

ZXMN6A09DN8

DUAL 60V N-CANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=60V$; $R_{DS(ON)}=0.045\Omega$ $I_D=5.1A$

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.

FEATURES

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

APPLICATIONS

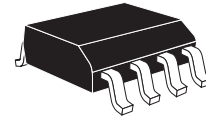
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

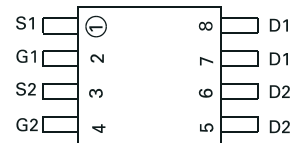
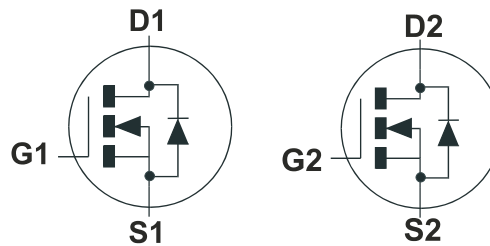
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN6A09DN8TA	7"	12mm	500 units
ZXMN6A09DN8TC	13"	12mm	2500 units

DEVICE MARKING

- ZXMN
6A09D



SO8



Top View

ZXMN6A09DN8

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	60	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	5.1 4.1 3.9	A
Pulsed Drain Current ^(c)	I_{DM}	25	A
Continuous Source Current (Body Diode) ^(b)	I_S	3.5	A
Pulsed Source Current (Body Diode) ^(c)	I_{SM}	25	A
Power Dissipation at $T_A=25^\circ C$ ^{(a)(d)} Linear Derating Factor	P_D	1.25 10	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ ^{(a)(e)} Linear Derating Factor	P_D	1.8 14	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ ^{(b)(d)} Linear Derating Factor	P_D	2.1 17	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)(d)}	$R_{\theta JA}$	100	$^\circ C/W$
Junction to Ambient ^{(a)(e)}	$R_{\theta JA}$	69	$^\circ C/W$
Junction to Ambient ^{(b)(d)}	$R_{\theta JA}$	58	$^\circ C/W$

NOTES

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with a 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.

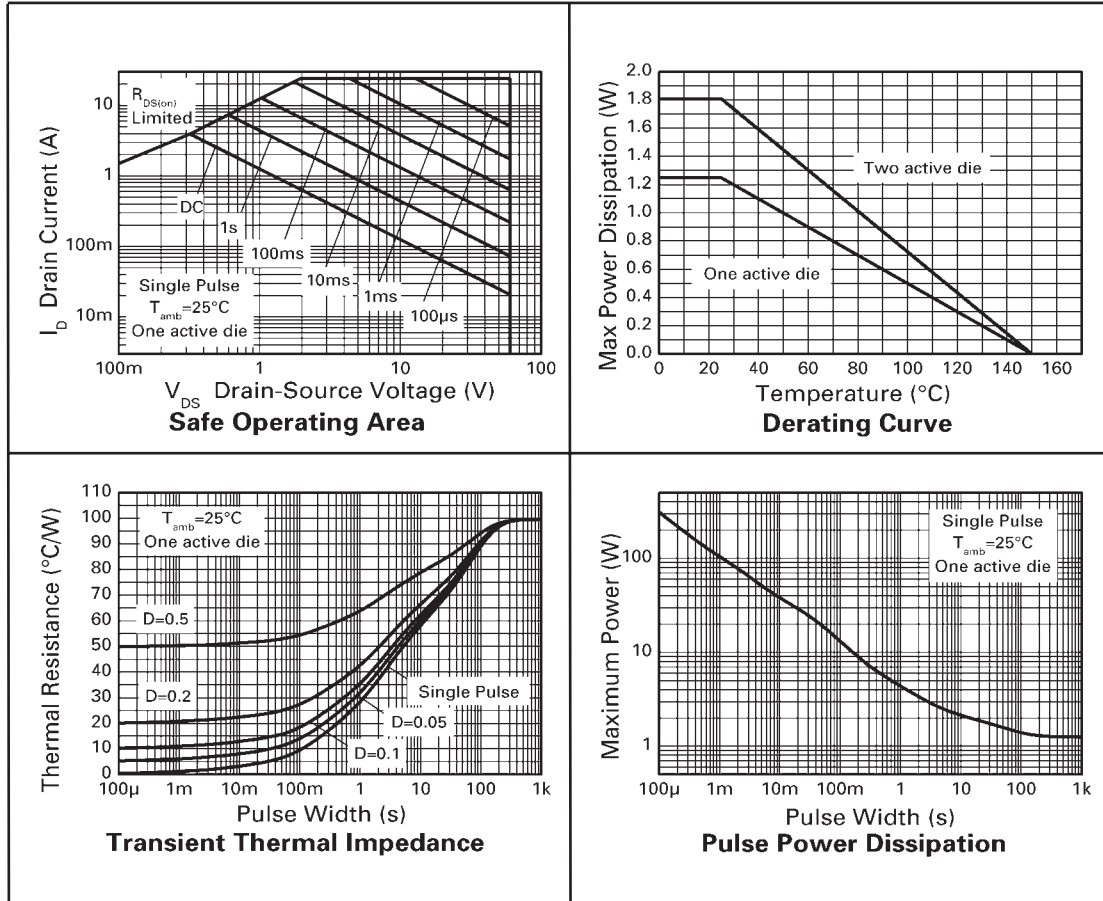
(c) Repetitive rating 25mm x 25mm FR4 PCB, $D=0.02$, pulse width=300 μs - pulse width limited by maximum junction temperature.

(d) For a device with one active die

(e) For a device with two active die running at equal power.

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TYPICAL CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS (at T_A = 25°C unless otherwise stated)

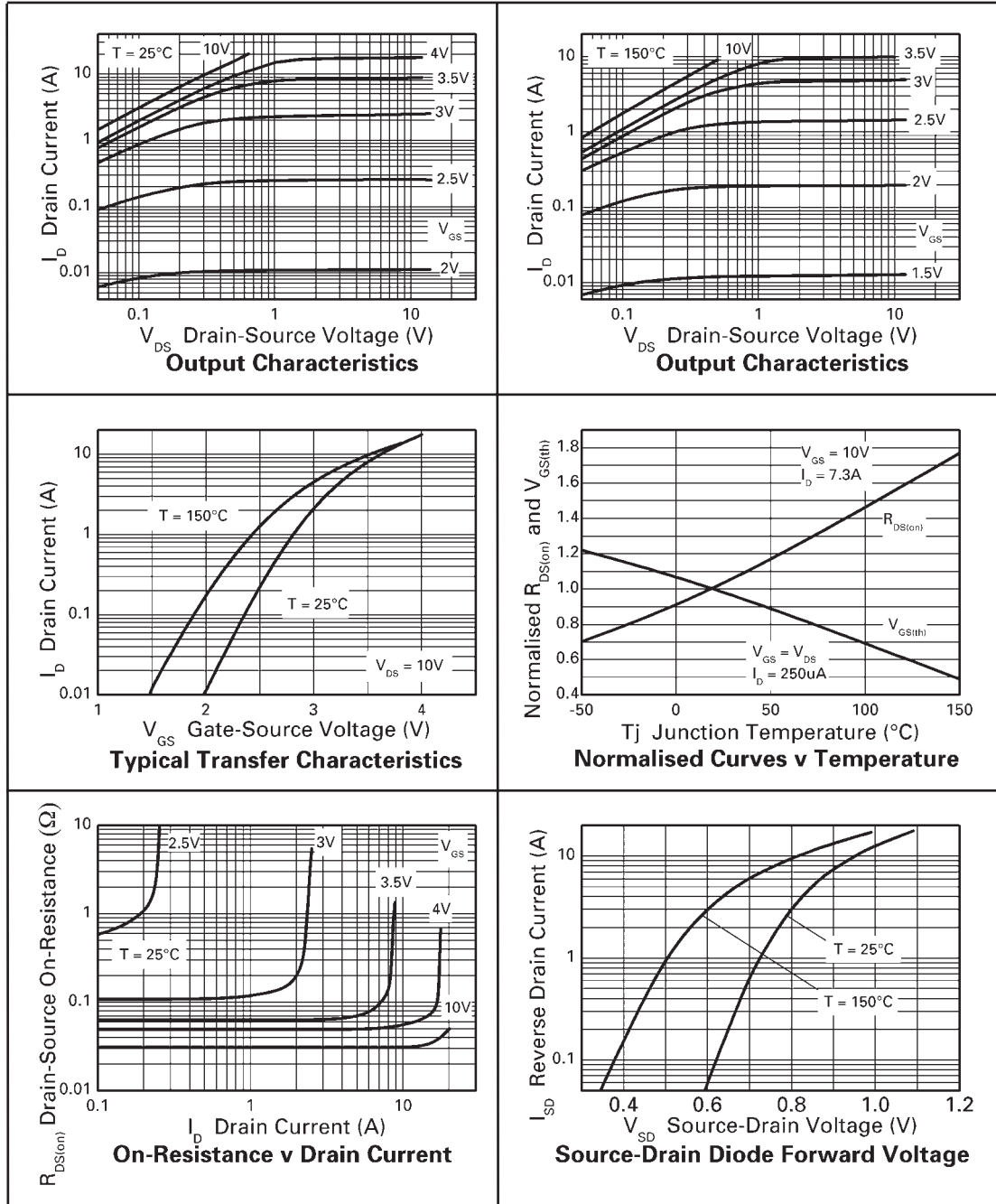
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	60			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =60V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	1.0			V	I _D =250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.045 0.070	Ω Ω	V _{GS} =10V, I _D =8.2A V _{GS} =4.5V, I _D =7.4A
Forward Transconductance (3)	g _{fs}		15		S	V _{DS} =15V, I _D =8.2A
DYNAMIC (3)						
Input Capacitance	C _{iss}		1407		pF	V _{DS} =40 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		121		pF	
Reverse Transfer Capacitance	C _{rss}		59		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		4.9		ns	V _{DD} =15V, I _D =3.5A R _G ≅6.0Ω, V _{GS} =10V (refer to test circuit)
Rise Time	t _r		5.0		ns	
Turn-Off Delay Time	t _{d(off)}		25.3		ns	
Fall Time	t _f		4.6		ns	
Gate Charge	Q _g		12.4		nC	V _{DS} =15V, V _{GS} =5V, I _D =3.5A
Total Gate Charge	Q _g		24.2		nC	V _{DS} =15V, V _{GS} =10V, I _D =3.5A
Gate-Source Charge	Q _{gs}		5.2		nC	
Gate-Drain Charge	Q _{gd}		3.5		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}		0.85	0.95	V	T _J =25°C, I _S =6.6A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		26.3		ns	T _J =25°C, I _F =3.5A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		26.6		nC	

NOTES

- (1) Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2% .
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

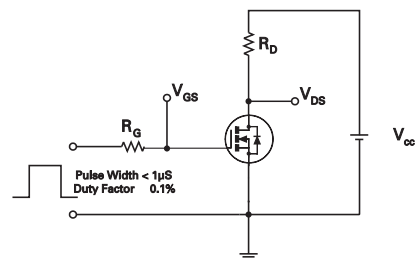
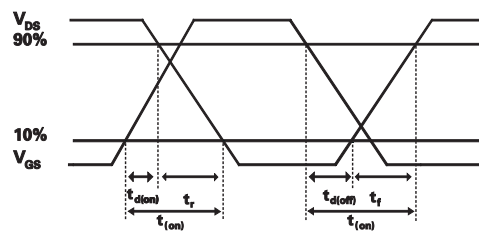
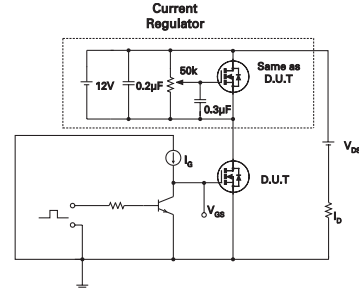
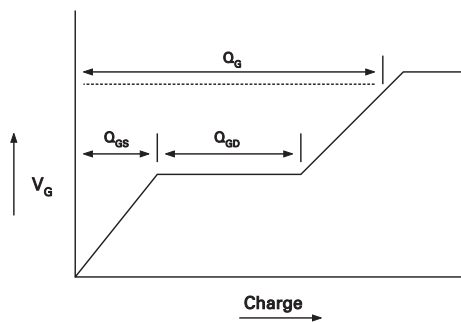
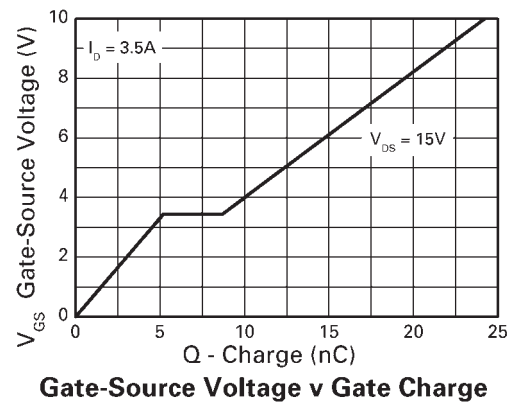
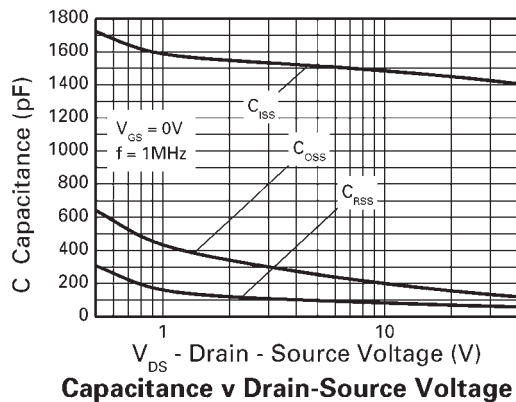
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TYPICAL CHARACTERISTICS



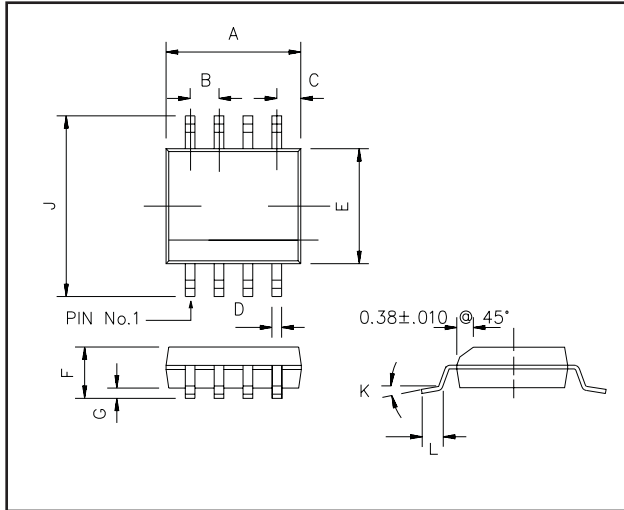
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TYPICAL CHARACTERISTICS



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PACKAGE DIMENSIONS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	4.80	4.98	0.189	0.196
B	1.27 BSC		0.05 BSC	
C	0.53 REF		0.02 REF	
D	0.36	0.46	0.014	0.018
E	3.81	3.99	0.15	0.157
F	1.35	1.75	0.05	0.07
G	0.10	0.25	0.004	0.010
J	5.80	6.20	0.23	0.24
K	0°	8°	0°	8°
L	0.41	1.27	0.016	0.050

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