

ZXMN3A04DN8

DUAL 30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=30V$; $R_{DS(ON)}=0.025\Omega$; $I_D=7.6A$

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

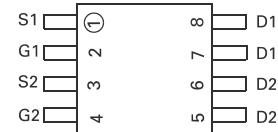
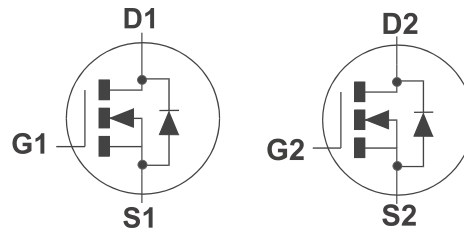
- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

APPLICATIONS

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

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN3A04DN8TA	7"	12mm	500 units
ZXMN3A04DN8TC	13"	12mm	2500 units



Top View

DEVICE MARKING

- ZXMN
3A04D

ZXMN3A04DN8

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)(d) ($V_{GS}=10V$; $T_A=70^\circ C$)(b)(d) ($V_{GS}=10V$; $T_A=25^\circ C$)(a)(d)	I_D	7.6 6.0 5.8	A
Pulsed Drain Current (c)	I_{DM}	25	A
Continuous Source Current (Body Diode) (b)	I_S	2.5	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	$T_J; T_{slg}$	-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)	$R_{\theta JA}$	70	$^\circ C/W$
Junction to Ambient (b)(d)	$R_{\theta JA}$	60	$^\circ C/W$

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.
- (d) For device with one active die
- (e) For device with two active die running at equal power.



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

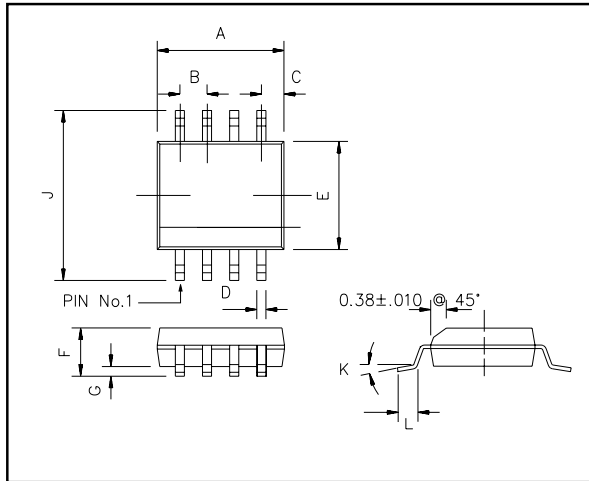
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	30			V	I _b =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			0.5	μA	V _{DS} =30V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	1.0			V	I _D =250μA, V _{DS} =V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.02 0.03	Ω	V _{GS} =10V, I _D =12.6A V _{GS} =4.5V, I _D =10.6A
Forward Transconductance (3)	g _{fs}		17.5		S	V _{DS} =15V, I _b =6A
DYNAMIC (3)						
Input Capacitance	C _{iss}		1800		pF	V _{DS} =25V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		289		pF	
Reverse Transfer Capacitance	C _{rss}		178		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		5.5		ns	V _{DD} =15V, I _b =6A R _c =6.0Ω, V _{GS} =10V
Rise Time	t _r		8.7		ns	
Turn-Off Delay Time	t _{d(off)}		33		ns	
Fall Time	t _f		8.5		ns	
Gate Charge	Q _g		19.4		nC	V _{DS} =15V, V _{GS} =5V, I _D =3.5A
Total Gate Charge	Q _g		35.7		nC	V _{DS} =15V, V _{GS} =10V, I _D =3.5A
Gate-Source Charge	Q _{gs}		5.5		nC	
Gate-Drain Charge	Q _{gd}		7.0		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}			0.95	V	T _J =25°C, I _S =6A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		20.5		ns	T _J =25°C, I _r =6A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		41.5		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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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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