

# ZXMN10A08DN8

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## 100V N-CANNEL ENHANCEMENT MODE MOSFET

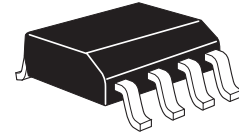
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### SUMMARY

$V_{(BR)DSS} = 100V$ ;  $R_{DS(ON)} = 0.25\Omega$   $I_D = 2.1A$

### 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.



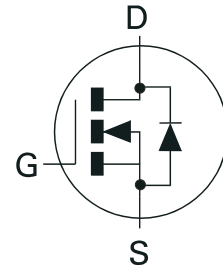
SO8

### FEATURES

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

### APPLICATIONS

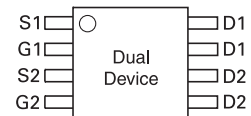
- DC - DC converters
- Power management functions
- Disconnect switches
- Motor control



### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN10A08DN8TA	7"	12mm	500 units
ZXMN10A08DN8TC	13"	12mm	2,500 units

### PINOUT



Top View

### DEVICE MARKING

- ZXMN  
10A08D

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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	$V_{DSS}$	100	V
Gate source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current $V_{GS}=10V; T_A=25^\circ C$ <sup>(b)</sup> $V_{GS}=10V; T_A=70^\circ C$ <sup>(b)</sup> $V_{GS}=10V; T_A=25^\circ C$ <sup>(a)</sup>	$I_D$	2.1 1.7 1.6	A
Pulsed drain current <sup>(c)</sup>	$I_{DM}$	9	A
Continuous source current (body diode) <sup>(b)</sup>	$I_S$	2.6	A
Pulsed source current (body diode) <sup>(c)</sup>	$I_{SM}$	9	A
Power dissipation at $T_A=25^\circ C$ <sup>(a)</sup>	$P_D$	1.25	W
Linear derating factor		10	mW/ $^\circ C$
Power dissipation at $T_A=25^\circ C$ <sup>(b)</sup>	$P_D$	1.8	W
Linear derating factor		14.5	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)	$R_{\theta JA}$	100	$^\circ C/W$
Junction to ambient (b)	$R_{\theta JA}$	69	$^\circ C/W$

### NOTES

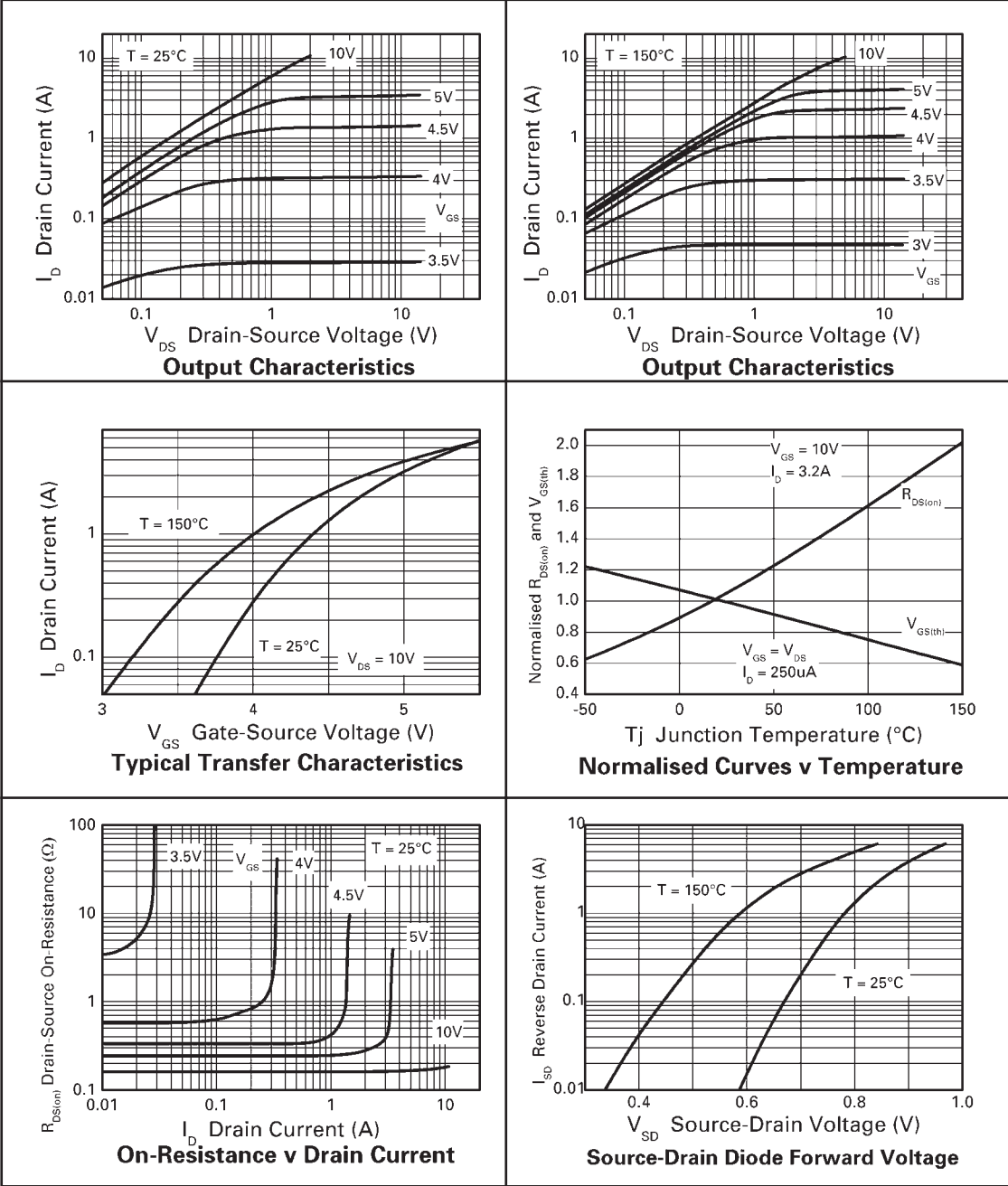
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at  $t \leq 5$  secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB,  $D = 0.02$ , pulse width 300 $\mu s$  - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph

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## TYPICAL CHARACTERISTICS



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

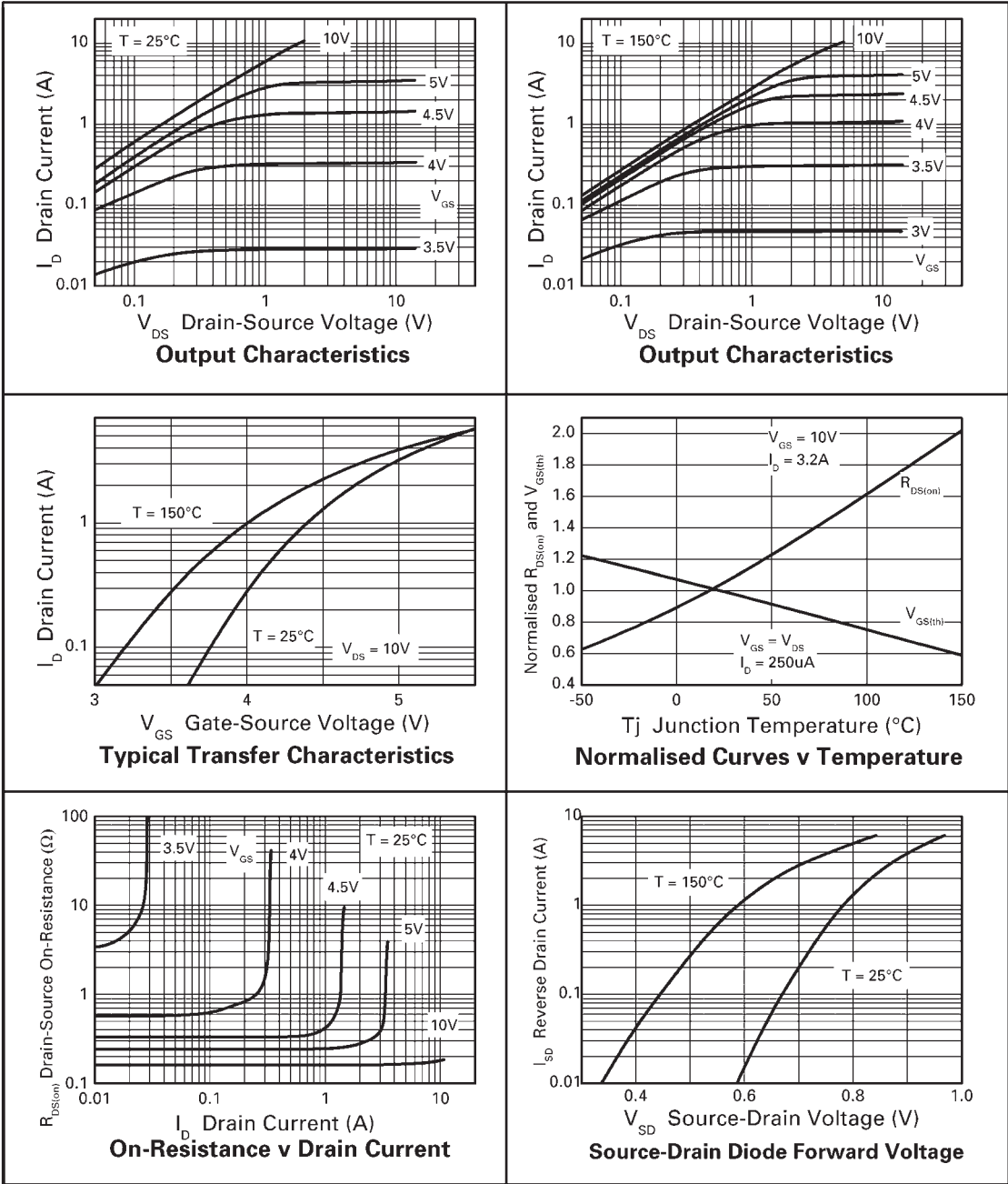
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
<b>STATIC</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	100			V	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$
Zero gate voltage drain current	$I_{DSS}$			0.5	$\mu\text{A}$	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$
Gate-body leakage	$I_{GSS}$			100	nA	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$
Gate-source threshold voltage	$V_{GS(th)}$	2.0			V	$I_D=250\mu\text{A}, V_{DS}=V_{GS}$
Static drain-source on-state resistance <sup>(1)</sup>	$R_{DS(on)}$			0.25 0.30	$\Omega$ $\Omega$	$V_{GS}=10\text{V}, I_D=3.2\text{A}$ $V_{GS}=6\text{V}, I_D=2.6\text{A}$
Forward transconductance <sup>(1)(3)</sup>	$g_{fs}$		5.0		S	$V_{DS}=15\text{V}, I_D=3.2\text{A}$
<b>DYNAMIC <sup>(3)</sup></b>						
Input capacitance	$C_{iss}$		405		pF	$V_{DS}=50\text{V}, V_{GS}=0\text{V},$ $f=1\text{MHz}$
Output capacitance	$C_{oss}$		28.2		pF	
Reverse transfer capacitance	$C_{rss}$		14.2		pF	
<b>SWITCHING <sup>(2) (3)</sup></b>						
Turn-on delay time	$t_{d(on)}$		3.4		ns	$V_{DD}=30\text{V}, I_D=1.2\text{A}$ $R_G=6.0\Omega, V_{GS}=10\text{V}$
Rise time	$t_r$		2.2		ns	
Turn-off delay time	$t_{d(off)}$		8		ns	
Fall time	$t_f$		3.2		ns	
Gate charge	$Q_g$		4.2		nC	$V_{DS}=50\text{V}, V_{GS}=5\text{V},$ $I_D=1.2\text{A}$
Total gate charge	$Q_g$		7.7		nC	$V_{DS}=50\text{V}, V_{GS}=10\text{V},$ $I_D=1.2\text{A}$
Gate-source charge	$Q_{gs}$		1.8		nC	
Gate-drain charge	$Q_{gd}$		2.1		nC	
<b>SOURCE-DRAIN DIODE</b>						
Diode forward voltage <sup>(1)</sup>	$V_{SD}$		0.87	0.95	V	$T_J=25^\circ\text{C}, I_S=3.2\text{A},$ $V_{GS}=0\text{V}$
Reverse recovery time <sup>(3)</sup>	$t_{rr}$		27		ns	$T_J=25^\circ\text{C}, I_F=1.2\text{A},$ $di/dt= 100\text{A}/\mu\text{s}$
Reverse recovery charge <sup>(3)</sup>	$Q_{rr}$		32		nC	

**NOTES:**

- (1) Measured under pulsed conditions. Width = 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.

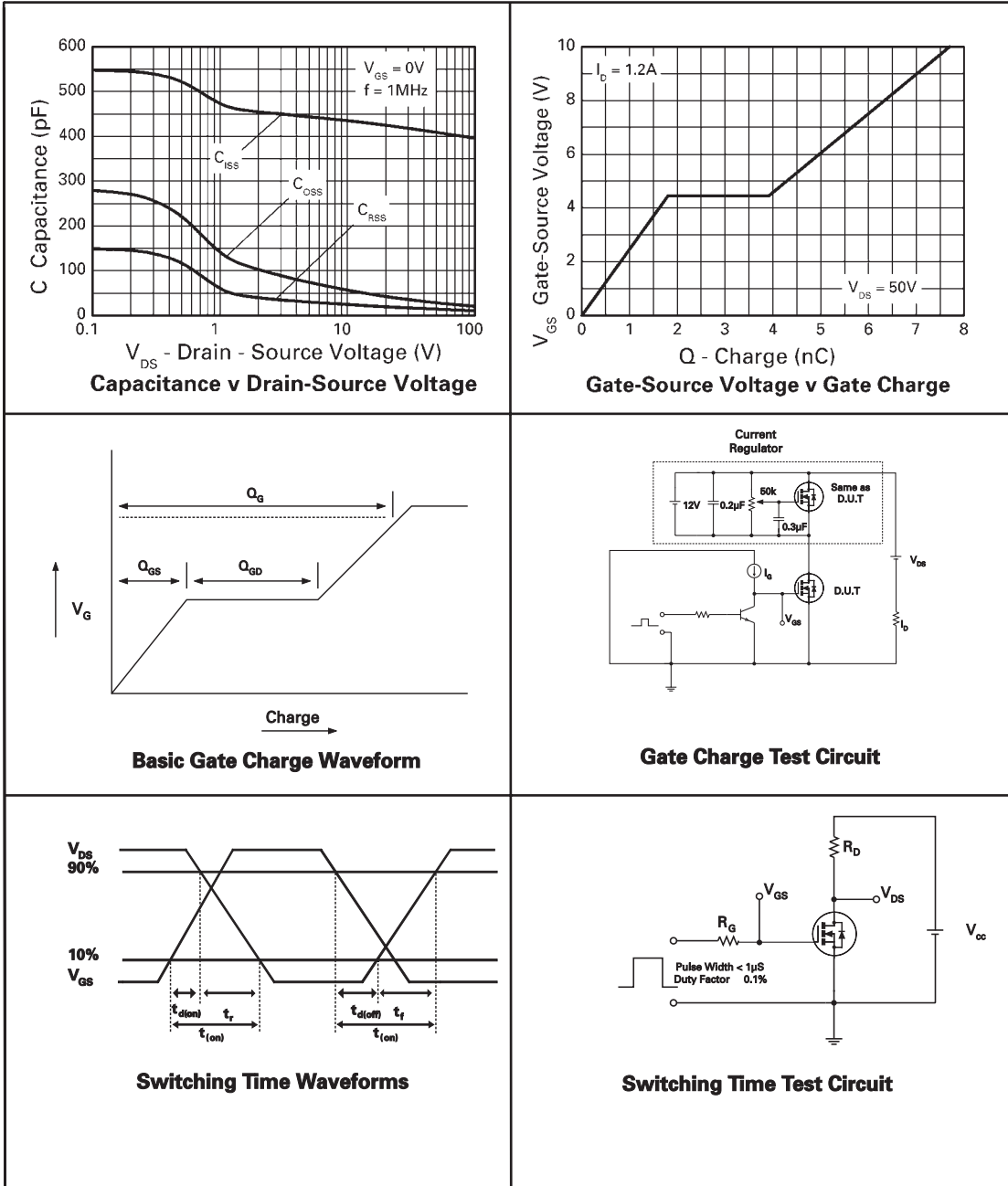
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## TYPICAL CHARACTERISTICS



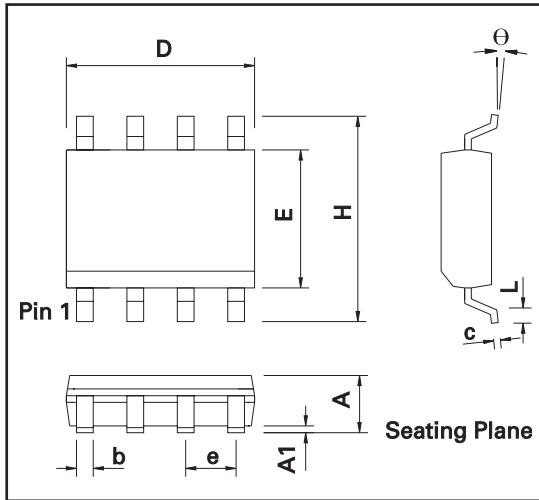
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## TYPICAL CHARACTERISTICS



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## PACKAGE OUTLINE



CONTROLLING DIMENSIONS IN MILLIMETERS APPROX CONVERSIONS INCHES

## PACKAGE DIMENSIONS

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

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