

ZXMN6A11G

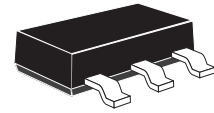
60V N-CANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = 60V$; $R_{DS(ON)} = 0.14\Omega$ $I_D = 3.8A$

DESCRIPTION

This new generation of TRENCH MOSFETs from Zetex utilises 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.



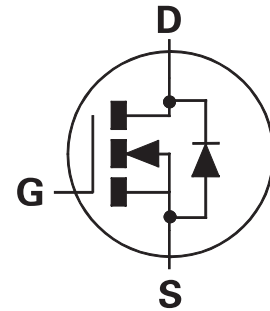
SOT223

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT223 package

APPLICATIONS

- DC - DC converters
- Power management functions
- Relay and solenoid driving
- Motor control

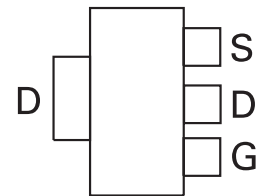


ORDERING INFORMATION

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

DEVICE MARKING

- ZXMN
6A11



TOP VIEW

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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	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

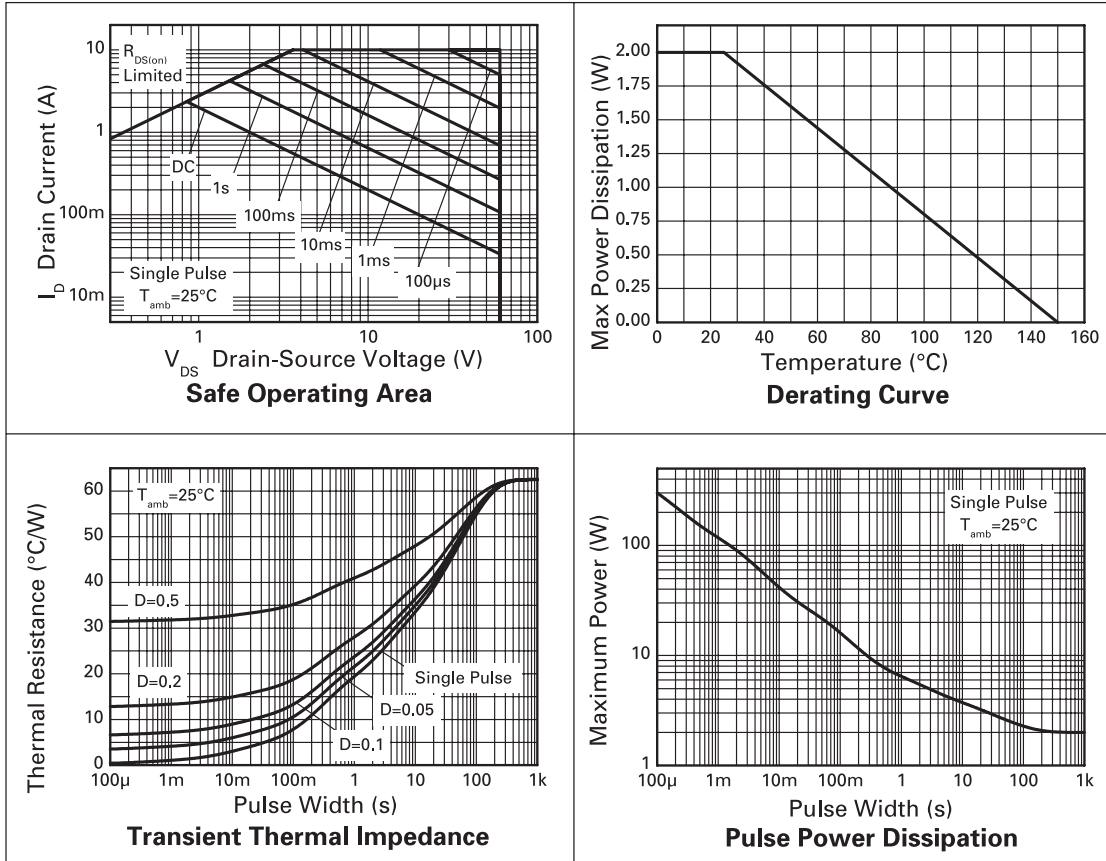
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient ^(a)	$R_{\theta JA}$	62.5	$^{\circ}C/W$
Junction to Ambient ^(b)	$R_{\theta JA}$	32	$^{\circ}C/W$

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 $t \leq 5$ secs.
- (c) Repetitive rating 25mm x 25mm FRA PCB, D=0.05 pulse width = 10 μ s - 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)

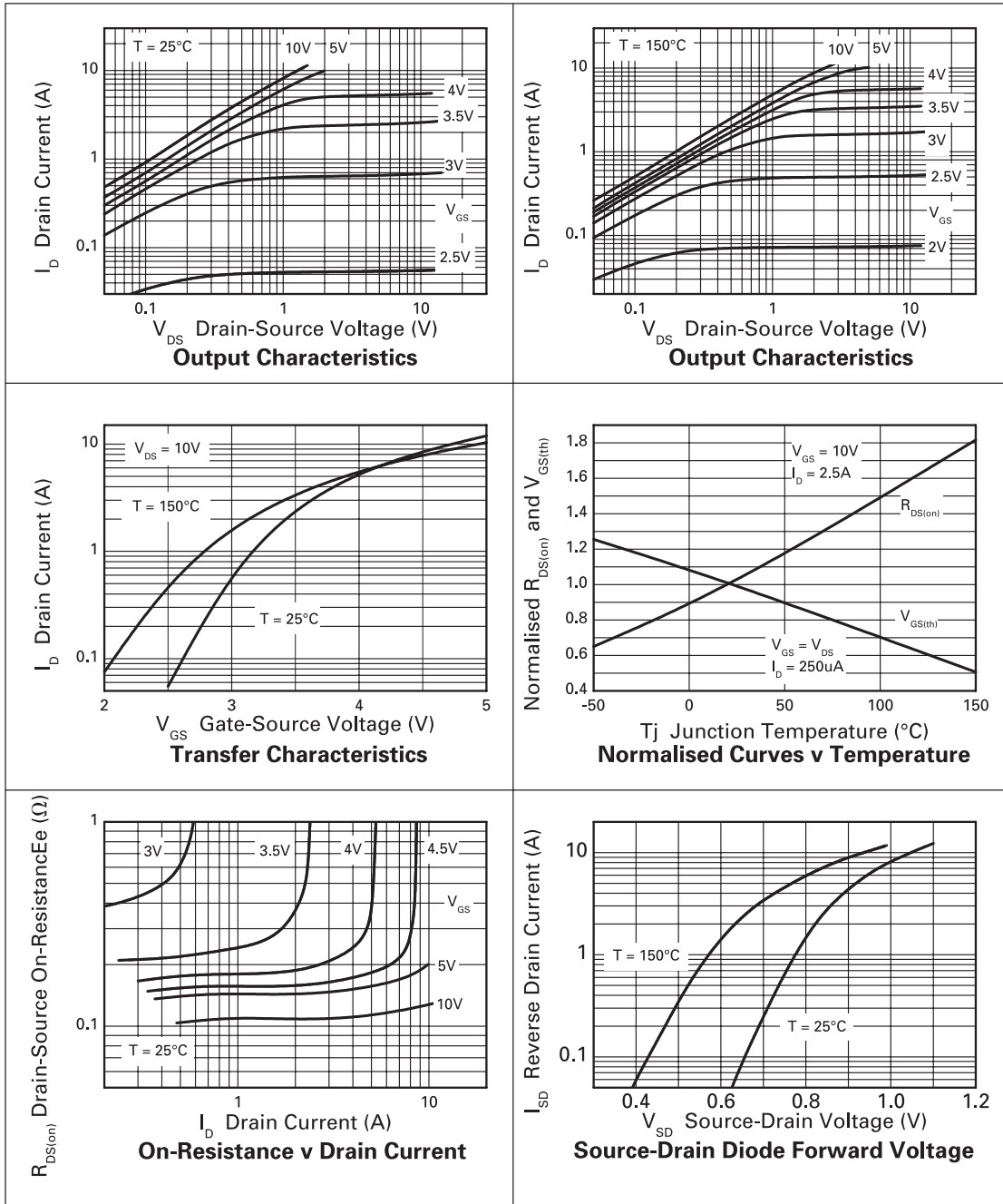
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60			V	$I_D=250\mu A, V_{GS}=0V$
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	$V_{DS}=60V, V_{GS}=0V$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.0			V	$I_D=250\mu A, V_{DS}=V_{GS}$
Static Drain-Source On-State Resistance ⁽¹⁾	$R_{DS(on)}$			0.140 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	$V_{DS}=40V, V_{GS}=0V,$ $f=1MHz$
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	$V_{DD}=30V, I_D=2.5A$ $R_G=6.0\Omega, V_{GS}=10V$ (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	$T_J=25^\circ C, I_S=2.8A,$ $V_{GS}=0V$
Reverse Recovery Time ⁽³⁾	t_{rr}		21.5		ns	$T_J=25^\circ C, I_F=2.5A,$ $di/dt=100A/\mu s$
Reverse Recovery Charge ⁽³⁾	Q_{rr}		20.5		nC	

NOTES

- (1) Measured under pulsed conditions. Width \leq 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.

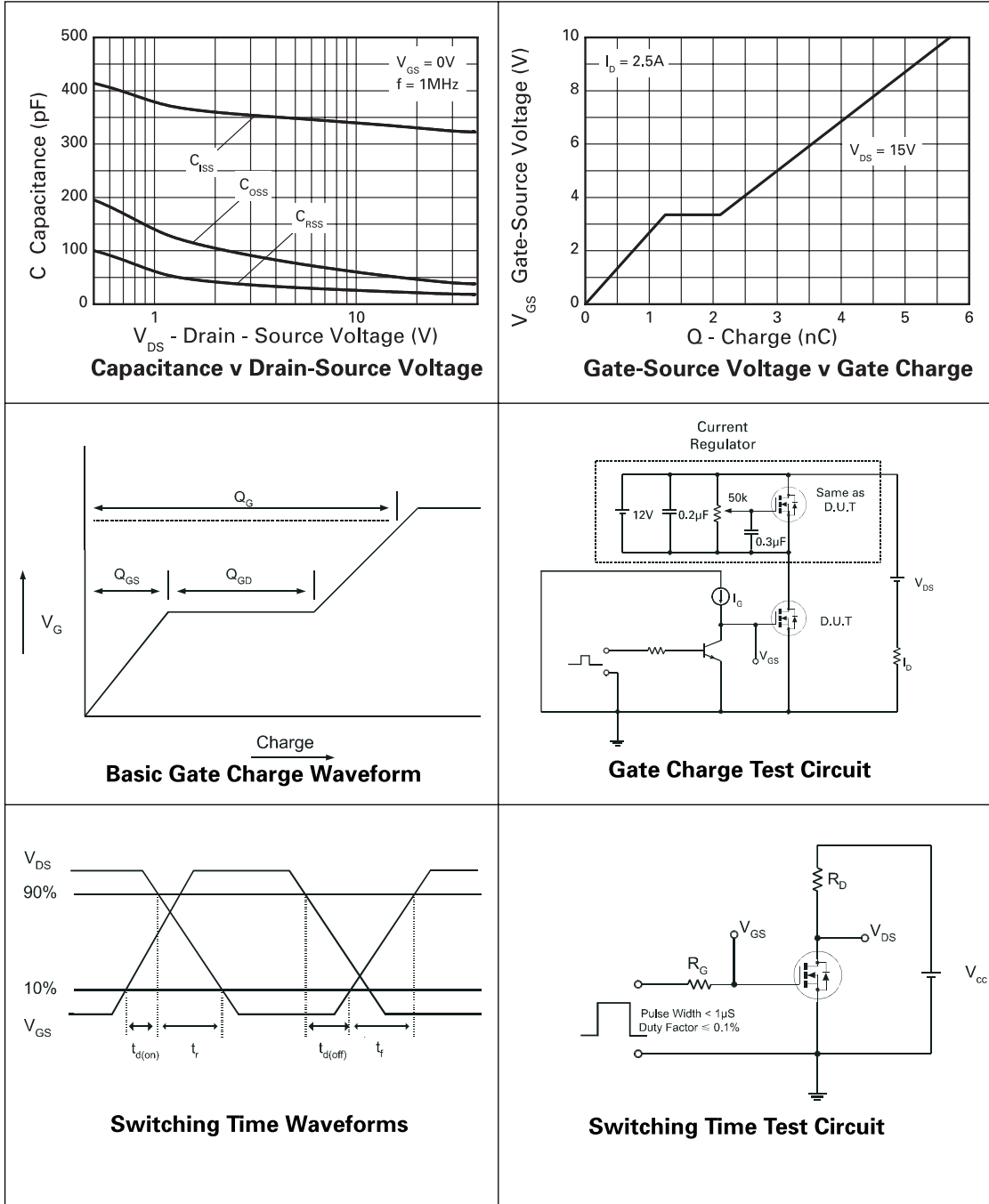
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TYPICAL CHARACTERISTICS



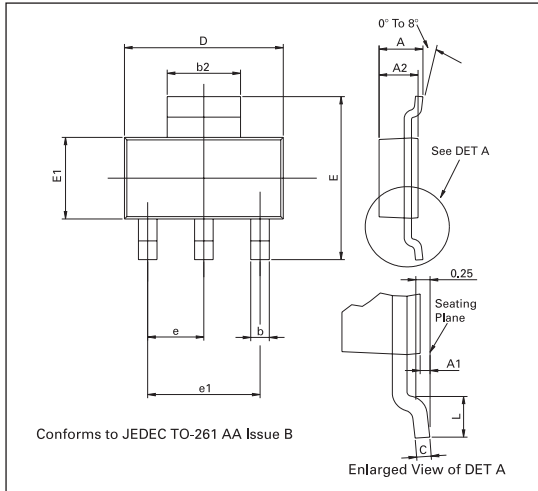
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TYPICAL CHARACTERISTICS

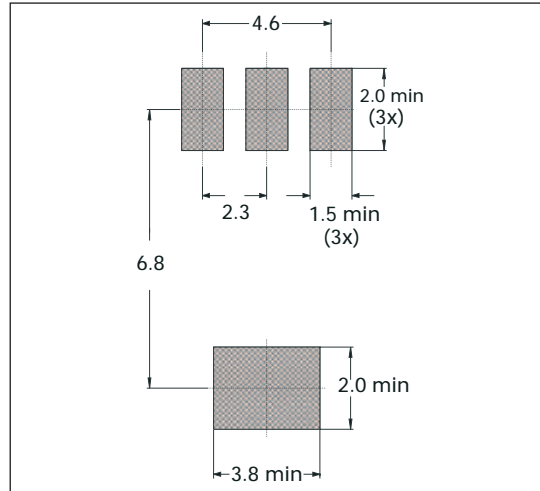


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PACKAGE OUTLINE



PAD LAYOUT DETAILS



PACKAGE DIMENSIONS

DIM	MILLIMETERS		DIM	MILLIMETERS	
	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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