



**THE DATASHEET OF
ZXMN3A02X8TC**



ZXMN3A02X8

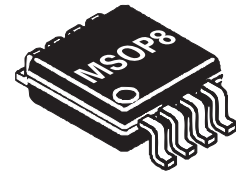
30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=30V$; $R_{DS(ON)}=0.025\Omega$ $I_D=6.7A$

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.

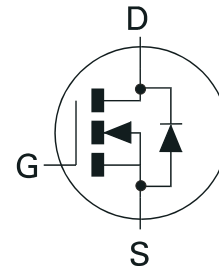


FEATURES

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

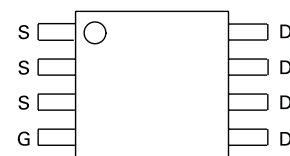
APPLICATIONS

- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control



ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN3A02X8TA	7"	12mm	1000 units
ZXMN3A02X8TC	13"	12mm	4000 units



Top View

DEVICE MARKING

- ZXMN
3A02

ZXMN3A02X8

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V _{DSS}	30	V
Gate Source Voltage	V _{GS}	±20	V
Continuous Drain Current V _{GS} =10V; T _A =25°C (b) V _{GS} =10V; T _A =70°C (b) V _{GS} =10V; T _A =25°C (a)	I _D	6.7 5.4 5.3	A
Pulsed Drain Current (c)	I _{DM}	24	A
Continuous Source Current (Body Diode) (b)	I _S	3.2	A
Pulsed Source Current (Body Diode) (c)	I _{SM}	24	A
Power Dissipation at T _A =25°C (a) Linear Derating Factor	P _D	1.1 8.8	W mW/°C
Power Dissipation at T _A =25°C (b) Linear Derating Factor	P _D	1.8 14.4	W mW/°C
Operating and Storage Temperature Range	T _j :T _{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	R _{θJA}	113	°C/W
Junction to Ambient (b)	R _{θJA}	70	°C/W

NOTES

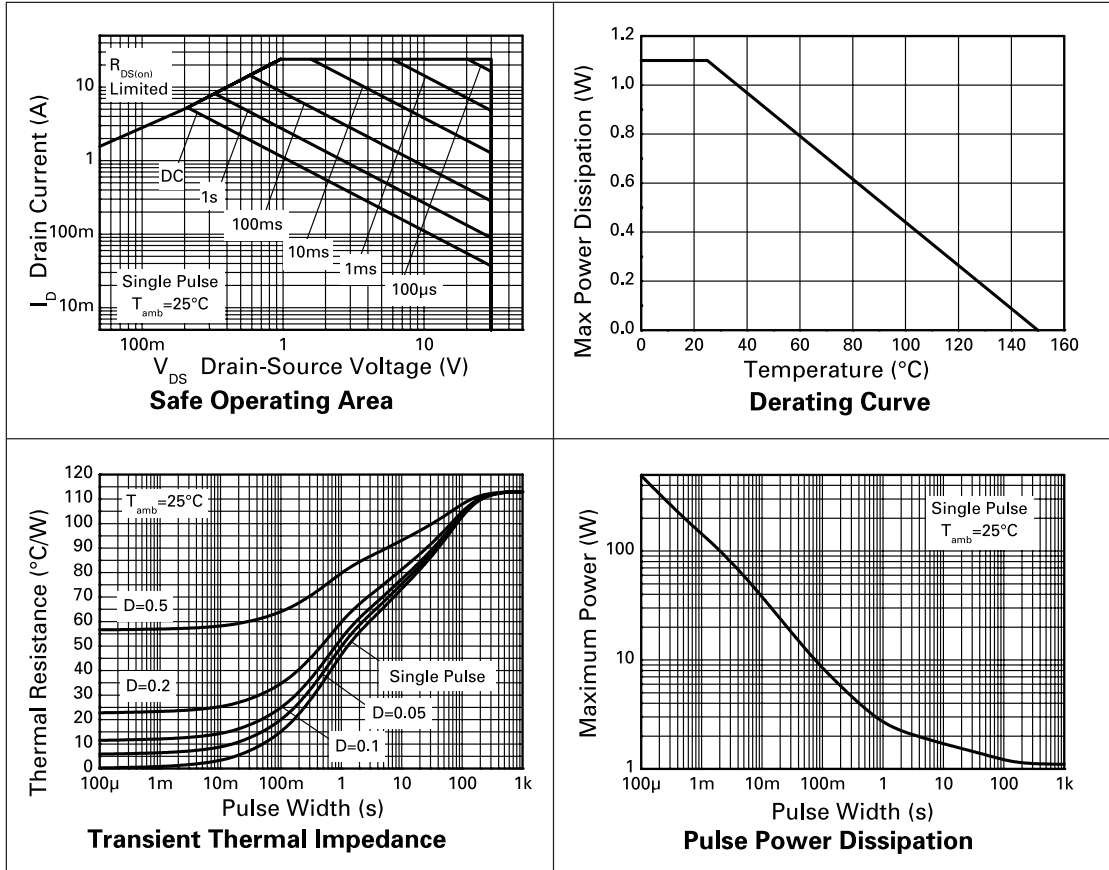
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

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

(c) Repetitive rating 25mm x 25mm FR4 PCB, D = 0.05, pulse width 10μs - pulse width limited by maximum junction temperature.

ZXMN3A02X8

CHARACTERISTICS



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

ZXMN3A02X8

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30			V	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1			V	$I_D=250\mu\text{A}$, $V_{DS}=V_{GS}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.025 0.035	Ω Ω	$V_{GS}=10\text{V}$, $I_D=12\text{A}$ $V_{GS}=4.5\text{V}$, $I_D=10.2\text{A}$
Forward Transconductance (1)(3)	g_{fs}		22		S	$V_{DS}=10\text{V}$, $I_D=12\text{A}$
DYNAMIC (3)						
Input Capacitance	C_{iss}		1400		pF	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$
Output Capacitance	C_{oss}		209		pF	
Reverse Transfer Capacitance	C_{rss}		120		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		3.9		ns	$V_{DD}=15\text{V}$, $I_D=5.5\text{A}$ $R_G=6.2\Omega$, $V_{GS}=10\text{V}$ (refer to test circuit)
Rise Time	t_r		5.5		ns	
Turn-Off Delay Time	$t_{d(off)}$		35.0		ns	
Fall Time	t_f		7.6		ns	
Gate Charge	Q_g		14.5		nC	$V_{DS}=15\text{V}$, $V_{GS}=5\text{V}$, $I_D=5.5\text{A}$ (refer to test circuit)
Total Gate Charge	Q_g		26.8		nC	$V_{DS}=15\text{V}$, $V_{GS}=10\text{V}$, $I_D=5.5\text{A}$ (refer to test circuit)
Gate-Source Charge	Q_{gs}		4.7		nC	
Gate-Drain Charge	Q_{gd}		4.7		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}			0.95	V	$T_J=25^\circ\text{C}$, $I_S=9\text{A}$, $V_{GS}=0\text{V}$
Reverse Recovery Time (3)	t_{rr}		17		ns	$T_J=25^\circ\text{C}$, $I_F=5.5\text{A}$, $di/dt=100\text{A}/\mu\text{s}$
Reverse Recovery Charge (3)	Q_{rr}		8.3		nC	

NOTES

(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.

(2) Switching characteristics are independent of operating junction temperature.

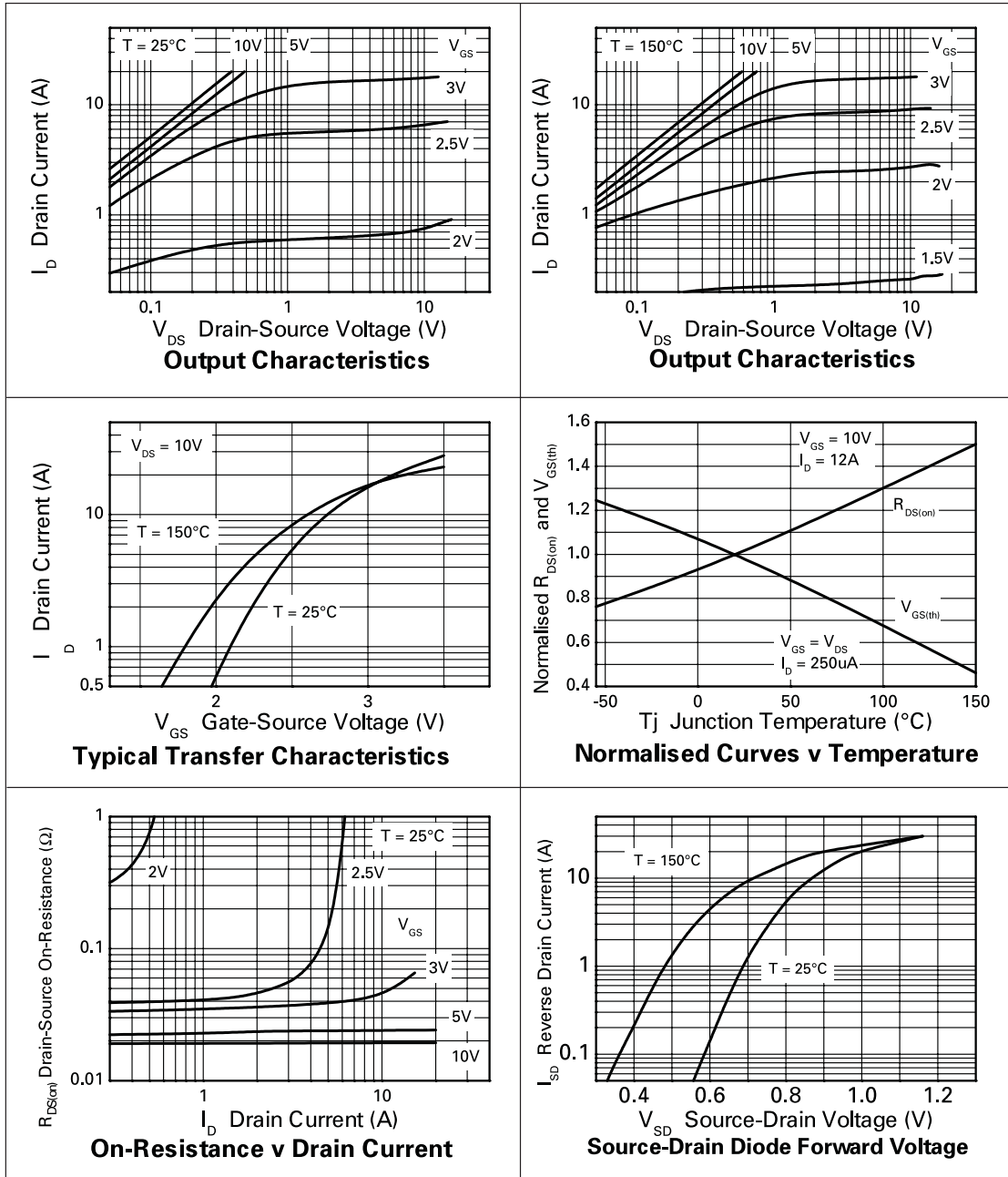
(3) For design aid only, not subject to production testing.



ISSUE 1 - JANUARY 2002

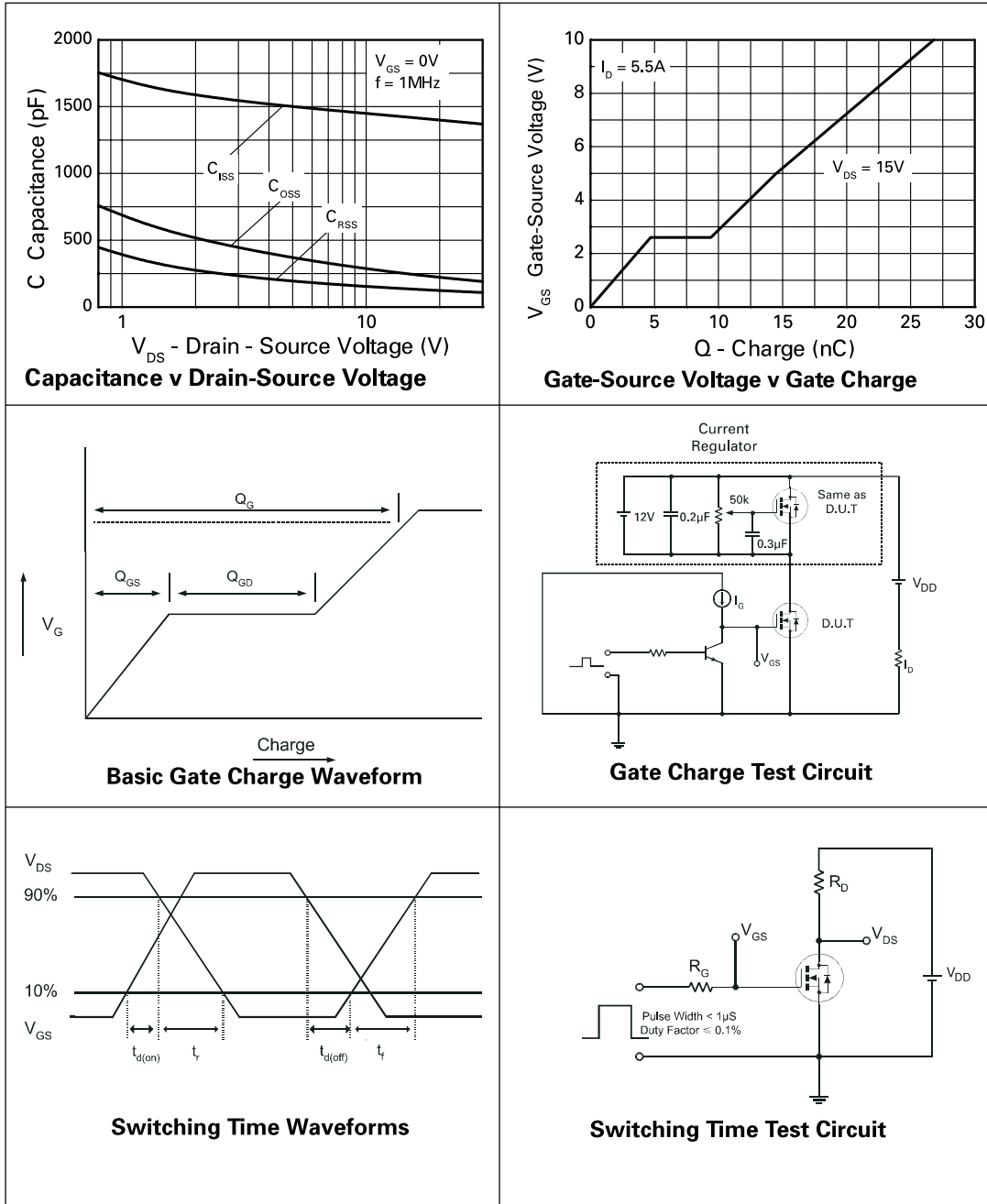
ZXMN3A02X8

CHARACTERISTICS



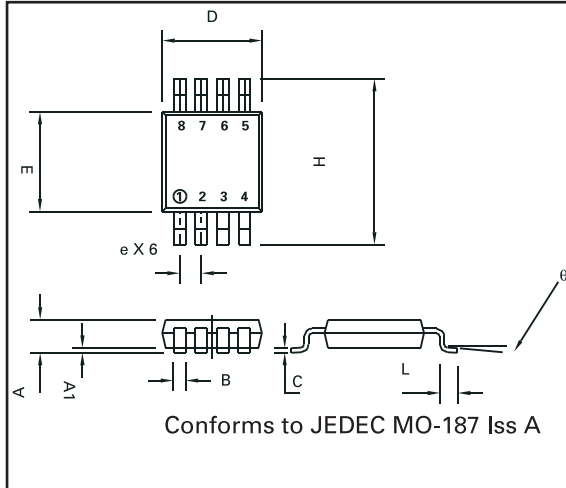
ZXMN3A02X8

CHARACTERISTICS



ZXMN3A02X8

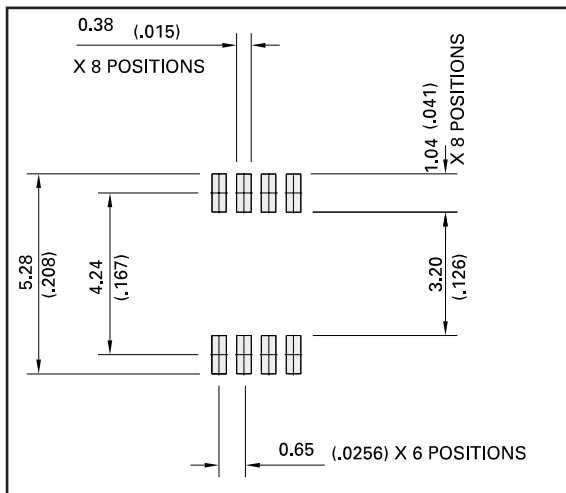
PACKAGE OUTLINE



PACKAGE DIMENSION

DIM	Millimetres		Inches	
	MIN	MAX	MIN	MAX
A		1.10		0.043
A1	0.05	0.15	0.002	0.006
B	0.25	0.40	0.010	0.016
C	0.13	0.23	0.005	0.009
D	2.90	3.10	0.114	0.122
e	0.65	BSC	0.0256	BSC
E	2.90	3.10	0.114	0.122
H	4.90	BSC	0.193	BSC
L	0.40	0.70	0.016	0.028
θ°	0°	6°	0°	6°

PAD LAYOUT



© Zetex plc 2001

Zetex plc
Fields New Road
Chadderton
Oldham, OL9 8NP
United Kingdom
Telephone (44) 161 622 4422
Fax: (44) 161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc
700 Veterans Memorial Hwy
Hauppauge, NY11788
USA
Telephone: (631) 360 2222
Fax: (631) 360 8222

Zetex (Asia) Ltd
3701-04 Metroplaza, Tower 1
Hing Fong Road
Kwai Fong
Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494

These offices are supported by agents and distributors in major countries world-wide.



This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to www.zetex.com

ISSUE 1 - JANUARY 2002

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View ZXMN3A02X8TC on WIN SOURCE](#)
-  [Diodes Incorporated Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management