



ZXMP7A17GQ

70V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on)}	I _D T _A = +25°C
-70V	160mΩ @ V _{GS} = -10V	-2.6A
-700	250mΩ @ V _{GS} = -4.5V	-1.6A

Description

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

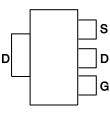
Applications

- Motor Control
- Transformer Driving Switch
- DC-DC Converters
- Power Management Functions
- Uninterrupted Power Supply

SOT223



Top View



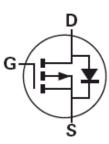
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Features and Benefits

- 100% Unclamped Inductive Switch (UIS) Test in Production
- Low On-Resistance
- Fast Switching Speed
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Available (Note 4)

Mechanical Data

- Case: SOT223
- Case 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)



Equivalent Circuit

Ordering Information (Notes 4 & 5)

Part Number	Qualification	Case	Packaging
ZXMP7A17GQTA	Automotive	SOT223	1,000/Tape & Reel
ZXMP7A17GQTC	Automotive	SOT223	4,000/Tape & Reel

Notes: 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.

2. See http://www.diodes.com/quality/lead_free.html 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_grade_definitions/.

5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information

	SO1223	
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	ZXMP 7A17	ΥWW
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007000

 $\begin{array}{l} \text{ZXMP7A17} = \text{Product Type Marking Code} \\ \text{YWW} = \text{Date Code Marking} \\ \text{Y or } \overline{\text{Y}} = \text{Last Digit of Year (ex: 5= 2015)} \\ \text{WW or } \overline{\text{WW}} = \text{Week Code (01~53)} \end{array}$



Maximum Ratings ($@T_A = +25^{\circ}C$, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage		V _{DSS}	-70	V	
Gate-Source Voltage			V _{GS}	±20	V
		(Note 7)		-3.7	
Continuous Drain Current	$V_{GS} = -10V$	$T_{A} = +70^{\circ}C$ (Note 7)	ID	-2.9	А
		(Note 6)		-2.6	
Pulsed Drain Current	V _{GS} = -10V	(Note 8)	I _{DM}	-9.6	А
Continuous Source Current	(Body Diode)	(Note 7)	Is	-4.8	А
Pulsed Source Current (Body Diode) (Note 8)		I _{SM}	-9.6	А	

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

Characteristic		Symbol	Value	Unit	
Power Dissipation	(Note 6)	6	2 16	W mW/°C	
Linear Derating Factor	(Note 7)		3.9 31		
Thermal Resistance, Junction to Ambient	(Note 6)		62.5	°C/W	
	(Note 7)	ALGA	34	0,11	
Operating and Storage Temperature Range		TJ, TSTG	-55 to +150	°C	

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

Characteristic	Symbol	Min	Тур	Мах	Unit	Test	Condition
OFF CHARACTERISTICS			- 71-				
Drain-Source Breakdown Voltage	BV _{DSS}	-70	—		V	$I_{D} = -250 \mu A, V_{GS} = 0 V$	
Zero Gate Voltage Drain Current	IDSS	_	_	-1	μA	V _{DS} = -70V, V _G	s= 0V
Gate-Source Leakage	I _{GSS}	_	_	100	nA	$V_{GS}=\pm 20V, V_{D}$	_{0S} = 0V
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(th)}	-1	_	_	V	I _D = -250µA, V _D	os= V _{GS}
Static Drain-Source On-Resistance (Note 9)	P			0.16 Ω	V _{GS} = -10V, I _D = -2.1A		
	R _{DS(ON)}			0.25	12	V _{GS} = -4.5V, I _D :	= -1.7A
Forward Transconductance (Notes 9 & 10)	g _{fs}	_	4.4	—	S	V_{DS} = -15V, I_{D} =	-2.1A
Diode Forward Voltage (Note 9)	V _{SD}	_	-0.85	-0.95	V	I _S = -2A, V _{GS} = 0V	
Reverse Recovery Time (Note 10)	t _{rr}		29.8	—	ns	I _S = -2.1A, di/dt= 100A/µs	
Reverse Recovery Charge (Note 10)	Q _{rr}	_	38.5	—	nC		
DYNAMIC CHARACTERISTICS (Note 10)			-	-	-		
Input Capacitance	C _{iss}		635	—	pF		
Output Capacitance	Coss	_	52	—	pF	V _{DS} = -40V, V _G f= 1MHz	S= 0V
Reverse Transfer Capacitance	C _{rss}	_	42.5	—	pF		
Total Gate Charge (Note 11)	Qg	_	9.6	_	nC	V _{GS} = -5V	
Total Gate Charge (Note 11)	Qg	_	18	_	nC		V _{DS} = -35V
Gate-Source Charge (Note 11)	Q _{gs}	_	1.77	_	nC	V _{GS} = -10V I _D = -2.1A	
Gate-Drain Charge (Note 11)	Q _{gd}	_	3.66	_	nC		
Turn-On Delay Time (Note 11)	t _{D(on)}		2.5	_	ns		
Turn-On Rise Time (Note 11)	tr	_	3.4	_	ns	V _{DD} = -35V, V _{GS} = -10V I _D = -1A, R _G ≅ 6Ω	
Turn-Off Delay Time (Note 11)	t _{D(off)}		27.9	_	ns		
Turn-Off Fall Time (Note 11)	t _f		8		ns		

Notes: 6. For a device surface mounted on 25mm x 25mm 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.

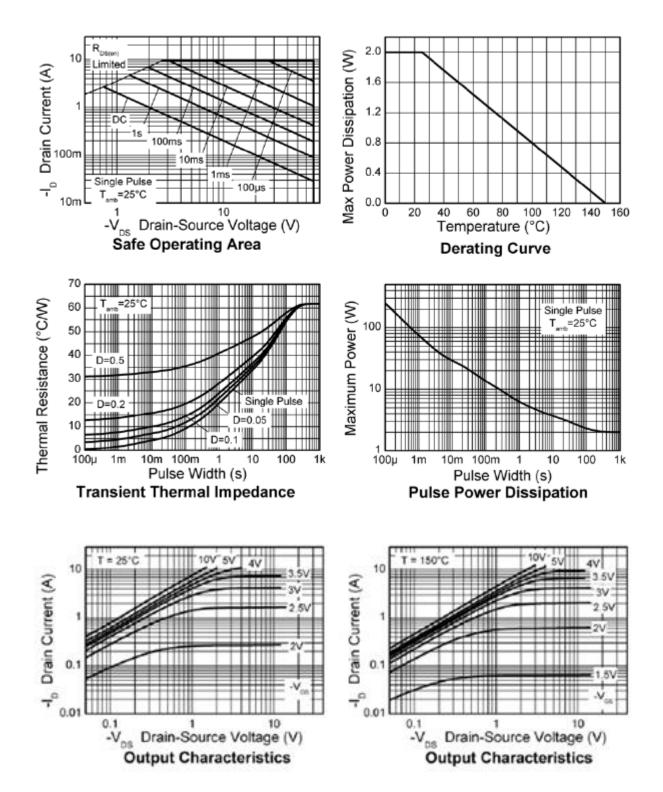
7. Same as Note 6, except the device is measured at $t \le 5$ seconds. 8. Same as Note 6, except the device is pulsed with D= 0.05 and pulse width 10µs. The pulse current is limited by the maximum junction temperature.

9. Measured under pulsed conditions. Pulse width \leq 300 $\mu s;$ duty cycle \leq 2%.

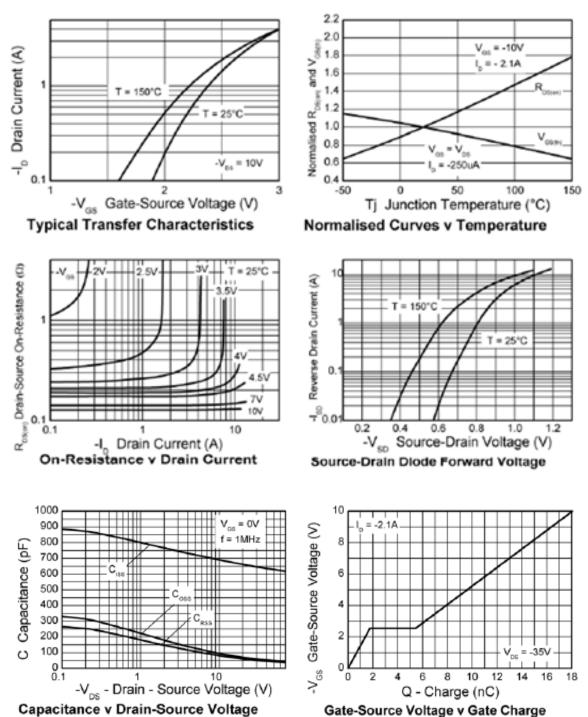
10. For design aid only, not subject to production testing.

11. Switching characteristics are independent of operating junction temperatures.





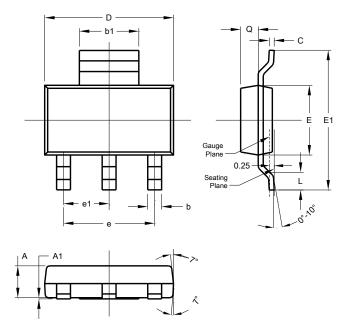






Package Outline Dimensions

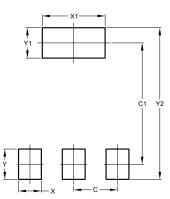
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
с	0.20	0.30	0.25		
D	6.45	6.55	6.50		
ш	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
e	-	-	4.60		
e1	-	-	2.30		
L	0.85	1.05	0.95		
q	0.84	0.94	0.89		
All Dimensions in mm					

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



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



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