

ZXMN4A06G

40V N-CANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = 40V$; $R_{DS(ON)} = 0.05\Omega$; $I_D = 7A$

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
- SOT223 package

APPLICATIONS

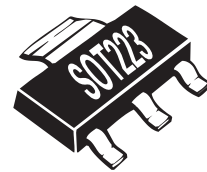
- DC - DC Converters
- Audio Output Stages
- Relay and Solenoid driving
- Motor control

ORDERING INFORMATION

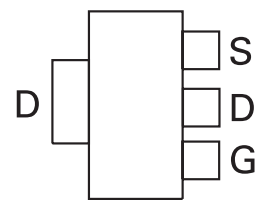
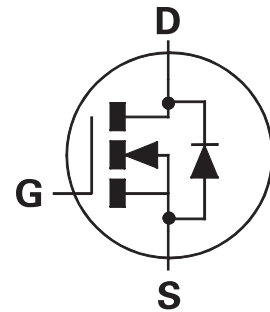
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN4A06GTA	7"	12mm	1000 units
ZXMN4A06GTC	13"	12mm	4000 units

DEVICE MARKING

- ZXMN
4A06



SOT223



Top View

ZXMN4A06G

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	40	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	7.0 5.6 5.0	A
Pulsed Drain Current (c)	I_{DM}	22	A
Continuous Source Current (Body Diode) (b)	I_S	5.4	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	22	A
Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor	P_D	2.0 16	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor	P_D	3.9 31	W mW/ $^\circ C$
Operating and Storage Temperature Range	T_j ; T_{stg}	-55 to +150	$^\circ C$

THERMAL RESISTANCE

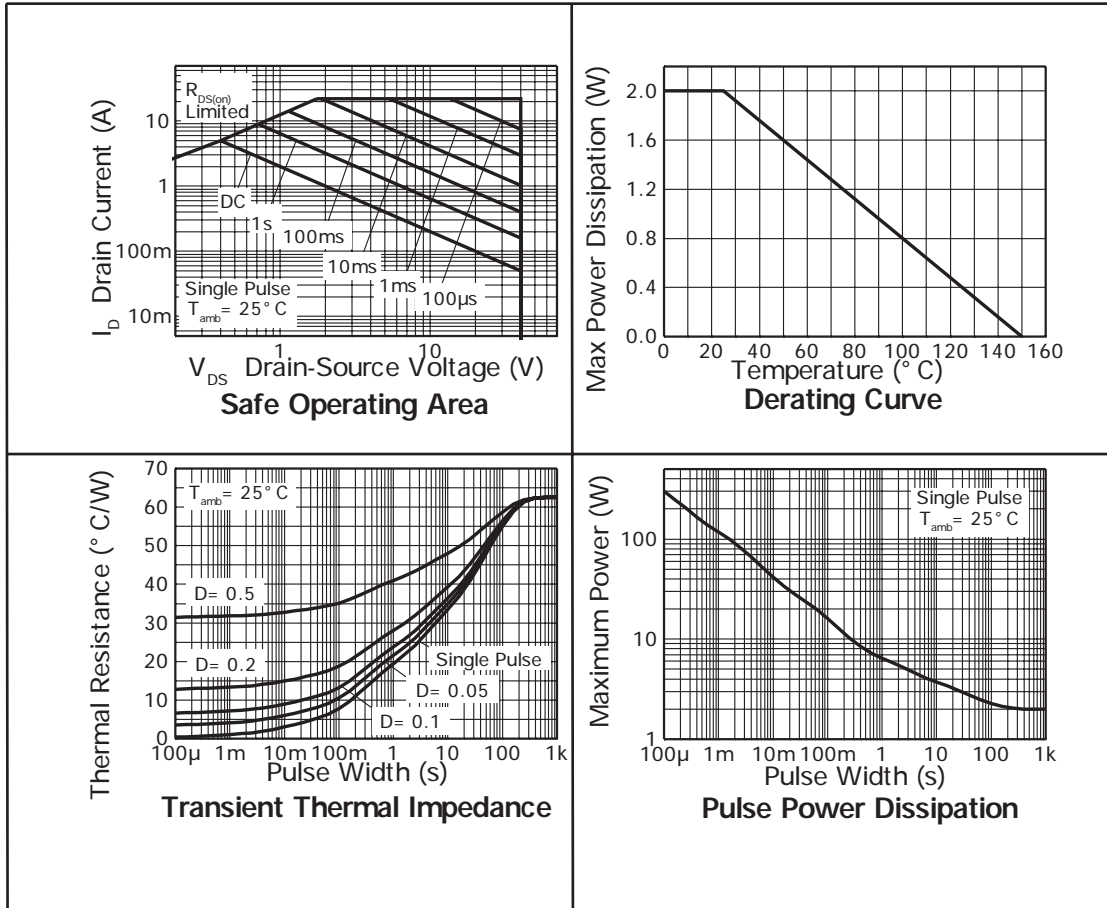
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	62.5	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	32.2	$^\circ C/W$

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 FRA PCB, D=0.05 pulse width = 10 μs - pulse width limited by maximum junction temperature.

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CHARACTERISTICS



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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	40			V	$I_D=250\mu A, V_{GS}=0V$
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	$V_{DS}=40V, V_{GS}=0V$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.0			V	$I_D=250\mu A, V_{DS}=V_{GS}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.050 0.075	Ω Ω	$V_{GS}=10V, I_D=4.5A$ $V_{GS}=4.5V, I_D=3.2A$
Forward Transconductance (3)	g_{fs}		8.7		S	$V_{DS}=15V, I_D=2.5A$
DYNAMIC (3)						
Input Capacitance	C_{iss}		770		pF	$V_{DS}=40V, V_{GS}=0V,$ $f=1MHz$
Output Capacitance	C_{oss}		92		pF	
Reverse Transfer Capacitance	C_{rss}		61		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		2.55		ns	$V_{DD}=30V, I_D=2.5A$ $R_G=6.0\Omega, V_{GS}=10V$ (refer to test circuit)
Rise Time	t_r		4.45		ns	
Turn-Off Delay Time	$t_{d(off)}$		28.61		ns	
Fall Time	t_f		7.35		ns	
Total Gate Charge	Q_g		18.2		nC	$V_{DS}=30V, V_{GS}=10V,$ $I_D=2.5A$ (refer to test circuit)
Gate-Source Charge	Q_{gs}		2.1		nC	
Gate-Drain Charge	Q_{gd}		4.5		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}		0.8	0.95	V	$T_J=25^\circ C, I_S=2.5A,$ $V_{GS}=0V$
Reverse Recovery Time (3)	t_{rr}		19.86		ns	$T_J=25^\circ C, I_F=2.5A,$ $di/dt=100A/\mu s$
Reverse Recovery Charge (3)	Q_{rr}		16.36		nC	

NOTES

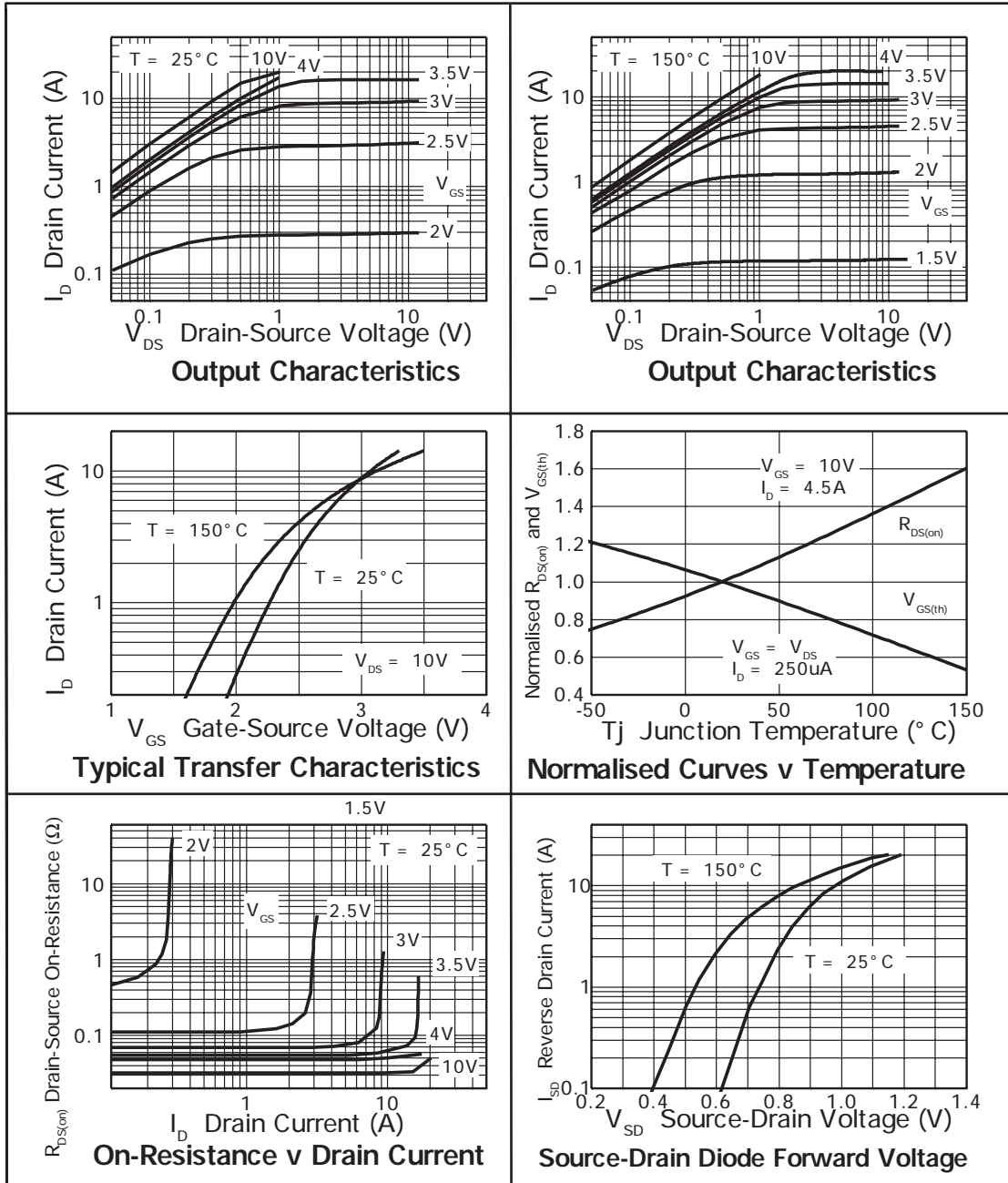
- (1) Measured under pulsed conditions. Width $\leq 300\mu s$. Duty cycle $\leq 2\%$.
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.



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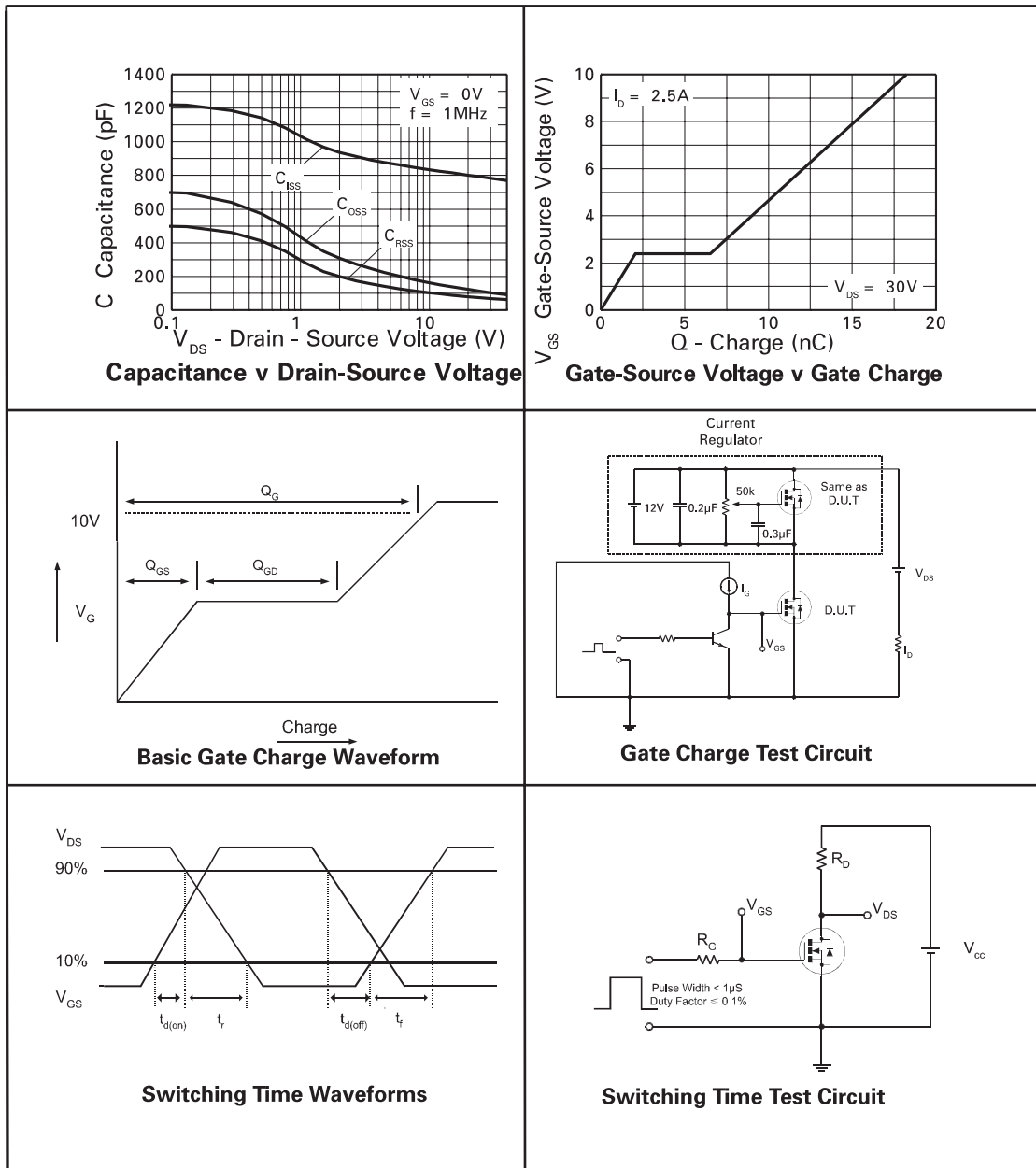
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TYPICAL CHARACTERISTICS



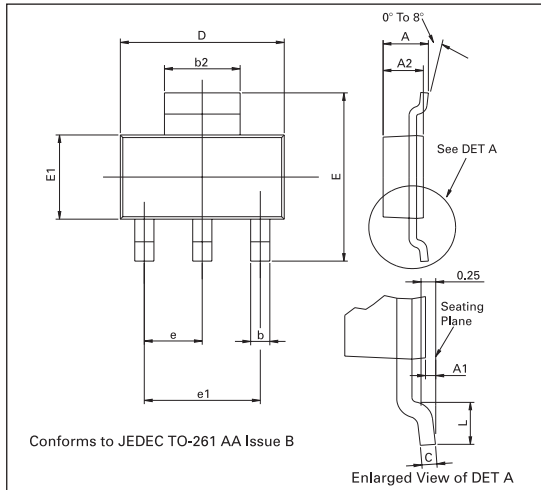
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TYPICAL CHARACTERISTICS

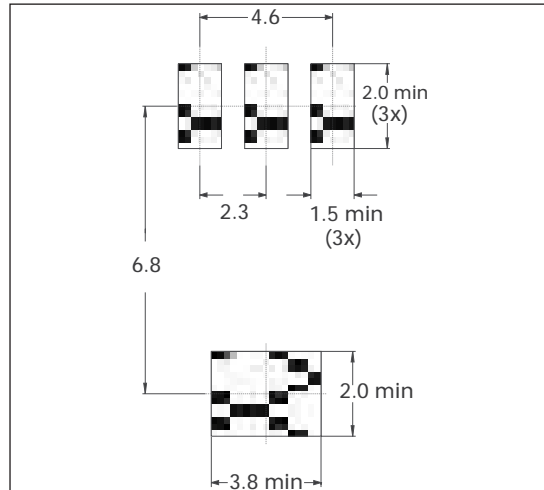


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PACKAGE OUTLINE



PAD LAYOUT DETAILS



PACKAGE DIMENSIONS

DIM	MILLIMETRES		DIM	MILLIMETRES	
	MIN	MAX		MIN	MAX
A	—	1.80	D	6.30	6.70
A1	0.02	0.10	e	2.30 BASIC	
A2	1.55	1.65	e1	4.60 BASIC	
b	0.66	0.84	E	6.70	7.30
b2	2.90	3.10	E1	3.30	3.70
C	0.23	0.33	L	0.90	—

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