

ZXMN3A02X8

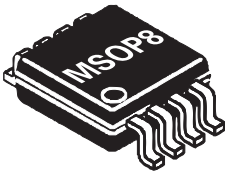
30V N-CHANNEL ENHANCEMENT MODE MOSFET

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.

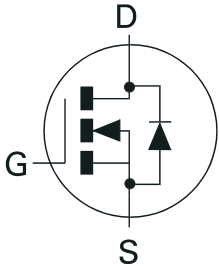


FEATURES

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

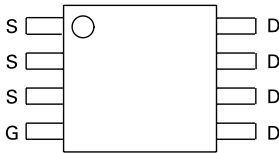
APPLICATIONS

- 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 $V_{GS}=10V$; $T_A=25^{\circ}C$ (b) $V_{GS}=10V$; $T_A=70^{\circ}C$ (b) $V_{GS}=10V$; $T_A=25^{\circ}C$ (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 $T_A=25^{\circ}C$ (a) Linear Derating Factor	P_D	1.1 8.8	W mW/ $^{\circ}C$
Power Dissipation at $T_A=25^{\circ}C$ (b) Linear Derating Factor	P_D	1.8 14.4	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)	$R_{\theta JA}$	113	$^{\circ}C/W$
Junction to Ambient (b)	$R_{\theta JA}$	70	$^{\circ}C/W$

NOTES

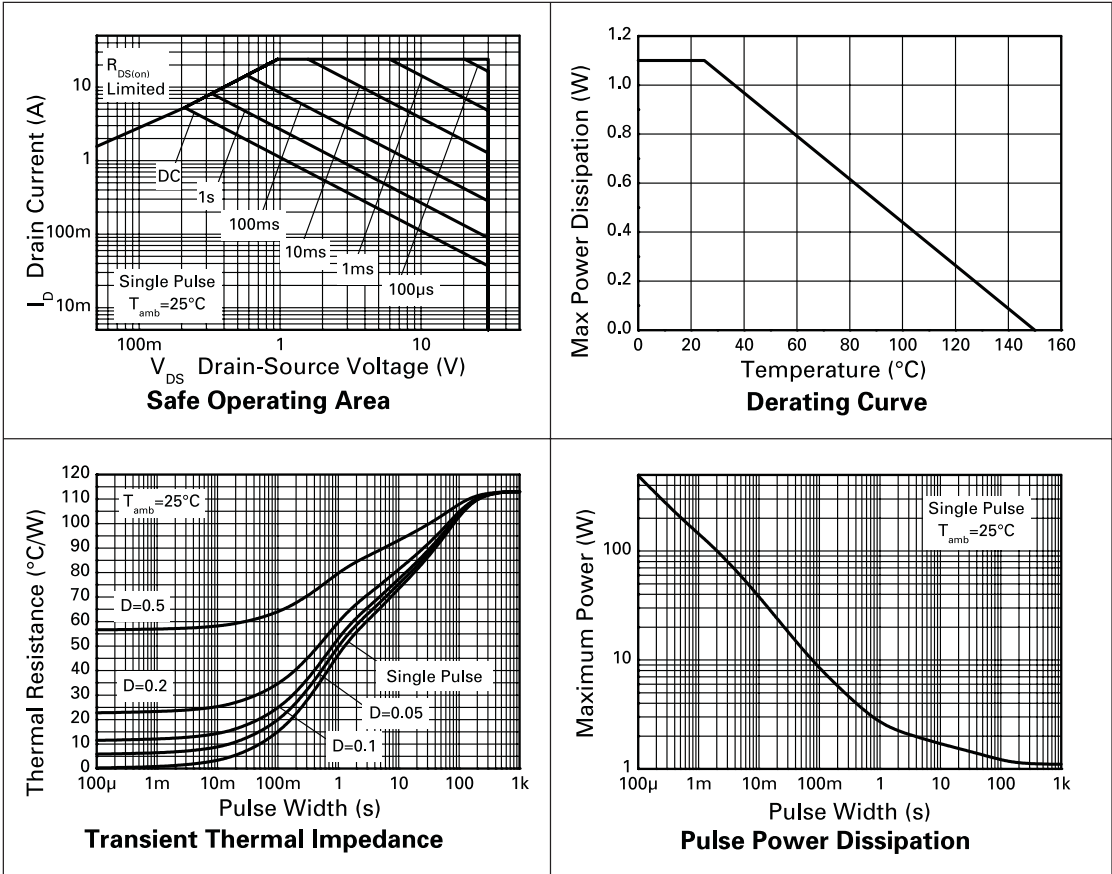
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

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

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

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CHARACTERISTICS



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

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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 =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =30V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	1			V	I _D =250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.025 0.035	Ω Ω	V _{GS} =10V, I _D =12A V _{GS} =4.5V, I _D =10.2A
Forward Transconductance (1)(3)	g _{fs}		22		S	V _{DS} =10V,I _D =12A
DYNAMIC (3)						
Input Capacitance	C _{iss}		1400		pF	V _{DS} =25 V, V _{GS} =0V, f=1MHz
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} =15V, I _D =5.5A R _G =6.2Ω, V _{GS} =10V (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} =15V,V _{GS} =5V, I _D =5.5A (refer to test circuit)
Total Gate Charge	Q _g		26.8		nC	V _{DS} =15V,V _{GS} =10V, I _D =5.5A (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°C, I _S =9A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		17		ns	T _J =25°C, I _F =5.5A, di/dt= 100A/μs
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.

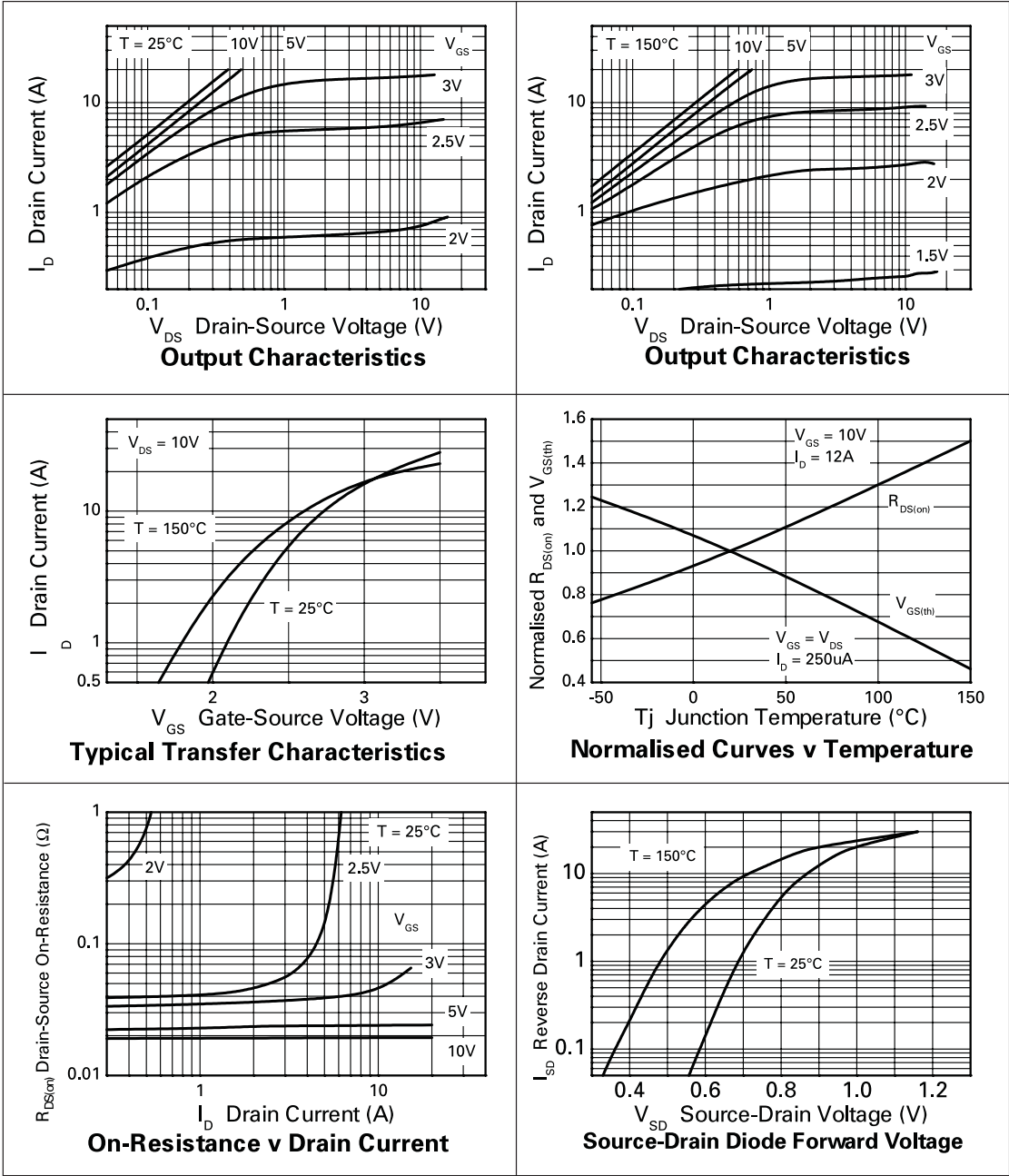
(3) For design aid only, not subject to production testing.



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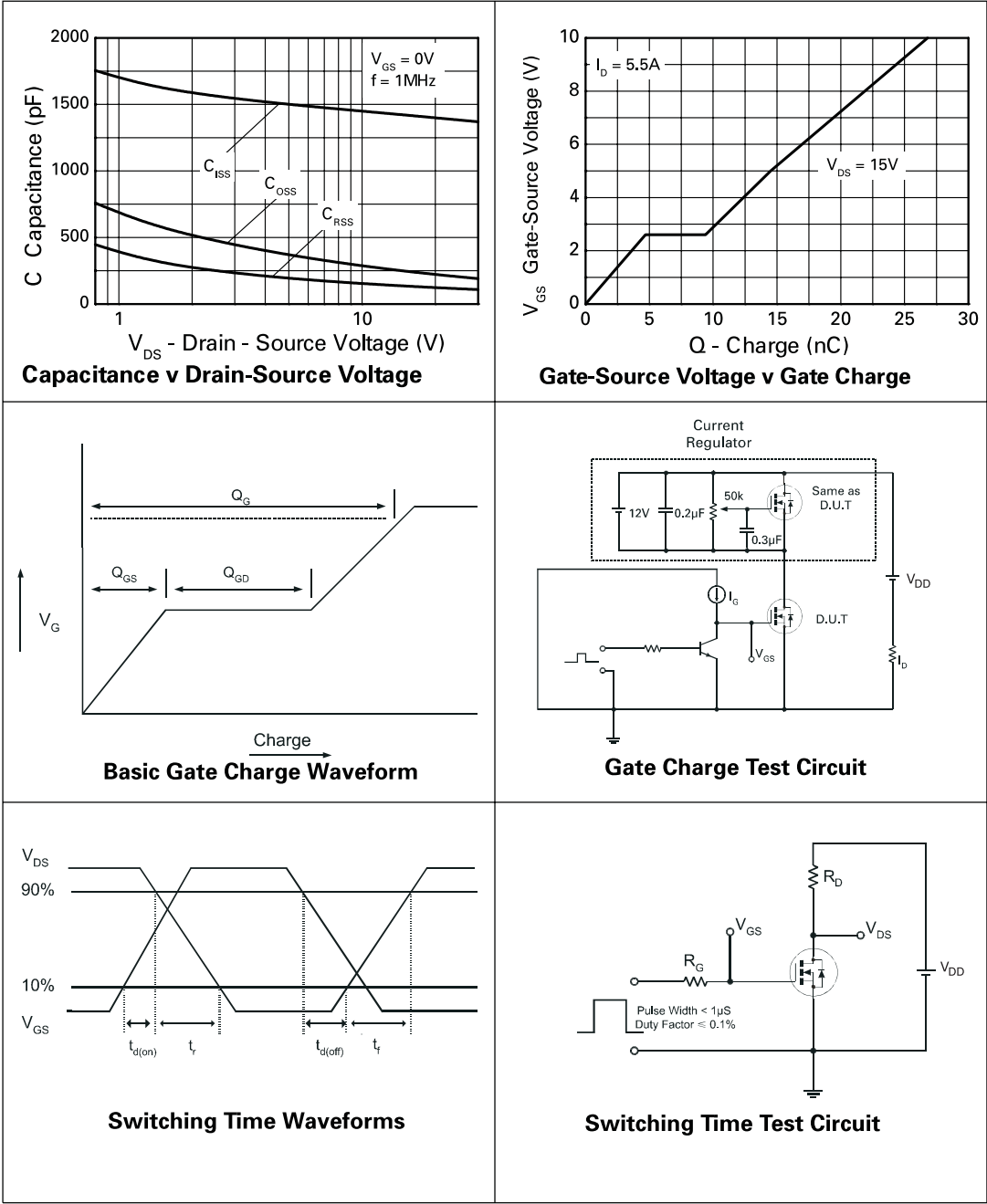
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CHARACTERISTICS



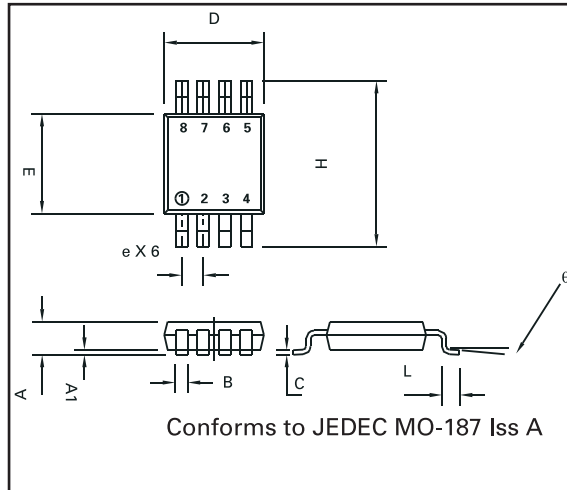
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CHARACTERISTICS



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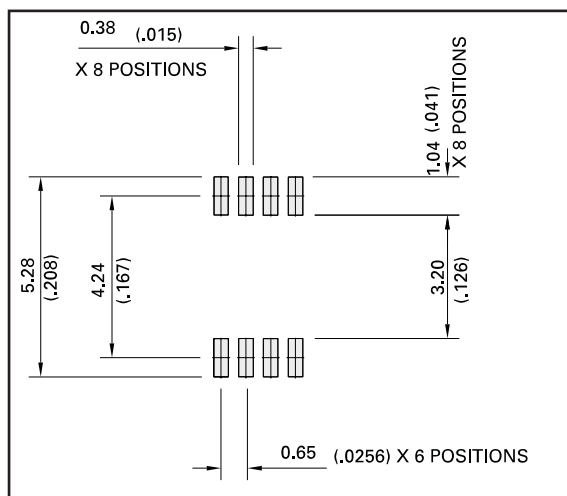
PACKAGE OUTLINE



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



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