

ZXMN2A02N8

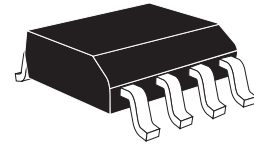
20V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = 20V$; $R_{DS(ON)} = 0.02\Omega$; $I_D = 10.2A$

DESCRIPTION

This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



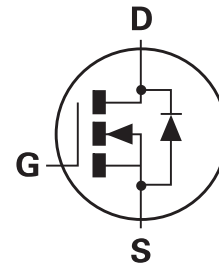
SO8

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

APPLICATIONS

- Disconnect switches
- Motor control

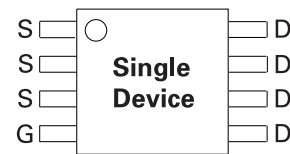


ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN2A02N8TA	7"	12mm	500 units
ZXMN2A02N8TC	13"	12mm	2500 units

DEVICE MARKING

- ZXMN
2A02



Top View

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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate Source Voltage	V_{GS}	± 12	V
Continuous Drain Current $V_{GS}=10V$; $T_A=25^\circ C$ ^(b) $V_{GS}=10V$; $T_A=70^\circ C$ ^(b) $V_{GS}=10V$; $T_A=25^\circ C$ ^(a)	I_D	10.2 8.2 8.3	A
Pulsed Drain Current ^(c)	I_{DM}	50	A
Continuous Source Current (Body Diode) ^(b)	I_S	4.3	A
Pulsed Source Current (Body Diode) ^(c)	I_{SM}	50	A
Power Dissipation at $T_A=25^\circ C$ ^(a) Linear Derating Factor	P_D	1.56 12.5	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ ^(b) Linear Derating Factor	P_D	2.5 20	W mW/ $^\circ C$
Operating and Storage Temperature Range	T_j ; T_{stg}	-55 to 150	$^\circ C$

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient ^(a)	$R_{\theta JA}$	80	$^\circ C/W$
Junction to Ambient ^(b)	$R_{\theta JA}$	50	$^\circ C/W$

NOTES

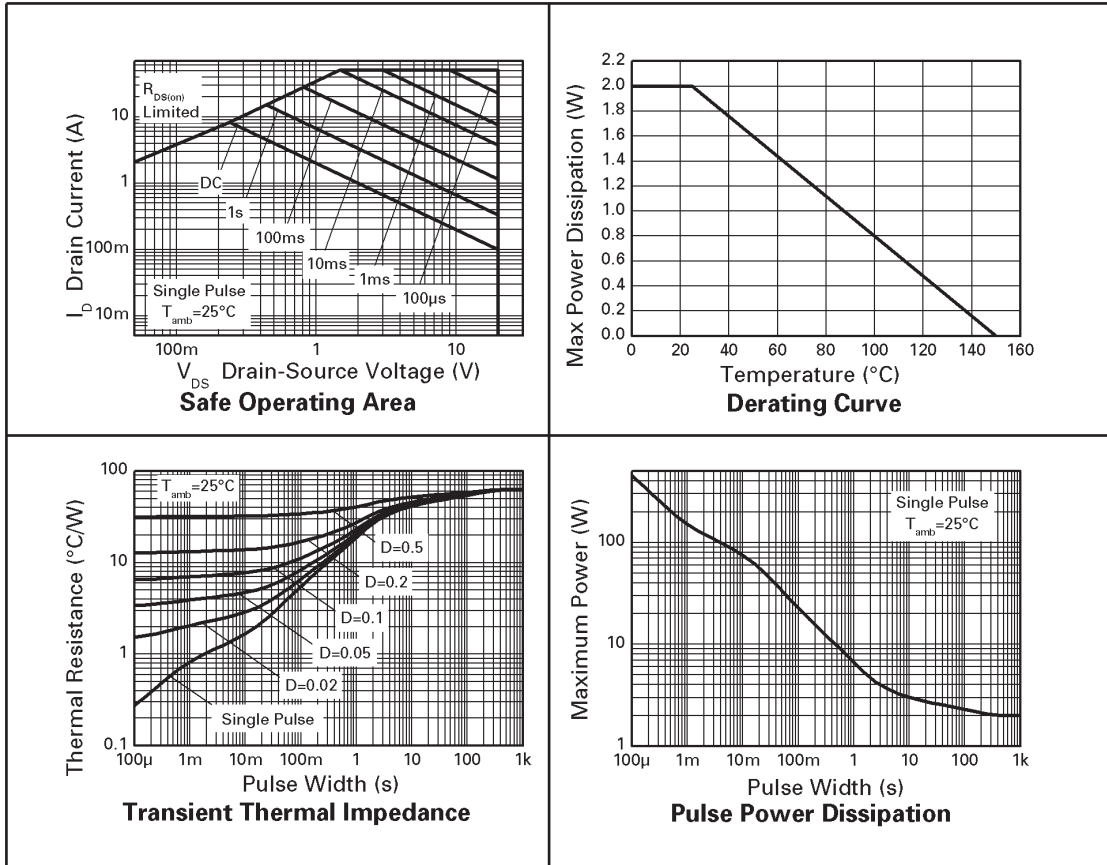
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.02$, pulse width 300 μs - pulse width limited by maximum junction temperature.

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CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

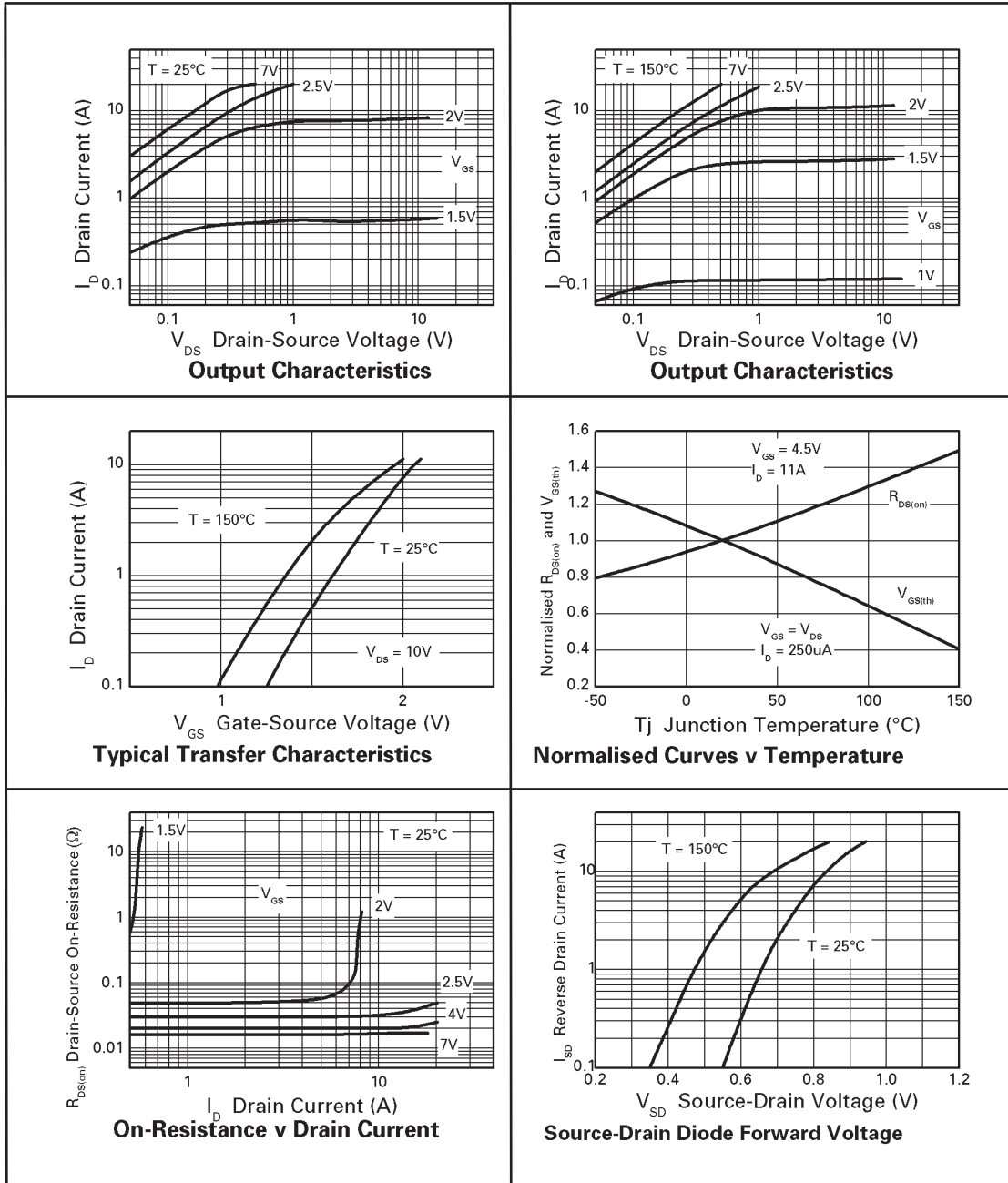
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	20			V	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	$V_{DS}=20\text{V}, V_{GS}=0\text{V}$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 12\text{V}, V_{DS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.7			V	$I_D=250\mu\text{A}, V_{DS}=V_{GS}$
Static Drain-Source On-State Resistance ⁽¹⁾	$R_{DS(on)}$			0.02	Ω	$V_{GS}=4.5\text{V}, I_D=11\text{A}$
				0.04	Ω	$V_{GS}=2.5\text{V}, I_D=8.4\text{A}$
Forward Transconductance ⁽¹⁾⁽³⁾	g_{fs}		27		S	$V_{DS}=10\text{V}, I_D=11\text{A}$
DYNAMIC ⁽³⁾						
Input Capacitance	C_{iss}		1900		pF	$V_{DS}=10\text{V}, V_{GS}=0\text{V},$ $f=1\text{MHz}$
Output Capacitance	C_{oss}		356		pF	
Reverse Transfer Capacitance	C_{rss}		218		pF	
SWITCHING ^{(2) (3)}						
Turn-On Delay Time	$t_{d(on)}$		7.9		ns	$V_{DD}=10\text{V}, I_D=1\text{A}$ $R_G=6.0\Omega, V_{GS}=4.5\text{V}$
Rise Time	t_r		10		ns	
Turn-Off Delay Time	$t_{d(off)}$		33.3		ns	
Fall Time	t_f		13.6		ns	
Total Gate Charge	Q_g		18.9		nC	$V_{DS}=10\text{V}, V_{GS}=4.5\text{V},$ $I_D=11\text{A}$
Gate-Source Charge	Q_{gs}		5.2		nC	
Gate-Drain Charge	Q_{gd}		4.9		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage ⁽¹⁾	V_{SD}		0.85	0.95	V	$T_J=25^{\circ}\text{C}, I_S=11.5\text{A},$ $V_{GS}=0\text{V}$
Reverse Recovery Time ⁽³⁾	t_{rr}		16.3		ns	$T_J=25^{\circ}\text{C}, I_F=2.1\text{A},$ $di/dt= 100\text{A}/\mu\text{s}$
Reverse Recovery Charge ⁽³⁾	Q_{rr}		7.8		nC	

NOTES

- (1) Measured under pulsed conditions. Width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.
 (2) Switching characteristics are independent of operating junction temperature.
 (3) For design aid only, not subject to production testing.

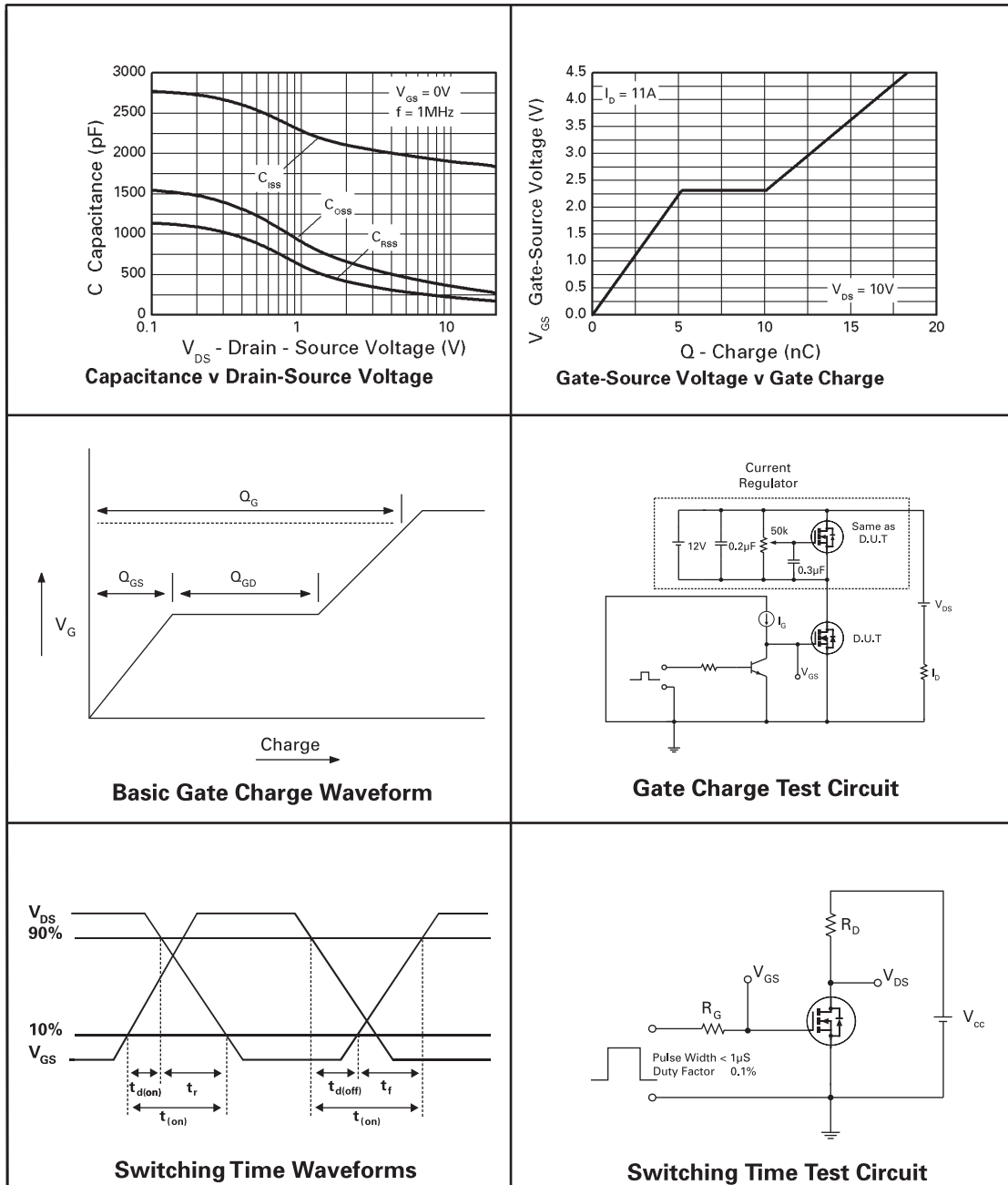
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CHARACTERISTICS



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CHARACTERISTICS



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Product status key:

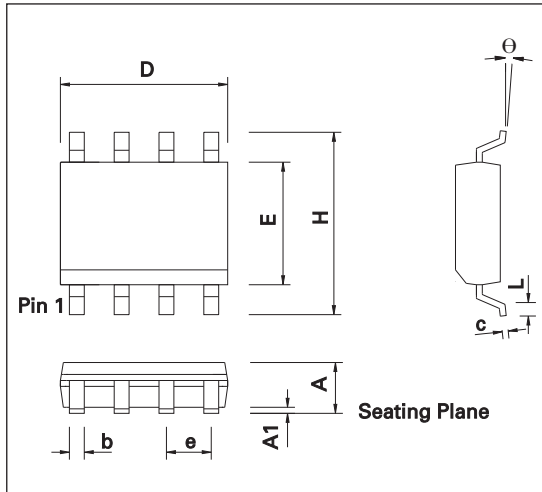
- "Preview"Future device intended for production at some point. Samples may be available
- "Active"Product status recommended for new designs
- "Last time buy (LTB)"Device will be discontinued and last time buy period and delivery is in effect
- "Not recommended for new designs"Device is still in production to support existing designs and production
- "Obsolete"Production has been discontinued

Datasheet status key:

- "Draft version" This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.
- "Provisional version" This term denotes a pre-release datasheet. It provides a clear indication of anticipated performance. However, changes to the test conditions and specifications may occur, at any time and without notice.
- "Issue" This term denotes an issued datasheet containing finalized specifications. However, changes to specifications may occur, at any time and without notice.

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PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES
APPROX IN MILLIMETERS

PACKAGE DIMENSIONS

DIM	INCHES		MILLIMETRES	
	MIN	MAX	MIN	MAX
A	0.053	0.069	1.35	1.75
A1	0.004	0.010	0.10	0.25
D	0.189	0.197	4.80	5.00
H	0.228	0.244	5.80	6.20
E	0.150	0.157	3.80	4.00
L	0.016	0.050	0.40	1.27
e	0.050 BSC		1.27 BSC	
b	0.013	0.020	0.33	0.51
c	0.008	0.010	0.19	0.25
θ	0°	8°	0°	8°
h	0.010	0.020	0.25	0.50

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