

ZXMN2A02X8

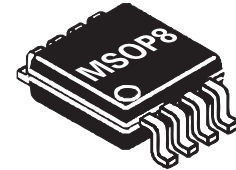
20V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = 20V$; $R_{DS(ON)} = 0.02\Omega$ $I_D = 7.8A$

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.



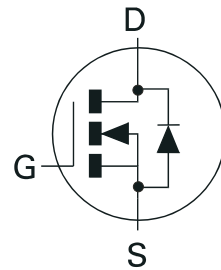
MSOP8

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



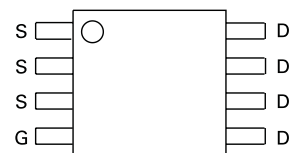
ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN2A02X8TA	7"	12mm	1000 units
ZXMN2A02X8TC	13"	12mm	4000 units

DEVICE MARKING

- ZXMN
2A02

PINOUT



Top View

ZXMN2A02X8

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	20	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	7.8 6.3 6.2	A
Pulsed Drain Current (c)	I_{DM}	39	A
Continuous Source Current (Body Diode) (b)	I_S	3.1	A
Pulsed Source Current (Body Diode) (c)	I_{SM}	39	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	1.67 13.4	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)	$R_{\theta JA}$	74.5	$^\circ C/W$

NOTES

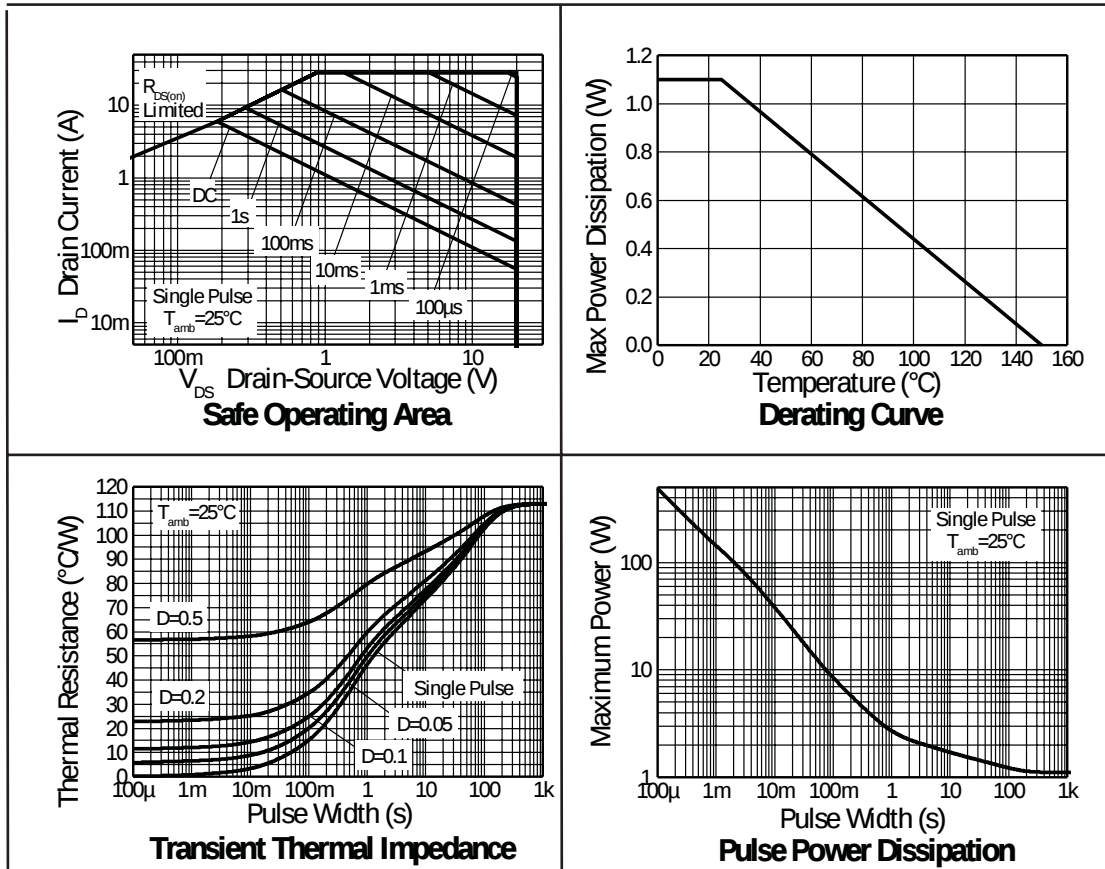
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(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 μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph. Refer to transient thermal impedance graph.

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CHARACTERISTICS



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

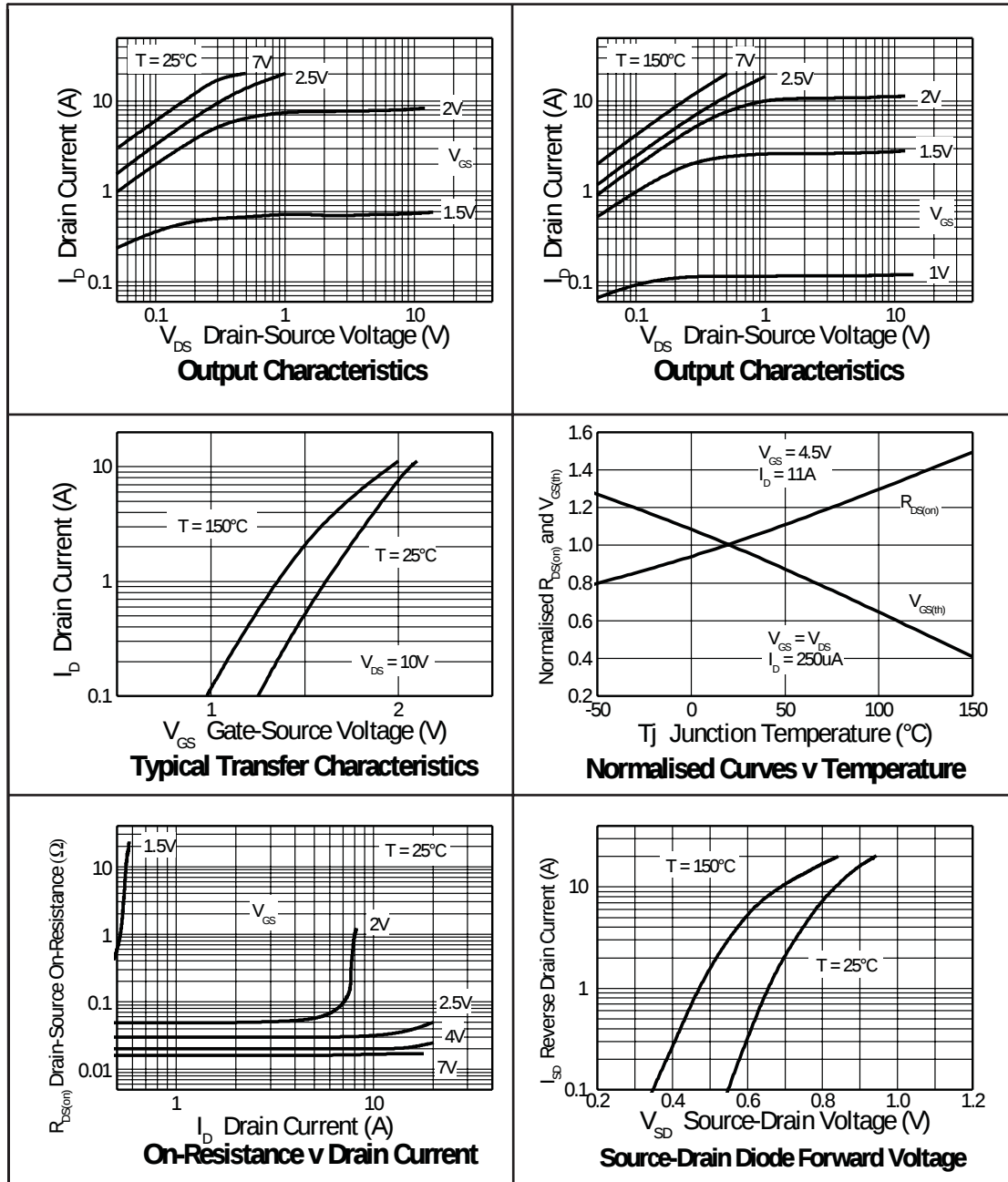
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	20			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =20V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±12V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	0.7			V	I _D =250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.02 0.04	Ω Ω	V _{GS} =4.5V, I _D =11A V _{GS} =2.5V, I _D =8.4A
Forward Transconductance (1)(3)	g _{fs}		27		S	V _{DS} =10V, I _D =11A
DYNAMIC (3)						
Input Capacitance	C _{iss}		1900		pF	V _{DS} =10 V, V _{GS} =0V, f=1MHz
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} =10V, I _D =1A R _G =6.0Ω, V _{GS} =4.5V
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		18.6		nC	V _{DS} =10V, V _{GS} =4.5V, I _D =11A
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°C, I _S =11.5A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		16.3		ns	T _J =25°C, I _F =2.1A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		7.8		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.

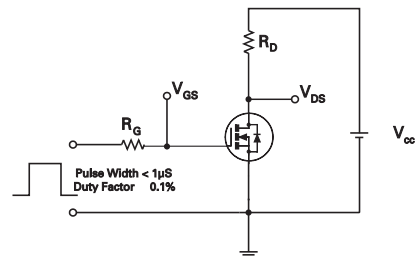
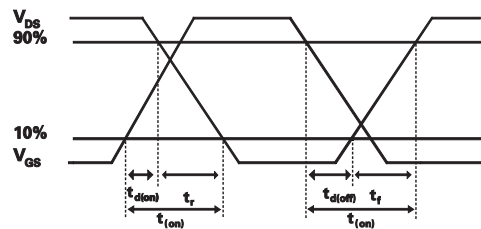
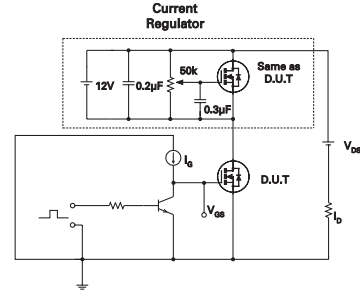
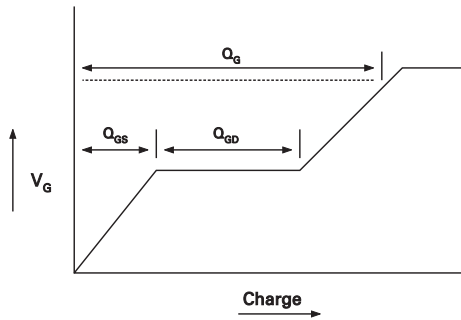
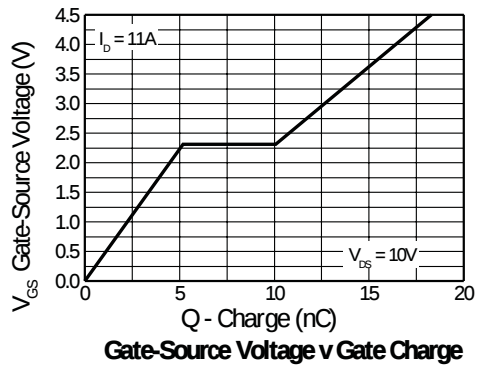
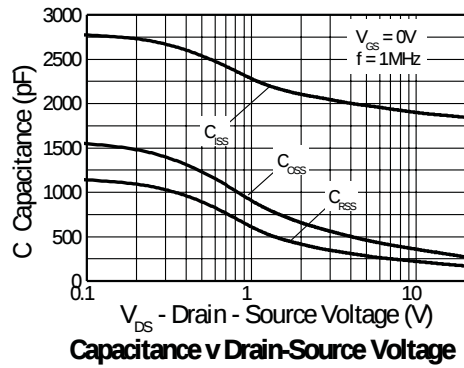
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TYPICAL CHARACTERISTICS



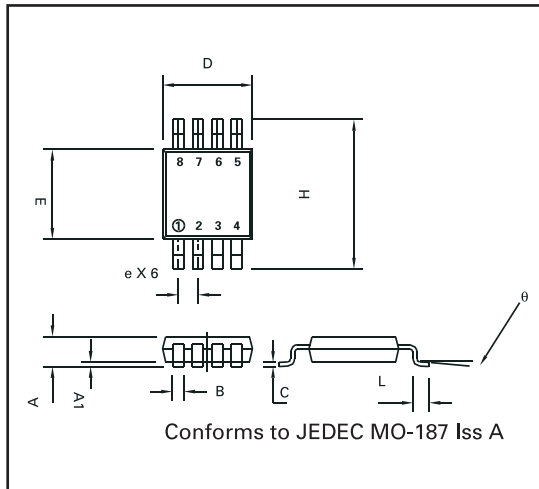
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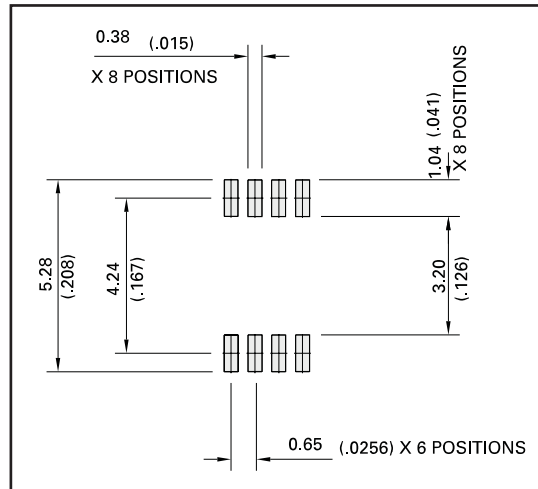


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PACKAGE OUTLINE



PAD LAYOUT



PACKAGE DIMENSIONS

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

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ISSUE 2 - JANUARY 2005