



DUAL P-CHANNEL 60V ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D T _A = +25°C (Notes 7 & 9)
-60V	125mΩ @ $V_{GS} = -10V$	-3.4A
	190mΩ @ $V_{GS} = -4.5V$	-2.8A

Description

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.

Applications

- DC-DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

Features

- Low On-Resistance
- Fast Switching Speed
- Low Threshold
- Low Gate Drive
- Low Profile SOIC Package
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

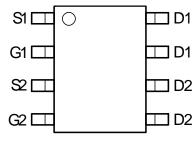
Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.074 grams (Approximate)

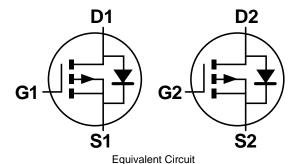


SO-8

Top View



Top View



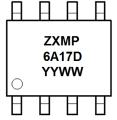
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXMP6A17DN8TA	AEC-Q101	ZXMP6A17D	7	12	500
ZXMP6A17DN8TC	AEC-Q101	ZXMP6A17D	13	12	2,500
ZXMP6A17DN8QTC	Automotive	ZXMP6A17D	13	12	2.500

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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/product_compliance_definitions.html.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



ZXMP6A17D = Product Type Marking Code YYWW = Date Code Marking YY = Year (ex: 17 = 2017) WW = Week (01 to 53)



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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	-60	V
Gate-Source Voltage			V _{GS}	±20	V
Continuous Drain Current	V _{GS} = 10V	(Notes 7 & 9)		-3.42	
		$T_A = +70^{\circ}C$ (Notes 7 & 9)	I _D	-2.73	Α
		(Notes 6 & 9)		-2.7	
Pulsed Drain Current		(Notes 8 & 9)	I _{DM}	-15.6	А
Continuous Source Current (Body Diode) (Notes		(Notes 7 & 9)	Is	-3.4	А
Pulsed Source Current (Body Diode) (Notes 8 & 9)		I _{SM}	-15.6	А	

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

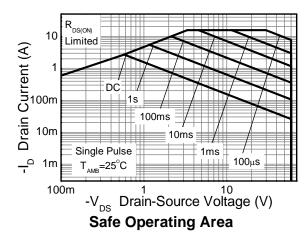
Characteristic	Symbol	Value	Unit	
	(Notes 6 & 9)		1.25 10.0	
Power Dissipation Linear Derating Factor	(Notes 6 & 10)	P _D	1.81 14.5	W mW/°C
	(Notes 7 & 9)		2.15 17	
	(Notes 6 & 9)	R ₀ JA	100	
Thermal Resistance, Junction to Ambient	(Notes 6 & 10)		70	°C 1 1 1
	(Notes 7 & 9)		60	°C/W
Thermal Resistance, Junction to Lead	(Notes 9 & 11)	R _{0JL}	51.68	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

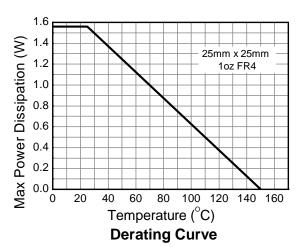
Notes:

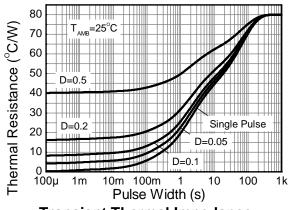
- 6. For a device surface mounted on 25mm x 25mm x 1.6mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
- Same as note (6), except the device is measured at t ≤ 10 sec.
 Same as note (6), except the device is pulsed with D = 0.02 and pulse width 300μs. The pulse current is limited by the maximum junction temperature.
 For a dual device with one active die.
 For a device with two active die running at equal power.
 Thermal resistance from junction to solder-point.

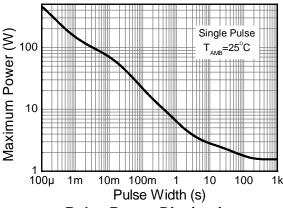


Thermal Characteristics









Transient Thermal Impedance

Pulse Power Dissipation



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

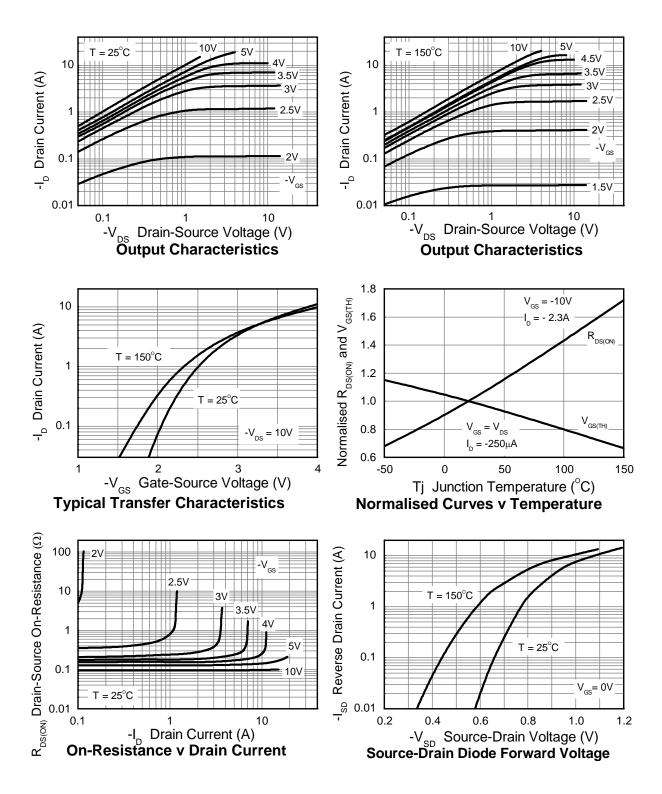
Characteristic	Symbol	Min	Тур	Max	Unit	Test Co	ondition
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	-60	_	_	V	$I_D = -250\mu A, V_{GS} = 0V$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	-0.5	μΑ	$V_{DS} = -60V, V_{GS}$	= 0V
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS}$	S = 0V
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(TH)}	-1.0	_	_	V	$I_D = -250 \mu A, V_{DS}$	s = V _{GS}
Statia Drain Source On Registance (Note 12)	5			0.125	Ω	$V_{GS} = -10V, I_{D} =$	-2.3A
Static Drain-Source On-Resistance (Note 12)	R _{DS(ON)}	_	_	0.190	12	$V_{GS} = -4.5V, I_{D} =$	= -1.9A
Forward Transconductance (Notes 12 & 13)	g fs	_	4.7	_	s	V _{DS} = -15V, I _D =	-2.3A
Diode Forward Voltage (Note 12)	V _{SD}	_	-0.85	-0.95	V	I _S = -2.0A, V _{GS} =	= 0V
Reverse Recovery Time (Note 13)	t _{RR}		25.1	_	ns	-I _S = -1.7A, di/dt = 100A/μs	
Reverse Recovery Charge (Note 13)	Q_{RR}	_	27.2	_	nC		
DYNAMIC CHARACTERISTICS (Note 13)							
Input Capacitance	C _{iss}	_	637	_	pF		
Output Capacitance	Coss	_	70	_	pF	V _{DS} = -30V, V _{GS} f = 1MHz	= 0V
Reverse Transfer Capacitance	C _{rss}	_	53	_	pF	-1 = 11VIDZ	
Total Gate Charge (Note 14)	Q_g	_	9.0	_	nC	$V_{GS} = -4.5V$	
Total Gate Charge (Note 14)	Q_g	_	17.7	_	nC		$V_{DS} = -30V$
Gate-Source Charge (Note 14)	Q _{gs}	_	1.6	_	nC	V _{GS} = -10V	
Gate-Drain Charge (Note 14)	Q_{gd}	_	4.4	_	nC		
Turn-On Delay Time (Note 14)	t _{D(ON)}	_	2.6	_	ns	V_{DD} = -30V, V_{GS} = -10V I_D = -1A, $R_g \cong 6.0\Omega$	
Turn-On Rise Time (Note 14)	t _R	_	3.4	_	ns		
Turn-Off Delay Time (Note 14)	t _{D(OFF)}	_	26.2	_	ns		
Turn-Off Fall Time (Note 14)	t _F	_	11.3		ns		

Notes:

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

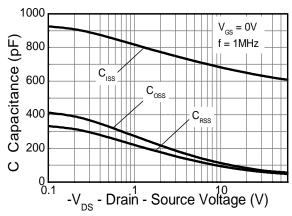


Typical Characteristics

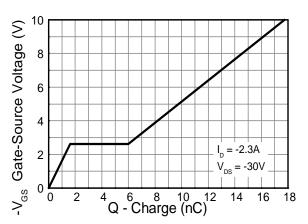




Typical Characteristics (Cont.)

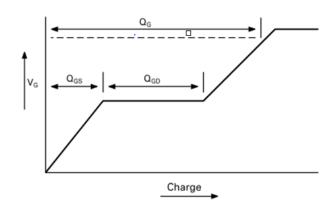


Capacitance v Drain-Source Voltage

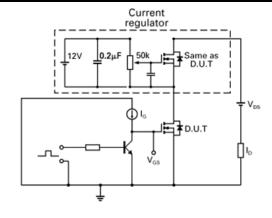


Gate-Source Voltage v Gate Charge

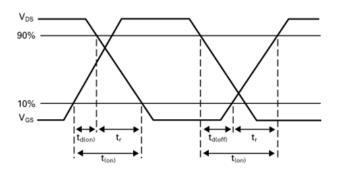
Test Circuits



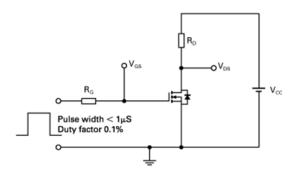
Basic gate charge waveform



Gate charge test circuit



Switching time waveforms



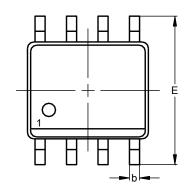
Switching time test circuit

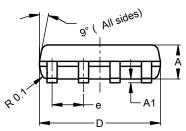


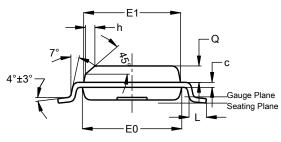
Package Outline Dimensions

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

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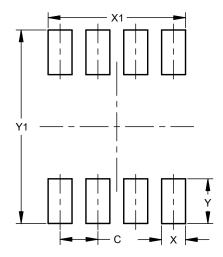


SO-8					
Dim	Min	Max	Тур		
Α	1.40	1.50	1.45		
A1	0.10	0.20	0.15		
b	0.30	0.50	0.40		
С	0.15	0.25	0.20		
D	4.85	4.95	4.90		
Е	5.90	6.10	6.00		
E1	3.80	3.90	3.85		
E0	3.85	3.95	3.90		
е			1.27		
h	-		0.35		
١	0.62	0.82	0.72		
ø	0.60	0.70	0.65		
All Dimensions in mm					

Suggested Pad Layout

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

SO-8



Dimensions	Value (in mm)
С	1.27
X	0.802
X1	4.612
Y	1.505
Y1	6.50



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