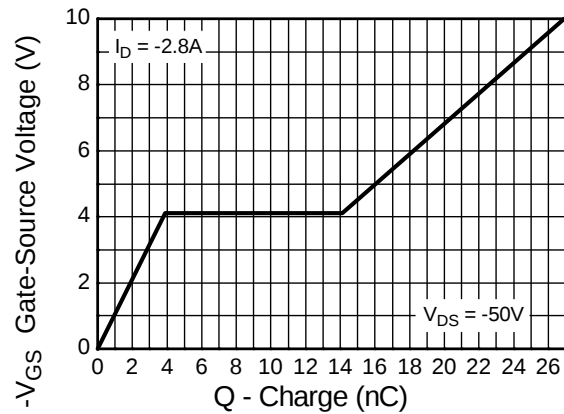
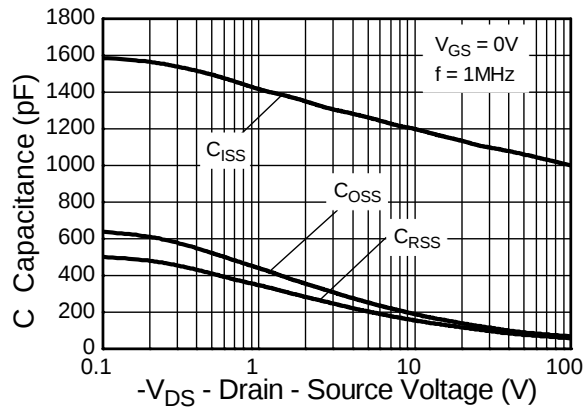


On-Resistance v Drain Current

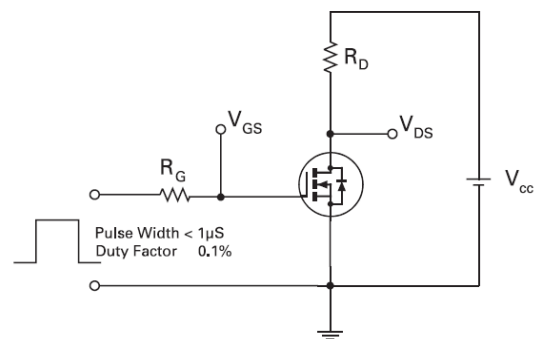
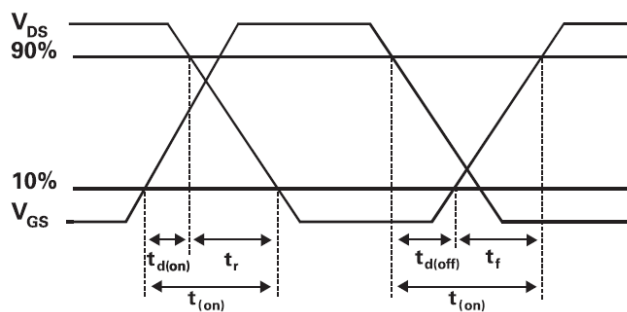
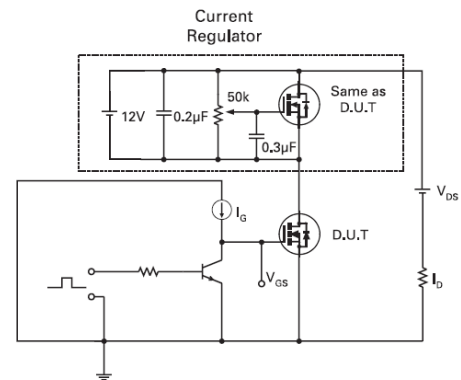
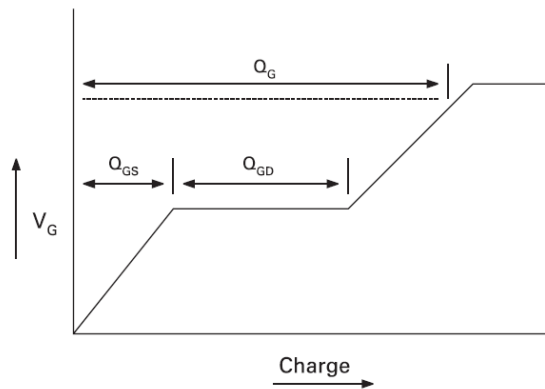


Source-Drain Diode Forward Voltage

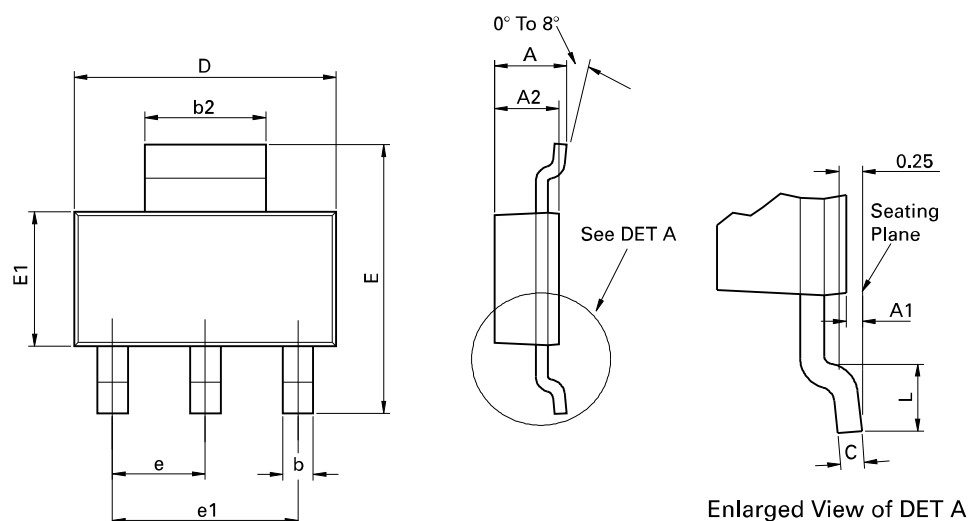
Typical Characteristics – continued



Test Circuits



Package Outline Dimensions

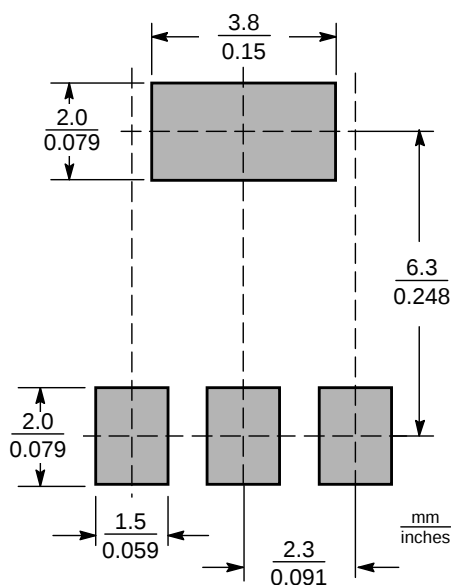


Conforms to JEDEC TO-261 AA Issue B

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	D	6.30	6.70	0.248	0.264
A1	0.02	0.10	0.0008	0.004	e	2.30 BSC		0.0905 BSC	
A2	1.55	1.65	0.0610	0.0649	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches.

Suggested Pad Layout



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