





ZXMN3A14F

30V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	Max R _{DS(on)}	Max I _D T _A = 25°C (Note 4)	
201/	$65\text{m}\Omega$ @ $V_{GS} = 10V$	3.2A	
30V	95mΩ @ V _{GS} = 4.5V	2.6A	

Description and Applications

This MOSFET utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed, making it ideal for high-efficiency power management applications.

- DC DC converters
- Power management functions
- Disconnect switches
- Motor control

Features and Benefits

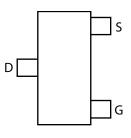
- Low on-resistance
- Fast switching speed
- Low gate charge
- Low threshold
- Totally Lead-Free & Fully RoHS compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

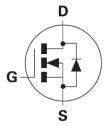
- Case: SOT23
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)







Top View Pin Out



Equivalent Circuit

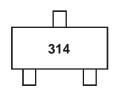
Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN3A14FTA	314	7	8	3000 Units

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 3. For more packaging details, go to our website at http://www.diodes.com.

Marking Information



314 = Product Type Marking Code





Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic				Symbol	Value	Units
Drain-Source Voltage				V_{DSS}	30	V
Gate-Source Voltage				V_{GS}	±20	V
Continuous Drain Current	V _{GS} = 10V	T _A = 70°C	(Note 5) (Note 5) (Note 4)	I_{D}	3.9 3.2 3.2	А
Pulsed Drain Current (Note 6)				I_{DM}	18	A
Continuous Source Current (Body Diode) (Note 5)				Is	2.3	A
Pulsed Source Current (Body Diode) (Note 6)				I _{SM}	18	A

Thermal Characteristics @TA = 25°C unless otherwise specified

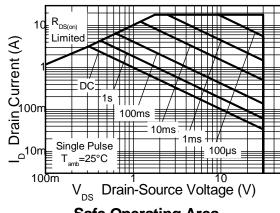
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	D-	1	W
Linear Derating Factor	P _D	8	mW/°C
Power Dissipation (Note 5)	D-	1.5	W
Linear Derating Factor	P _D	12	mW/°C
Thermal Resistance, Junction to Ambient (Note 4)	R ₀ JA	125	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	83	°C/W
Thermal Resistance, Junction to Leads (Note 7)	$R_{ heta JL}$	70.44	°C/W
Operating and Storage Temperature Range	$T_{J_i} T_{STG}$	-55 to +150	°C

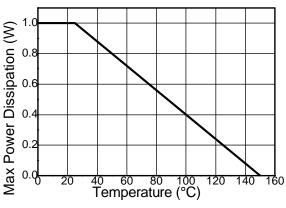
Notes:

- 4. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions 5. For a device surface mounted on FR4 PCB measured at t ≤5 secs.
 6. Repetitive rating 25mm x 25mm FR4 PCB, D=0.02 pulse width=300µs pulse current limited by maximum junction temperature. 7. Thermal resistance from junction to solder-point (at the end of the drain lead).



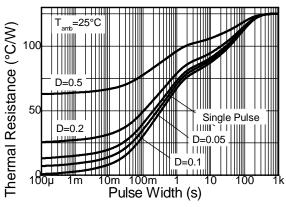
Thermal Characteristics

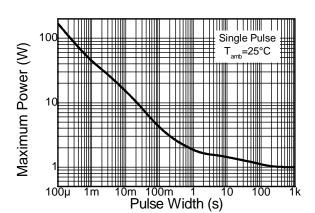




Safe Operating Area







Transient Thermal Impedance

Pulse Power Dissipation





Electrical Characteristics @T_A = 25°C unless otherwise specified

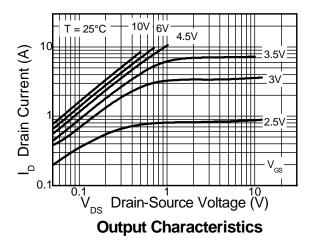
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage		30	_	_	V	$I_D = 250 \mu A$, $V_{GS} = 0 V$
Zero Gate Voltage Drain Current	I _{DSS}	_		1	μΑ	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	_	_	±100	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	1.0		2.2	V	$I_D = 250 \mu A, V_{DS} = V_{GS}$
Static Drain-Source On-Resistance (Note 8)	2	_	48	65	mΩ	$V_{GS} = 10V, I_D = 3.2A$
Static Dialii-Source On-Resistance (Note 6)	R _{DS} (ON)		69	95		$V_{GS} = 4.5V, I_D = 2.6A$
Forward Transconductance (Notes 8 and 10)	g _{fs}	_	7.1	_	S	$V_{DS} = 15V, I_D = 3.2A$
Diode Forward Voltage (Note 8)	V_{SD}	_	0.85	0.95	V	$T_J = 25$ °C, $I_S = 2.5$ A, $V_{GS} = 0$ V
Reverse Recovery Time (Note 10)	t _{rr}	_	13	_	ns	$T_J = 25^{\circ}C$, $I_F = 1.6A$,
Reverse Recovery Charge (Note 10)		_	7	_	nC	di/dt = 100A/μs
DYNAMIC CHARACTERISTICS (Note 10)	•				•	•
Input Capacitance	C _{iss}	_	448	_		$V_{DS} = 15V, V_{GS} = 0V$ f = 1.0MHz
Output Capacitance	Coss	_	82	_	pF	
Reverse Transfer Capacitance	C _{rss}	_	49	_		
Turn-On Delay Time (Note 9)	t _{D(on)}	_	2.4	_		
Turn-On Rise Time (Note 9)	t _r	_	2.5	_		$V_{DD} = 15V, I_D = 1A,$
Turn-Off Delay Time (Note 9)	t _{D(off)}	_	13.1	_	ns	$R_G \cong 6.0\Omega, V_{GS} = 10V$
Turn-Off Fall Time (Note 9)	t _f	_	5.3	_		
Total Gate Charge (Note 9)	Qq	_	8.6	_		
Gate-Source Charge (Note 9)	Qgs	_	1.4	_	nC	$V_{DS} = 15V, V_{GS} = 10V,$
Gate-Drain Charge (Note 9)	Q_{qd}	_	1.8	_	I _D = 3.2A	

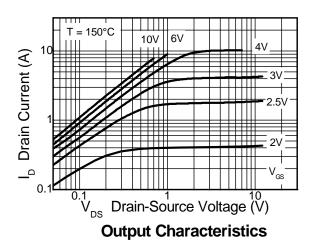
Notes:

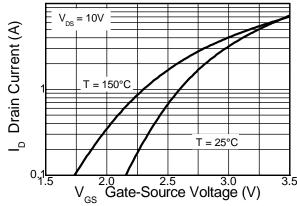
^{8.} Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.
9. Switching characteristics are independent of operating junction temperature.
10. For design aid only, not subject to production testing.

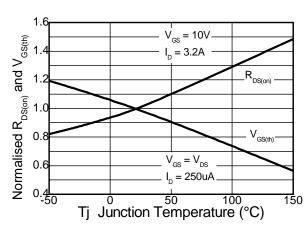


Typical Characteristics



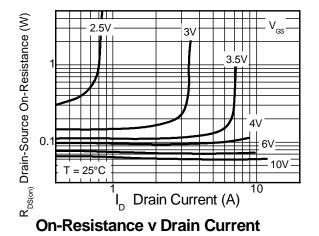


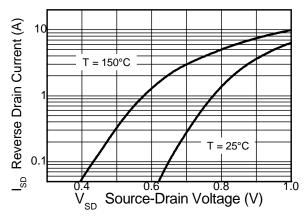




Typical Transfer Characteristics



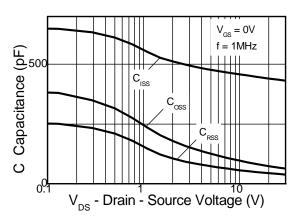




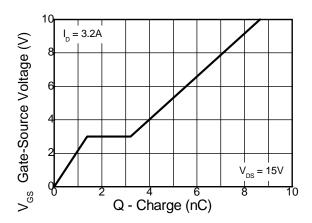
Source-Drain Diode Forward Voltage



Typical Characteristics - continued

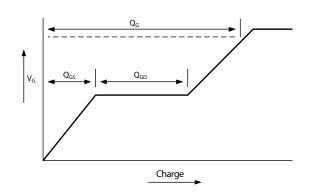


Capacitance v Drain-Source Voltage

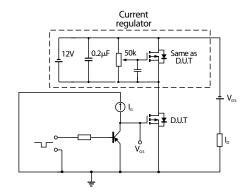


Gate-Source Voltage v Gate Charge

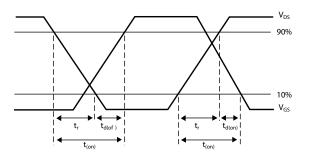
Test Circuits



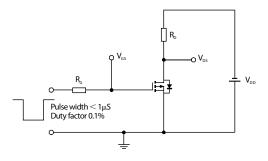
Basic gate charge waveform



Gate charge test circuit



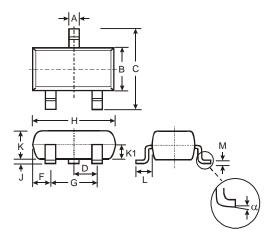
Switching time waveforms



Switching time test circuit

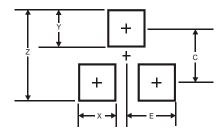


Package Outline Dimensions



SOT23					
Dim	Min	Max	Тур		
Α	0.37	0.51	0.40		
В	1.20	1.40	1.30		
С	2.30	2.50	2.40		
D	0.89	1.03	0.915		
F	0.45	0.60	0.535		
G	1.78	2.05	1.83		
Н	2.80	3.00	2.90		
J	0.013	0.10	0.05		
K	0.903	1.10	1.00		
K1	-	-	0.400		
L	0.45	0.61	0.55		
M	0.085	0.18	0.11		
α	0°	8°	-		
All Dimensions in mm					

Suggested Pad Layout



Dimensions	Value (in mm)		
Z	2.9		
Х	0.8		
Y	0.9		
С	2.0		
E	1.35		





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