



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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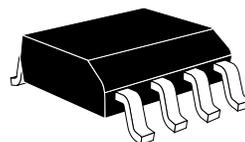
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SUMMARY
 $V_{(BR)DSS} = 30V$; $R_{DS(ON)} = 0.02\Omega$; $I_D = 8.5A$
DESCRIPTION

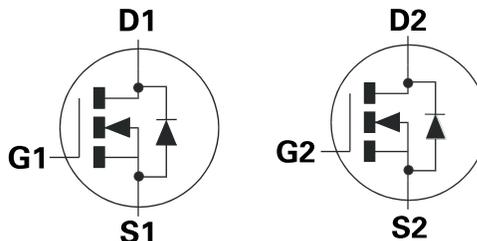
This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.


S08
FEATURES

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

APPLICATIONS

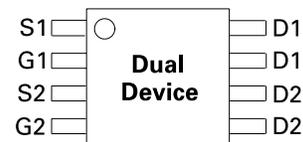
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control


ORDERING INFORMATION

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

DEVICE MARKING

 NK-ZXMN
 3A04D

PINOUT


Top view

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	8.5 6.8 6.5	A
Pulsed Drain Current (c)	I_{DM}	39	A
Continuous Source Current (Body Diode) (b)	I_S	3.6	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	39	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	1.81 14.5	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b)(d) Linear Derating Factor	P_D	2.15 17.2	W mW/ $^\circ C$
Operating and Storage Temperature Range	$T_J; T_{stg}$	-55 to +150	$^\circ C$

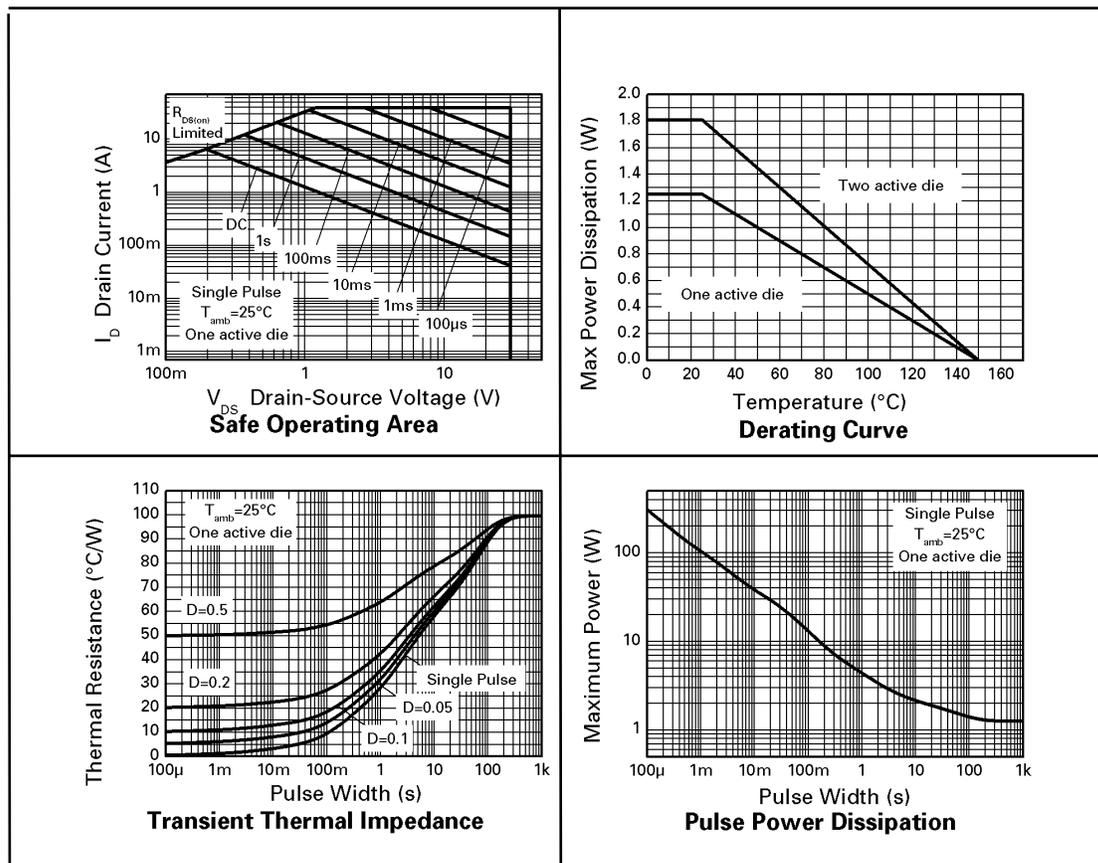
THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)(d)	$R_{\theta JA}$	100	$^\circ C/W$
Junction to Ambient (b)(e)	$R_{\theta JA}$	69	$^\circ C/W$
Junction to Ambient (b)(d)	$R_{\theta JA}$	58	$^\circ C/W$

Notes

- (a) For a dual device surface mounted on 25mm x 25mm FR4 PCB with coverage of single sided 1oz copper in still air conditions.
- (b) For a dual device surface mounted on FR4 PCB measured at $t \leq 10$ sec.
- (c) Repetitive rating 25mm x 25mm FR4 PCB, $D=0.02$ pulse width=300 μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance Graph.
- (d) For a dual device with one active die.

CHARACTERISTICS



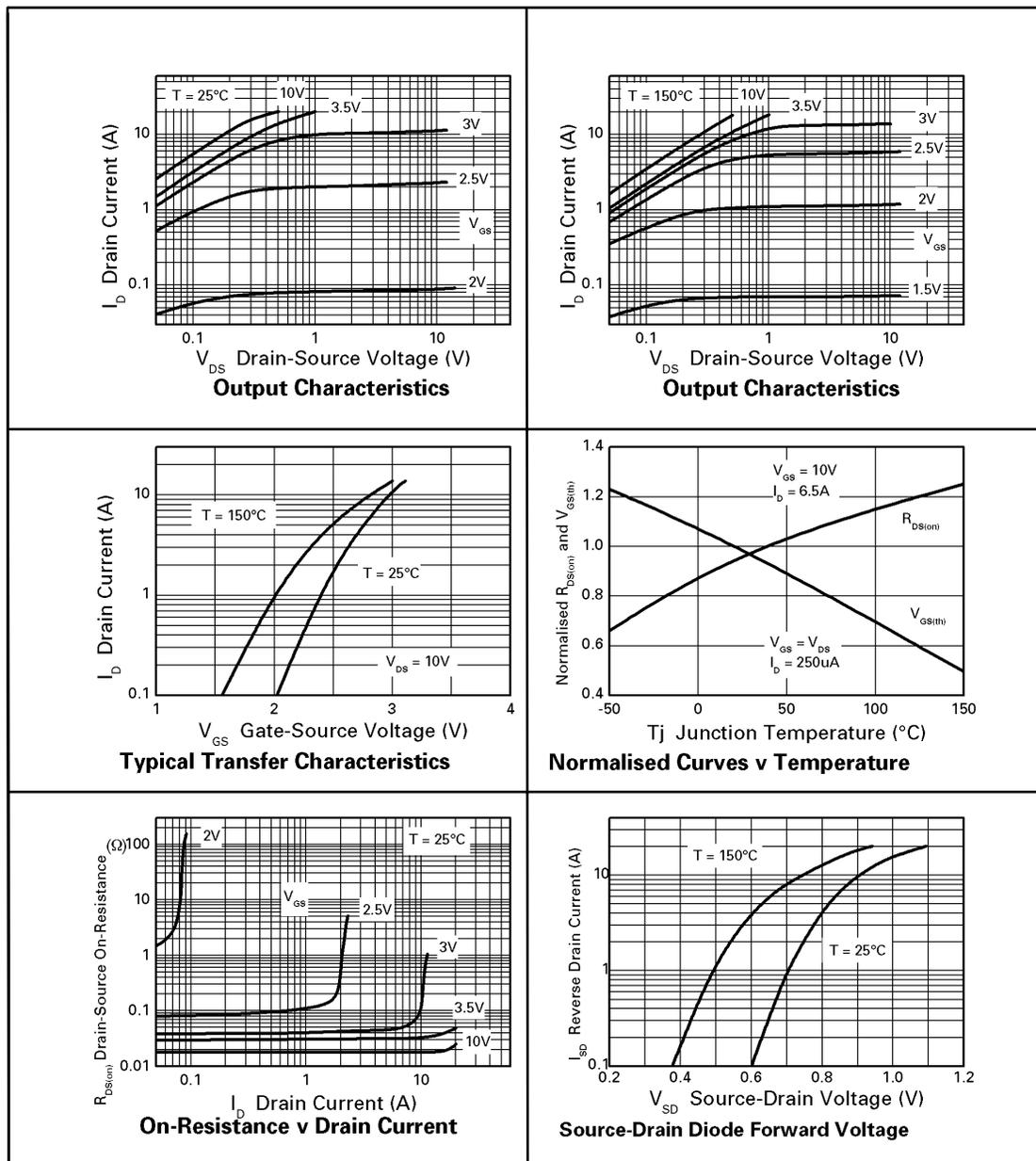
ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30			V	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			0.5	μA	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.0			V	$I_D=250\mu\text{A}, V_{DS}=V_{GS}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.02 0.03	Ω Ω	$V_{GS}=10\text{V}, I_D=12.6\text{A}$ $V_{GS}=4.5\text{V}, I_D=10.6\text{A}$
Forward Transconductance (3)	g_{fs}		22.1		S	$V_{DS}=15\text{V}, I_D=12.6\text{A}$
DYNAMIC (3)						
Input Capacitance	C_{iss}		1890		pF	$V_{DS}=15\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$
Output Capacitance	C_{oss}		349		pF	
Reverse Transfer Capacitance	C_{rss}		218		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		5.2		ns	$V_{DD}=15\text{V}, I_D=1\text{A}$ $R_G=6.0\Omega, V_{GS}=10\text{V}$
Rise Time	t_r		6.1		ns	
Turn-Off Delay Time	$t_{d(off)}$		38.1		ns	
Fall Time	t_f		20.2		ns	
Gate Charge	Q_g		19.9		nC	$V_{DS}=15\text{V}, V_{GS}=5\text{V}, I_D=6.5\text{A}$
Total Gate Charge	Q_g		36.8		nC	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=6.5\text{A}$
Gate-Source Charge	Q_{gs}		5.8		nC	
Gate-Drain Charge	Q_{gd}		7.1		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}		0.85	0.95	V	$T_J=25^\circ\text{C}, I_S=6.8\text{A}, V_{GS}=0\text{V}$
Reverse Recovery Time (3)	t_{rr}		18.4		ns	$T_J=25^\circ\text{C}, I_F=2.3\text{A}, di/dt=100\text{A}/\mu\text{s}$
Reverse Recovery Charge (3)	Q_{rr}		11		nC	

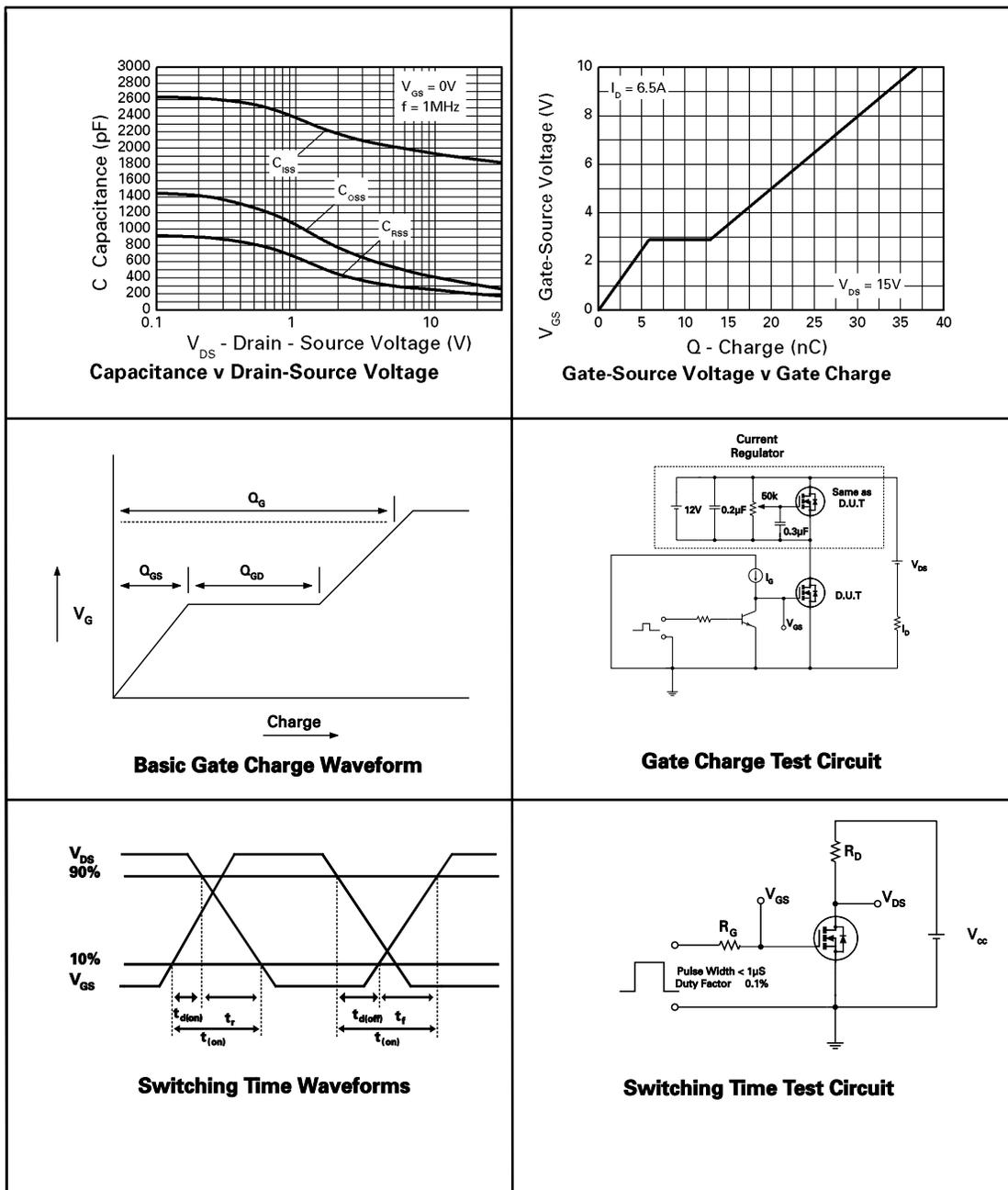
NOTES

- (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.

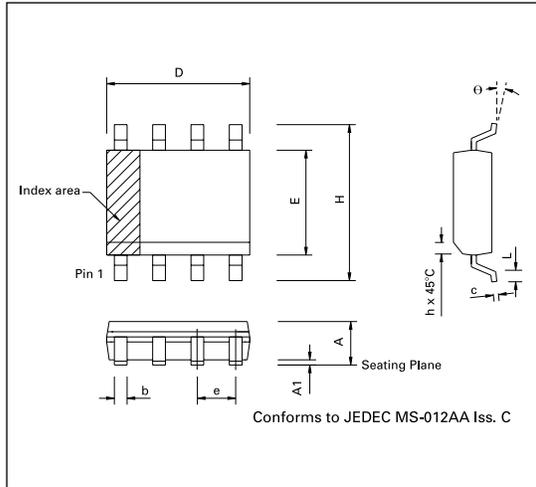
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES
APPROX IN MILLIMETRES

PACKAGE DIMENSIONS

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