

ZXMN4A06G

40V N-CHANNEL 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

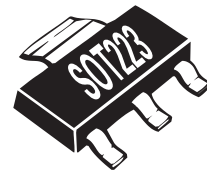
- DC - DC Converters
- Audio Output Stages
- Relay and Solenoid driving
- Motor control

ORDERING INFORMATION

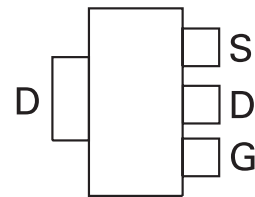
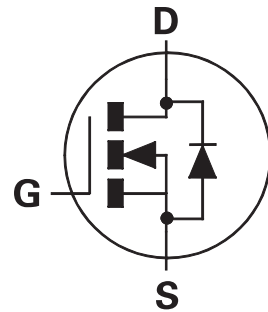
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN4A06GTA	7"	12mm	1000 units
ZXMN4A06GTC	13"	12mm	4000 units

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

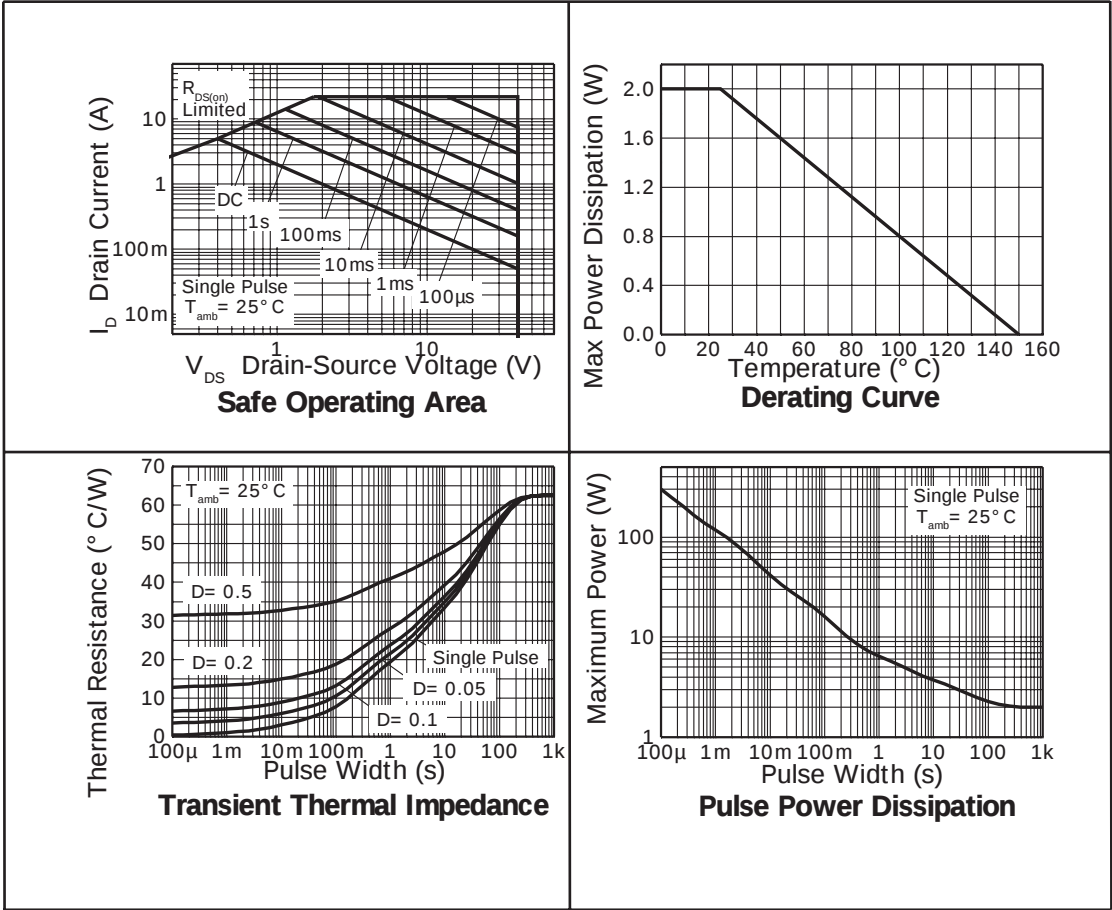
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	62.5	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	32.2	$^\circ C/W$

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)

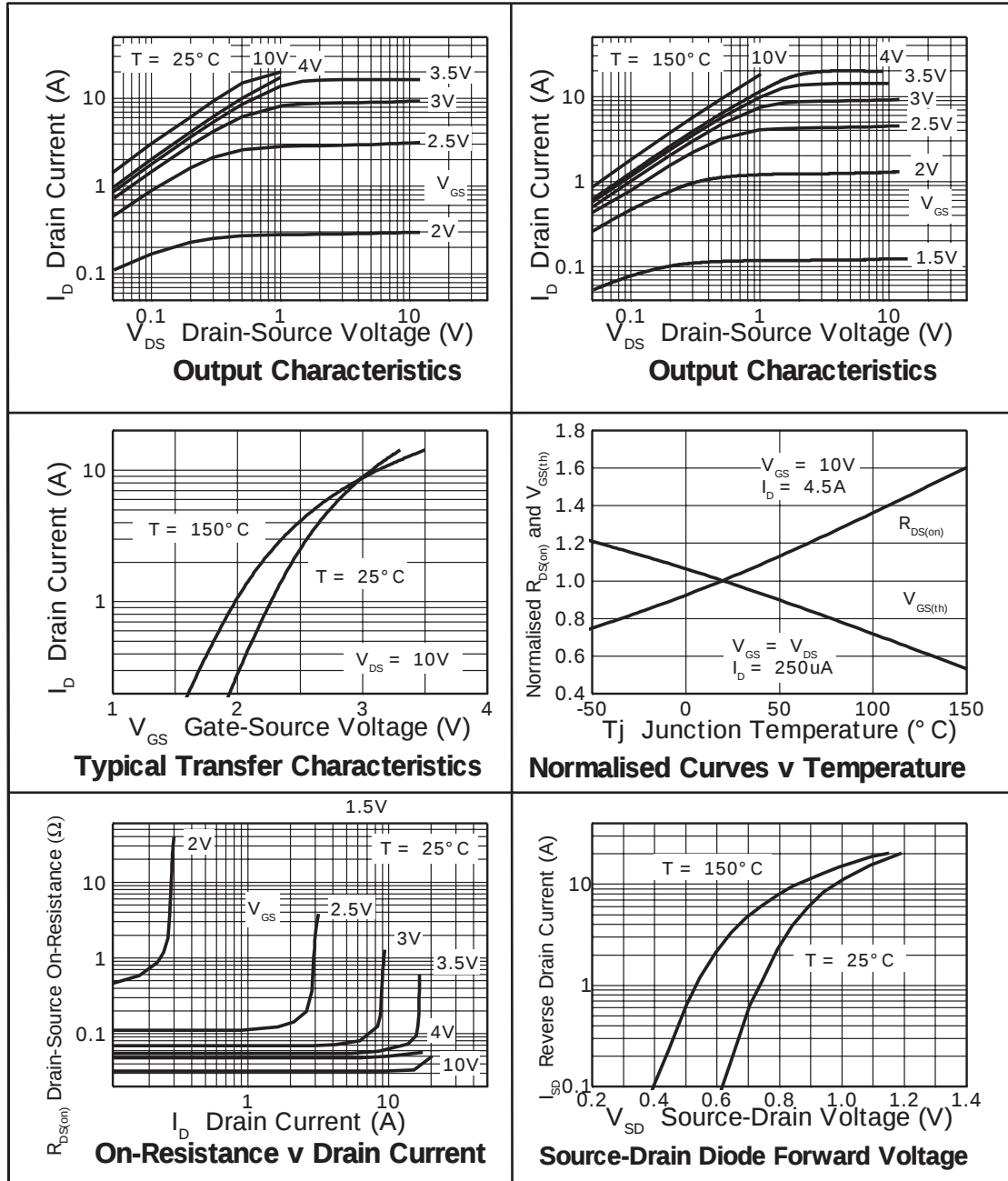
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	40			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =40V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	1.0			V	I _D =250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.050 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} =40 V, 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 =6.0Ω, 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°C, I _S =2.5A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		19.86		ns	T _J =25°C, I _F =2.5A, di/dt= 100A/μs
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.

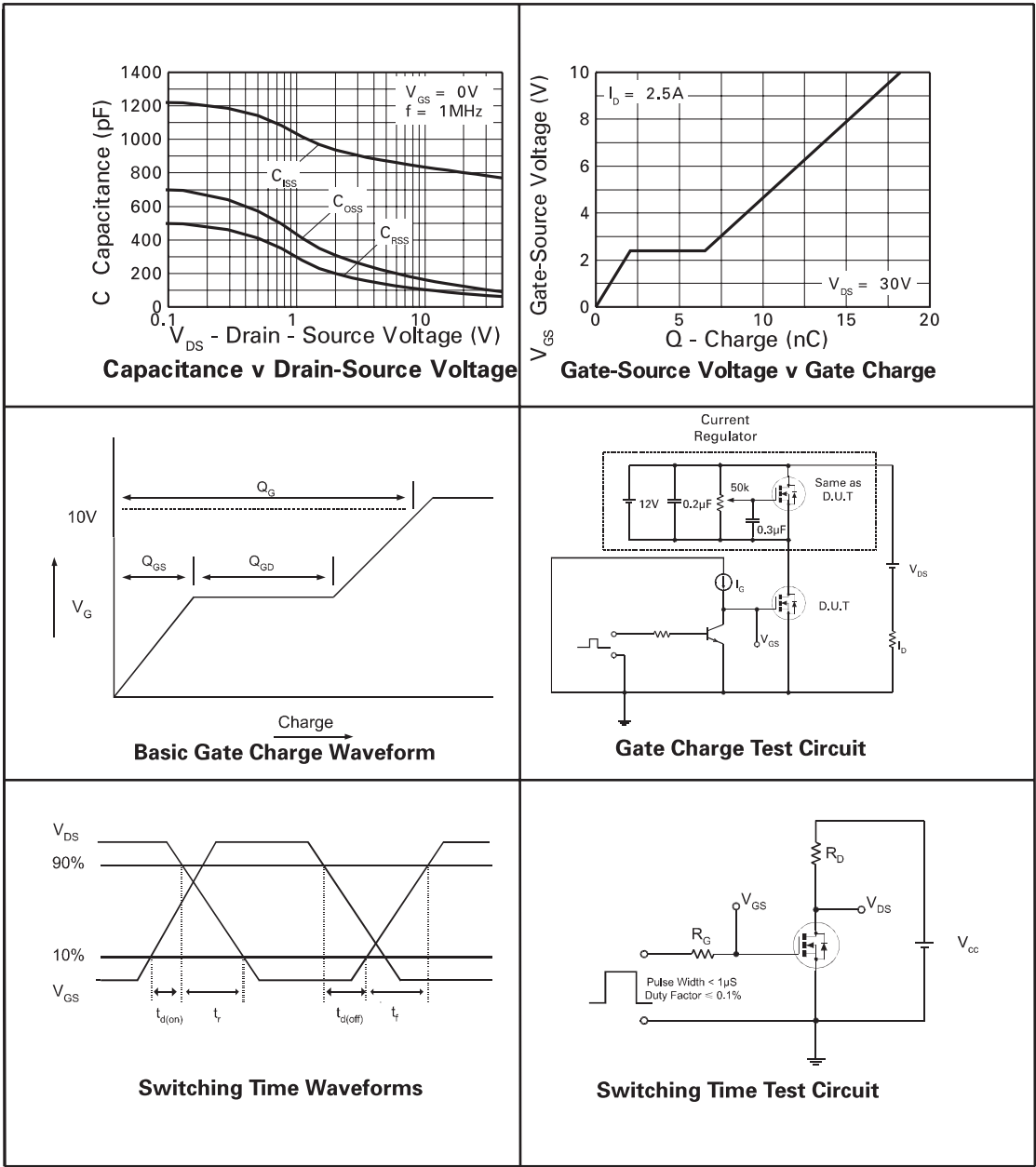
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TYPICAL CHARACTERISTICS



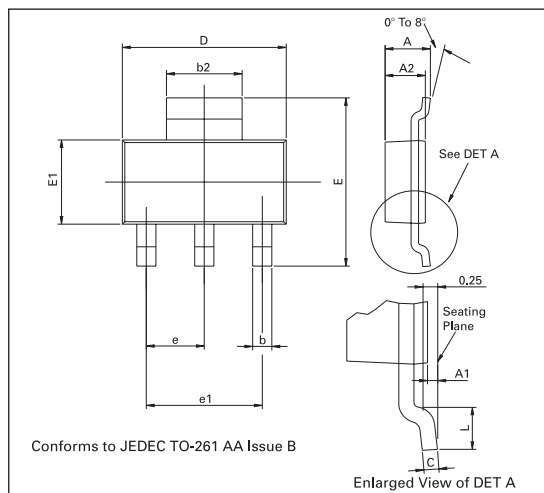
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TYPICAL CHARACTERISTICS

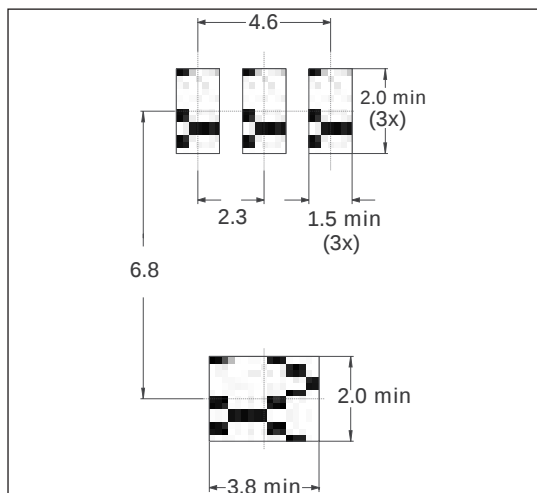


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PACKAGE OUTLINE



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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