

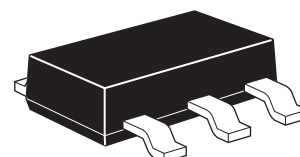
ZXMN7A11G

70V N-channel enhancement mode MOSFET

Summary

$V_{DSS}=70V$: $R_{DS(on)}=0.13\Omega$

$I_D=3.8A$

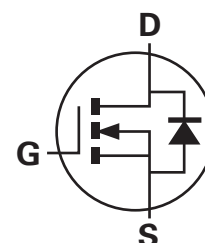


Description

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.

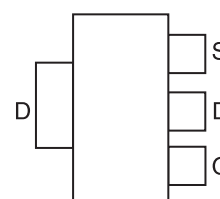
Features

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



Applications

- DC-DC converters
- Power management functions
- Disconnect switches
- Motor control
- Class D audio output stages



Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN7A11GTA	7	12	1,000
ZXMN7A11GTC	13	12	4,000

Device marking

ZXMN
7A11

ZXMN7A11G

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DSS}	70	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 A 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 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	Limit	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:

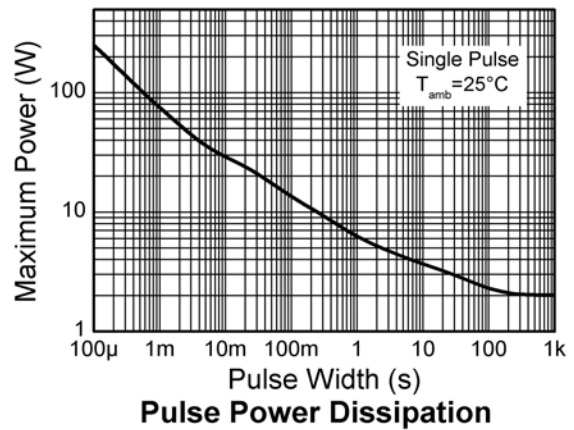
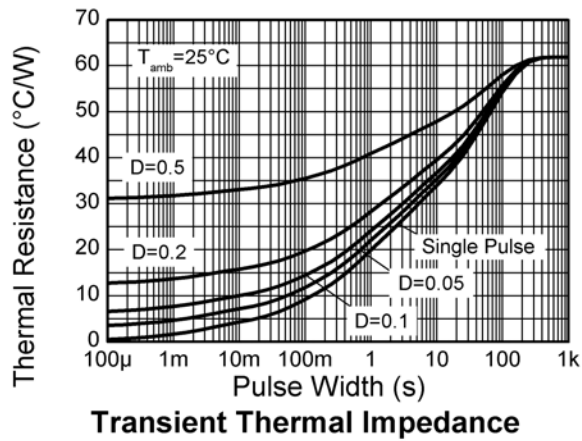
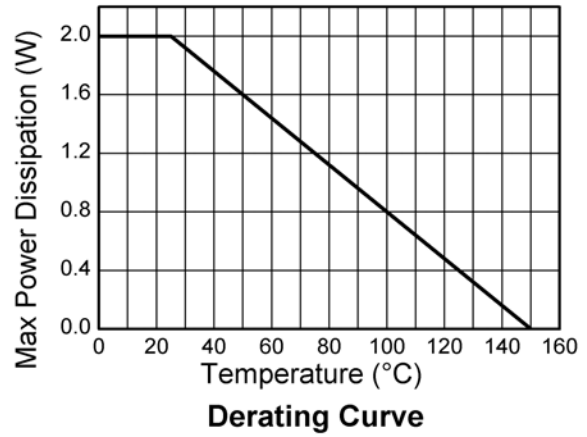
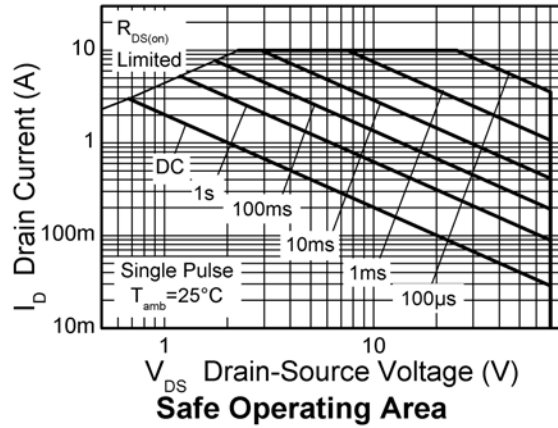
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ sec.

(c) Repetitive rating 25mm x 25mm FR4 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 $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Static						
Drain-source breakdown voltage	V _{(BR)DSS}	70			V	I _D = 250μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 70V, 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 ^(*)	R _{DS(on)}			0.13	Ω	V _{GS} = 10V, I _D = 4.4A
				0.19	Ω	V _{GS} = 4.5V, I _D = 3.8A
Forward transconductance ^{(*)(‡)}	g _{fs}		4.66		S	V _{DS} = 15V, I _D = 4.4A
Dynamic ^(‡)						
Input capacitance	C _{iss}		298		pF	V _{DS} = 40V, V _{GS} =0V f=1MHz
Output capacitance	C _{oss}		35		pF	
Reverse transfer capacitance	C _{rss}		21		pF	
Switching ^{(†)(‡)}						
Turn-on-delay time	t _{d(on)}		1.9		ns	V _{DD} = 35V, I _D = 1A R _G ≅6.0Ω, V _{GS} = 10V
Rise time	t _r		2		ns	
Turn-off delay time	t _{d(off)}		11.5		ns	
Fall time	t _f		5.8		ns	
Total gate charge	Q _g		4.35		nC	V _{DS} = 35V, V _{GS} = 5V I _D = 4.4A
Total gate charge	Q _g		7.4		nC	V _{DS} =35V, V _{GS} = 10V I _D = 4.4A
Gate-source charge	Q _{gs}		1.06		nC	
Gate drain charge	Q _{gd}		1.8		nC	
Source-drain diode						
Diode forward voltage ^(*)	V _{SD}		0.85	0.95	V	T _J =25°C, I _S = 2.5A, V _{GS} =0V
Reverse recovery time ^(‡)	t _{rr}		19.8		ns	T _J =25°C, I _S = 2.5A, di/dt=100A/μs
Reverse recovery charge ^(‡)	Q _{rr}		14		nC	

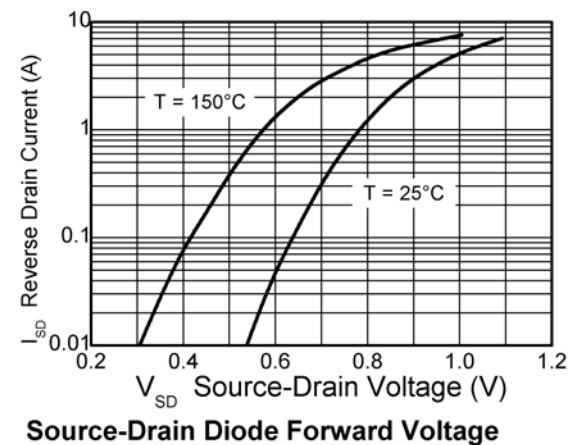
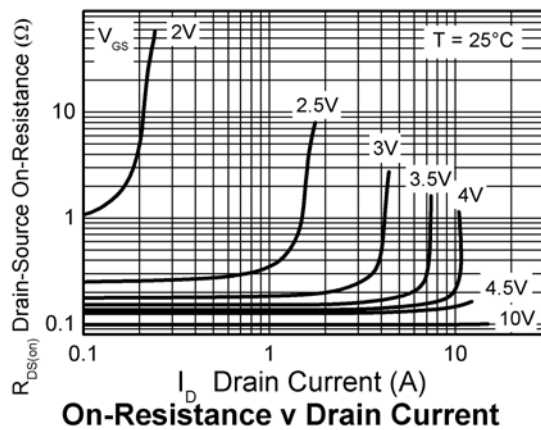
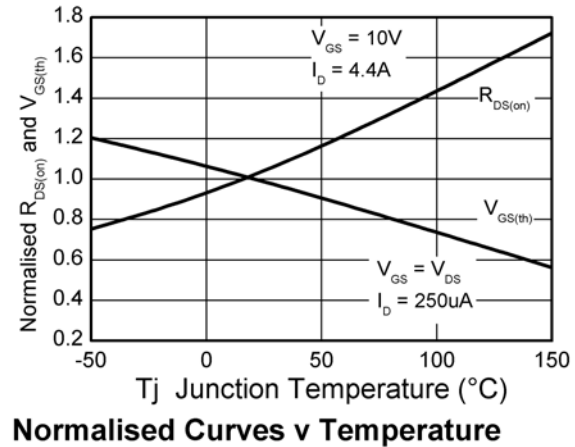
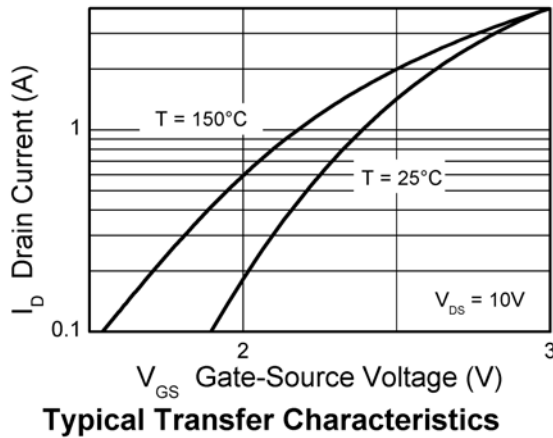
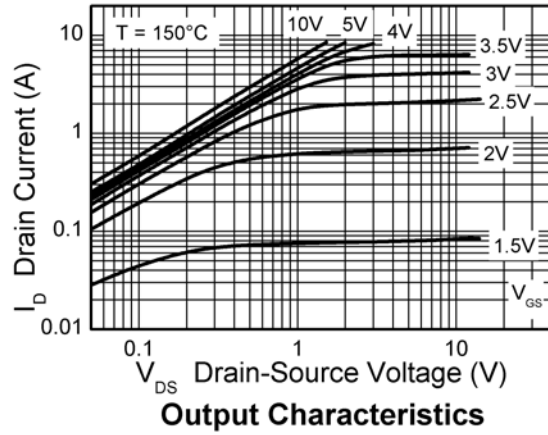
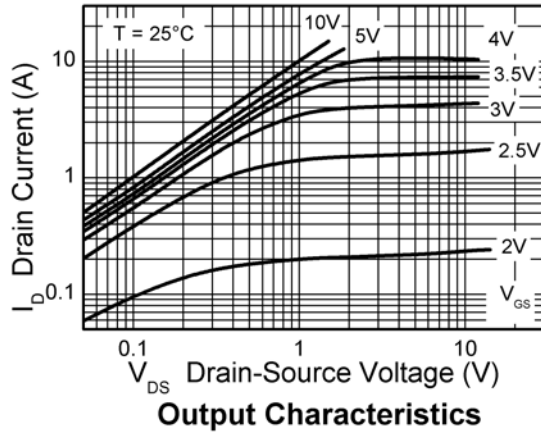
NOTES:

(*) Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

(†) Switching characteristics are independent of operating junction temperature.

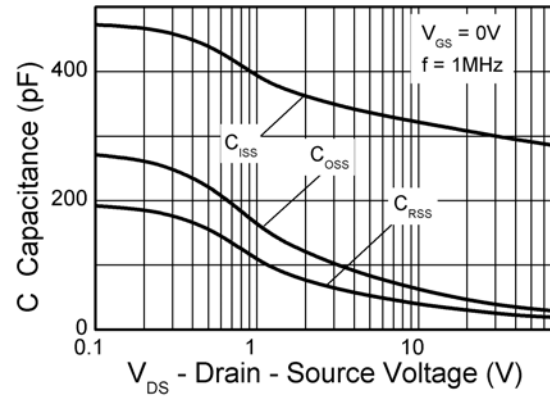
(‡) For design aid only, not subject to production testing.

Typical characteristics

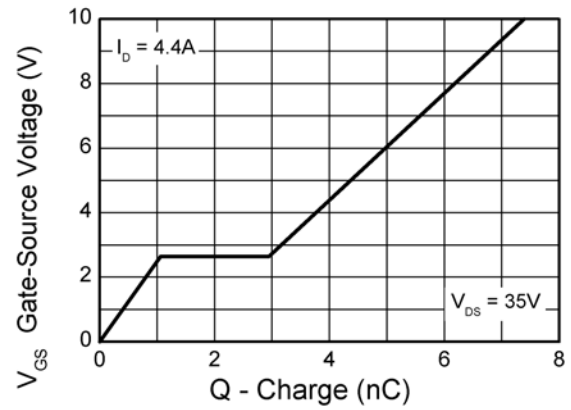


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Typical characteristics



Capacitance v Drain-Source Voltage



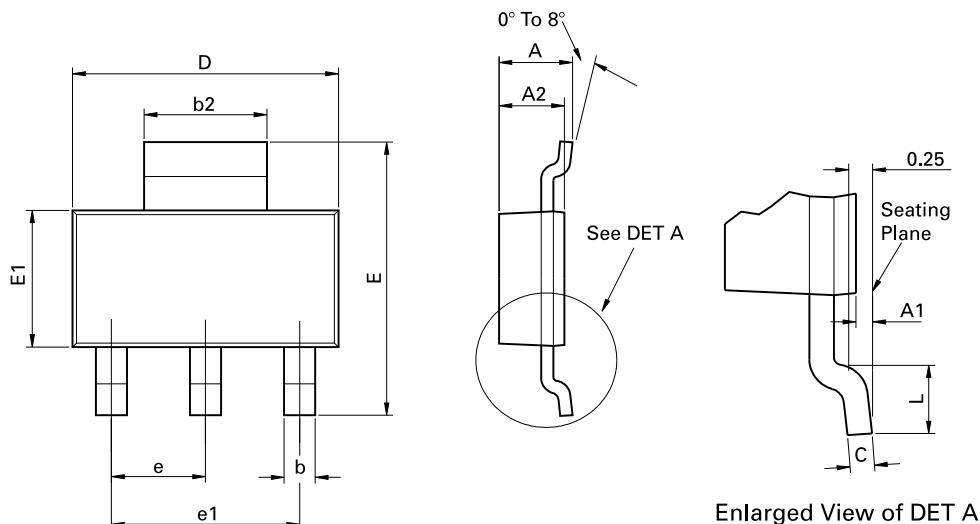
Gate-Source Voltage v Gate Charge

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Package outline - SOT223



Conforms to JEDEC TO-261 AA Issue B

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-
D	6.30	6.70	0.248	0.264	-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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