

ZXMN6A11G

60V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=60V$; $R_{DS(ON)}=0.15\Omega$ $I_D=3.8A$

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

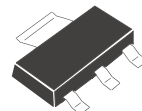
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

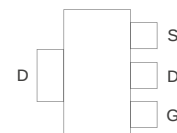
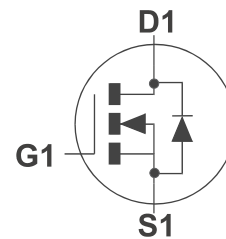
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN6A11GTA	7"	12mm	1000 units
ZXMN6A11GTC	13"	12mm	4000 units

DEVICE MARKING

- ZXMN
6A11



SOT223



Top View

ZXMN6A11G

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	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	3.8 3.0 2.7	A
Pulsed Drain Current (c)	I_{DM}	10	A
Continuous Source Current (Body Diode) (b)	I_S	5.0	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	10	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	$^{\circ}C/W$

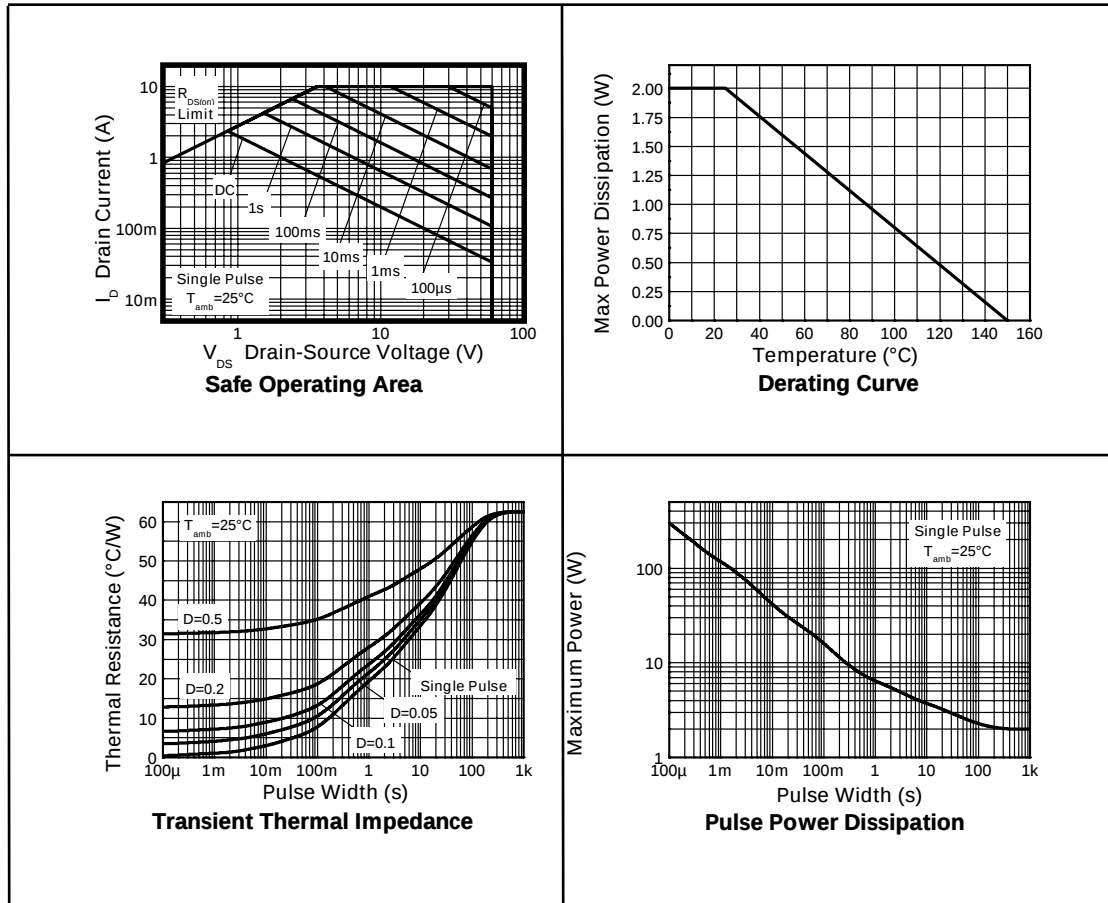
NOTES

(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 μ s - pulse width limited by maximum junction temperature.

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

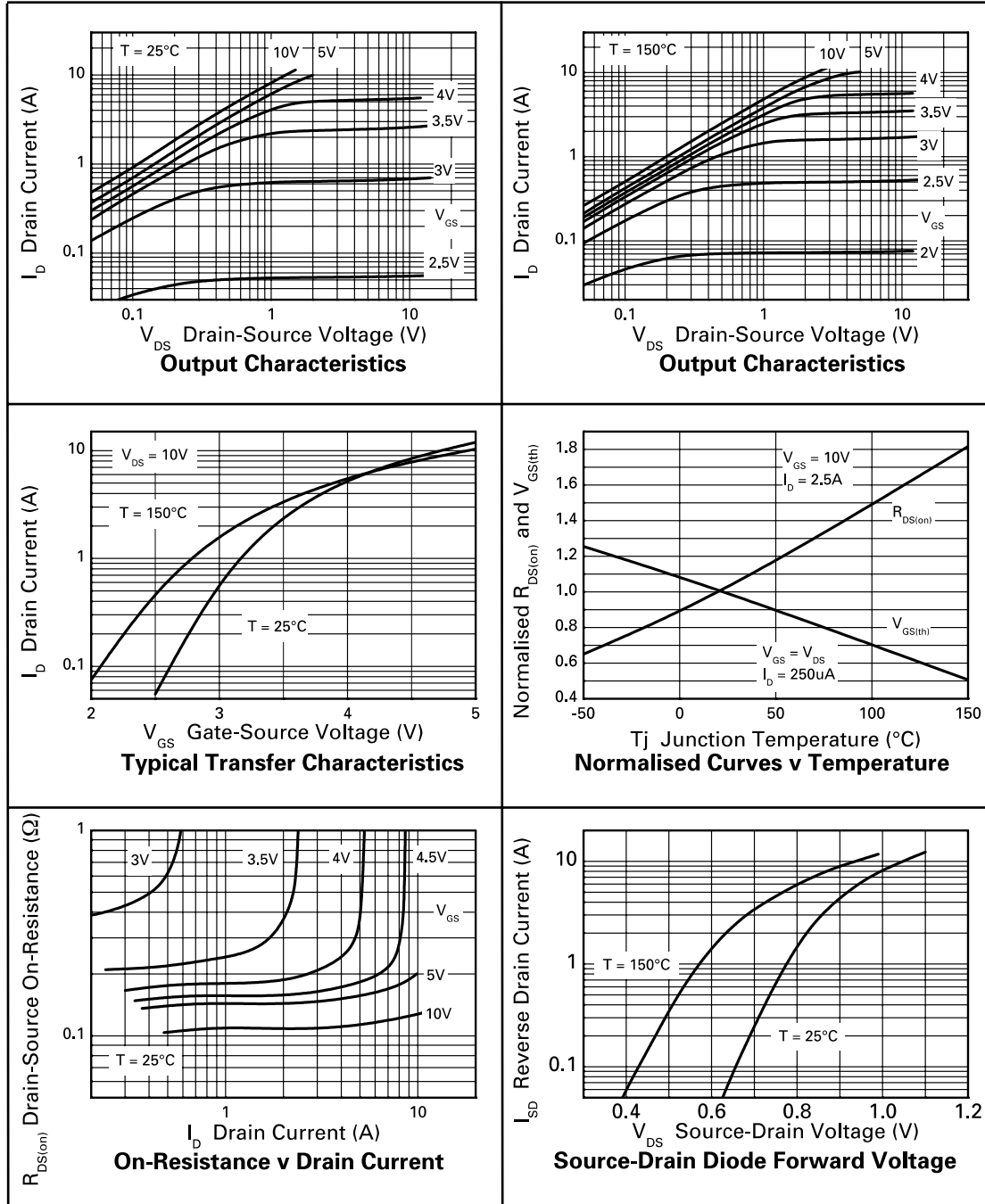
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	60			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =60V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	1.0			V	I _D =250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.150 0.250	Ω Ω	V _{GS} =10V, I _D =4.4A V _{GS} =4.5V, I _D =3.8A
Forward Transconductance (3)	g _{fs}		4.9		S	V _{DS} =15V, I _D =2.5A
DYNAMIC (3)						
Input Capacitance	C _{iss}		330		pF	V _{DS} =40 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		35.2		pF	
Reverse Transfer Capacitance	C _{rss}		17.1		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		1.95		ns	V _{DD} =30V, I _D =2.5A R _G =6.0Ω, V _{GS} =10V (refer to test circuit)
Rise Time	t _r		3.5		ns	
Turn-Off Delay Time	t _{d(off)}		8.2		ns	
Fall Time	t _f		4.6		ns	
Gate Charge	Q _g		3.0		nC	V _{DS} =15V, V _{GS} =5V, I _D =2.5A
Total Gate Charge	Q _g		5.7		nC	V _{DS} =15V, V _{GS} =10V, I _D =2.5A (refer to test circuit)
Gate-Source Charge	Q _{gs}		1.25		nC	
Gate-Drain Charge	Q _{gd}		0.86		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}		0.85	0.95	V	T _J =25°C, I _S =2.8A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		21.5		ns	T _J =25°C, I _F =2.5A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		20.5		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.

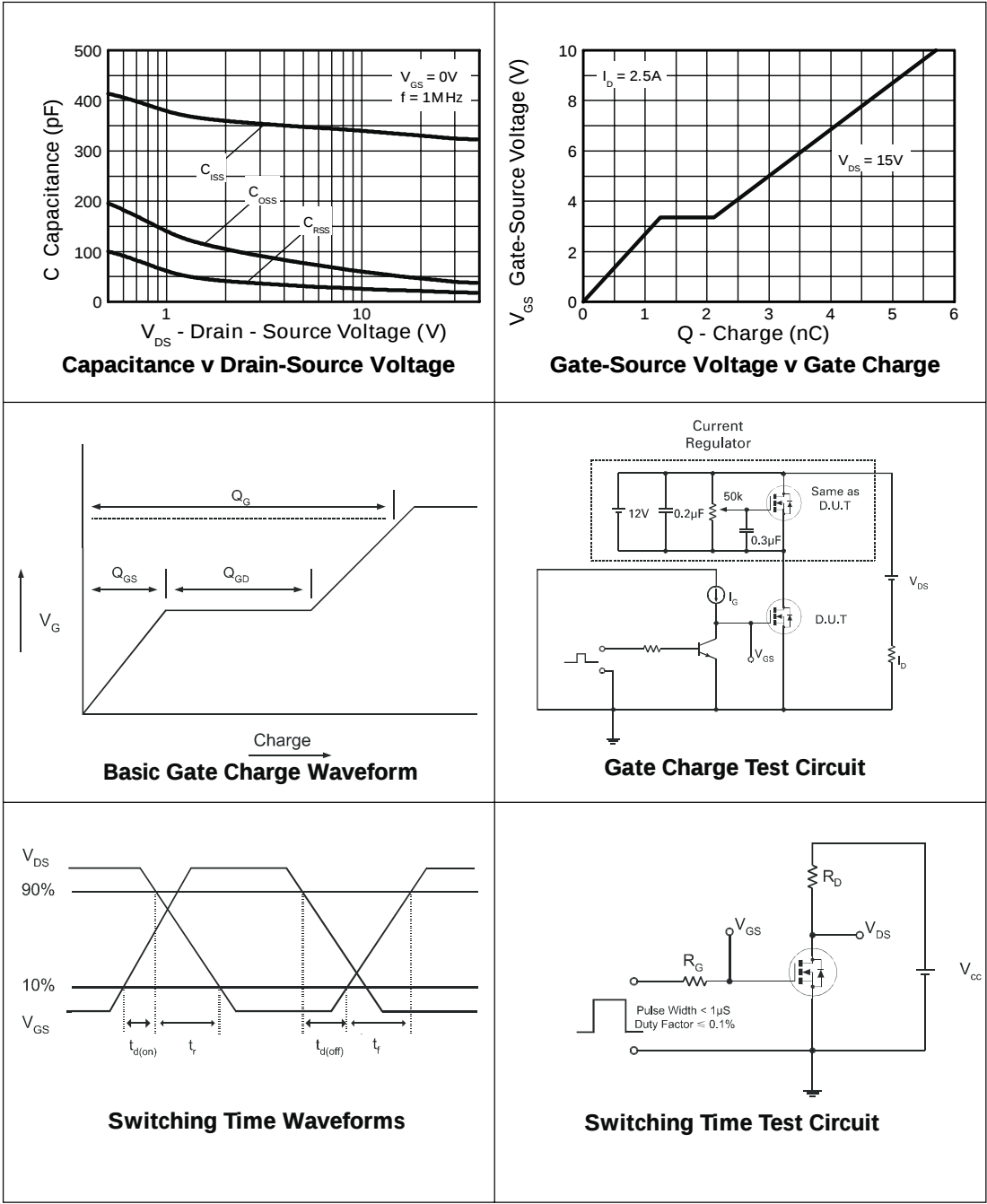
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TYPICAL CHARACTERISTICS



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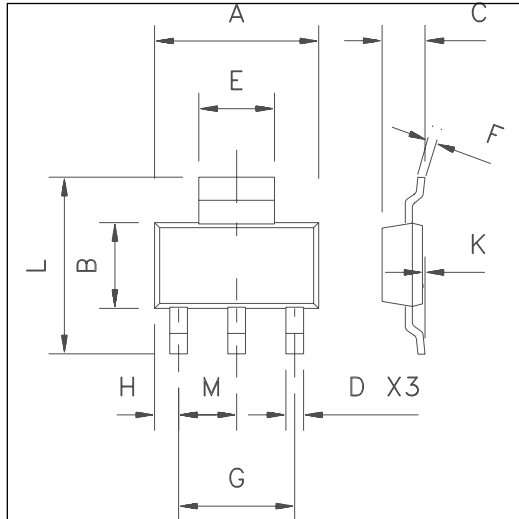
TYPICAL CHARACTERISTICS



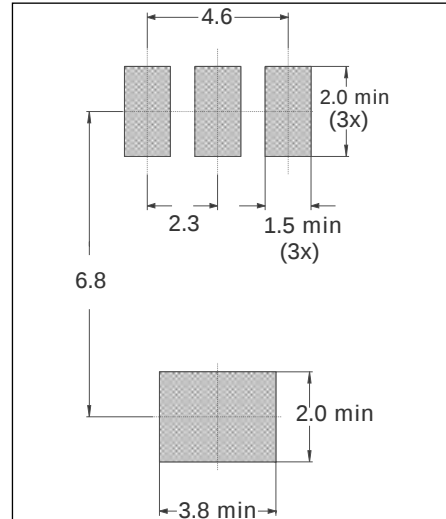
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PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	6.3	6.7	0.248	0.264
B	3.3	3.7	0.130	0.146
C	-	1.7	-	0.067
D	0.6	0.8	0.024	0.031
E	2.9	3.1	0.114	0.122
F	0.24	0.32	0.009	0.13
G	NMO 4.6		NOM 0.181	
H	0.85	1.05	0.033	0.041
K	0.02	0.10	0.0008	0.004
L	6.7	7.3	0.264	0.287
M	NOM 2.3		NOM 0.0905	

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