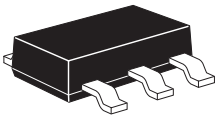
ZXMN10A11G

100V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY
$V_{(BR)DSS}$= 100V; $R_{DS(ON)}$= 0.35Ω I_D= 2.4A

DESCRIPTION

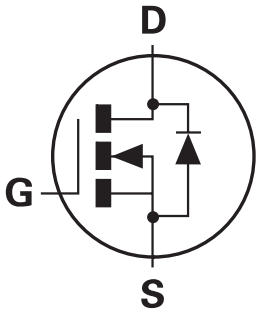
This new generation of TRENCH MOSFETs from Zetex utilises a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



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

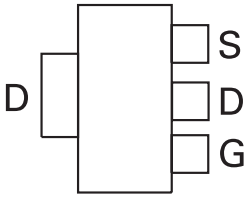
ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN10A11GTA	7”	12mm	1000 units
ZXMN10A11GTC	13”	12mm	4000 units

DEVICE MARKING

- ZXMN
  10A11

PINOUT



Top View

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V_{DSS}	100	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current V_{GS}=10V; T_A=25°C(b) V_{GS}=10V; T_A=70°C(b) V_{GS}=10V; T_A=25°C(a)	I_D	2.4 1.9 1.7	A
Pulsed drain current (c)	I_{DM}	7.9	A
Continuous source current (body diode) (b)	I_S	4.6	A
Pulsed source current (body diode)(c)	I_{SM}	7.9	A
Power dissipation at T_A=25°C (a) Linear derating factor	P_D	2 16	W mW/°C
Power dissipation at T_A=25°C (b) Linear derating factor	P_D	3.9 31	W mW/°C
Operating and storage temperature range	T_j:T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

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

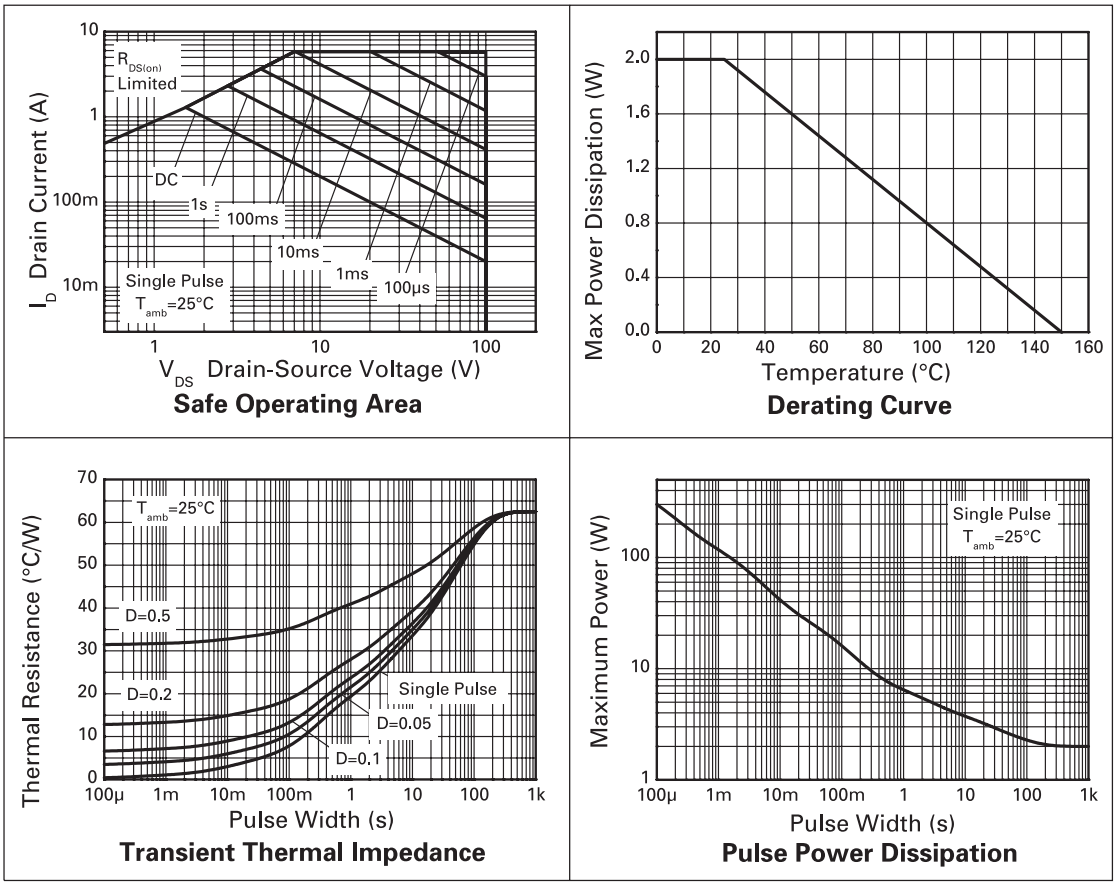
NOTES

(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≤10 secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, D=0.02 pulse width = 300μs - pulse width limited by maximum junction temperature. Refer to transient Thermal Impedance graph.

CHARACTERISTICS



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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-source breakdown voltage	$V_{(BR)DSS}$	100			V	I_D=250μA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}			1	μA	V_{DS}=100V, V_{GS}=0V
Gate-body leakage	I_{GSS}			100	nA	V_{GS}=±20V, V_{DS}=0V
Gate-source threshold voltage	$V_{GS(th)}$	2.0		4.0	V	I_D=250μA, V_{DS}= V_{GS}
Static drain-source On-State resistance (1)	$R_{DS(on)}$			0.35 0.45	Ω Ω	V_{GS}=10V, I_D=2.6A V_{GS}=6V, I_D=1.3A
Forward transconductance (3)	g_{fs}		4		S	V_{DS}=15V,I_D=2.6A
DYNAMIC (3)						
Input capacitance	C_{iss}		274		pF	V_{DS}=50 V, V_{GS}=0V, f=1MHz
Output capacitance	C_{oss}		21		pF	
Reverse transfer capacitance	C_{rss}		11		pF	
SWITCHING(2) (3)						
Turn-on delay time	$t_{d(on)}$		2.7		ns	V_{DD} =50V, I_D=1A R_G≅6.0Ω, V_{GS}=10V
Rise time	t_r		1.7		ns	
Turn-off delay time	$t_{d(off)}$		7.4		ns	
Fall time	t_f		3.5		ns	
Gate charge	Q_g		3		nC	V_{DS}=50V, V_{GS}=5V, I_D=2.5A
Total gate charge	Q_g		5.4		nC	V_{DS}=50V,V_{GS}=10V, I_D=2.5A
Gate-source charge	Q_{gs}		1.4		nC	
Gate-drain charge	Q_{gd}		1.5		nC	
SOURCE-DRAIN DIODE						
Diode forward voltage (1)	V_{SD}		0.85	0.95	V	T_J=25°C, I_S=1.85A, V_{GS}=0V
Reverse recovery time (3)	t_{rr}		26		ns	T_J=25°C, I_F=1.0A, di/dt= 100A/μs
Reverse recovery charge (3)	Q_{rr}		30		nC	

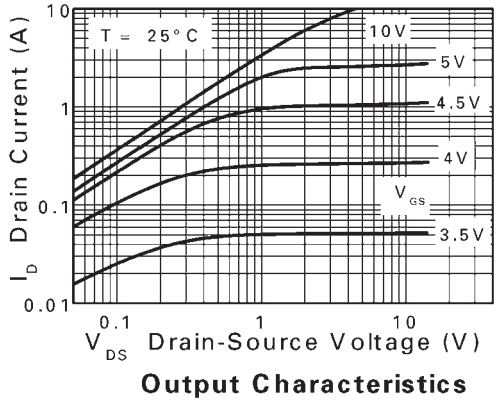
NOTES:

(1) Measured under pulsed conditions. Width ≤ 300μs. Duty cycle ≤ 2% .

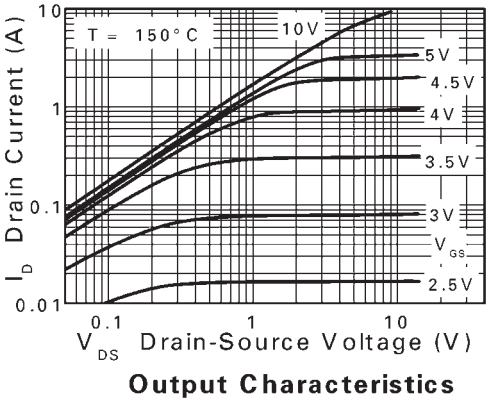
(2) Switching characteristics are independent of operating junction temperature.

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

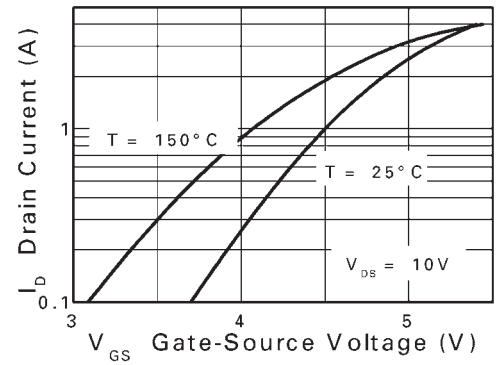
TYPICAL CHARACTERISTICS



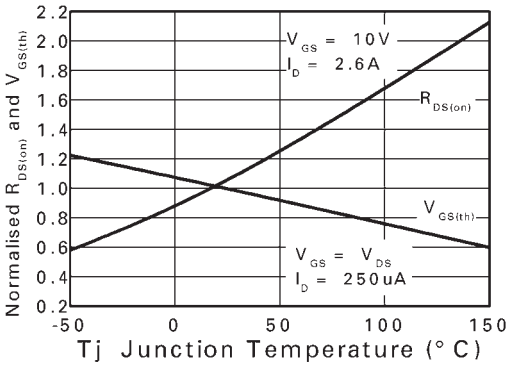
Output Characteristics



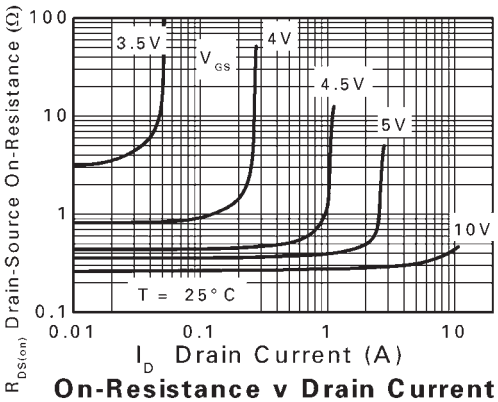
Output Characteristics



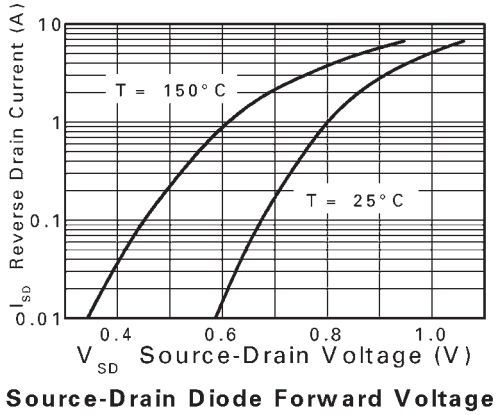
Typical Transfer Characteristics



Normalised Curves v Temperature

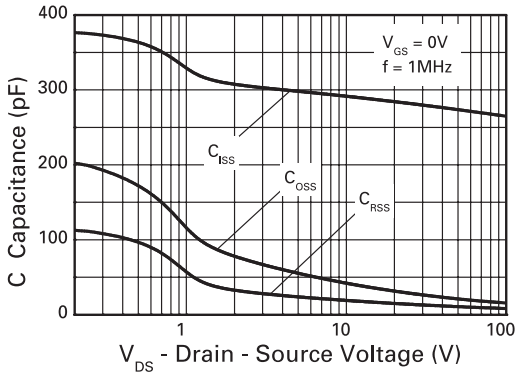


On-Resistance v Drain Current

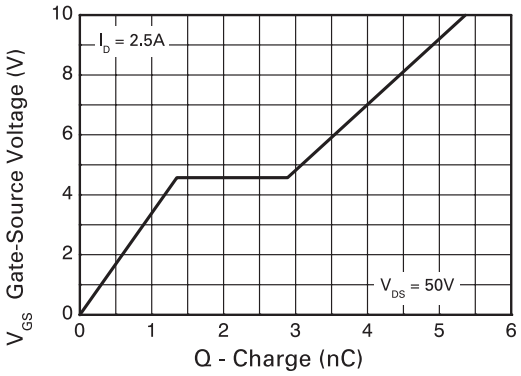


Source-Drain Diode Forward Voltage

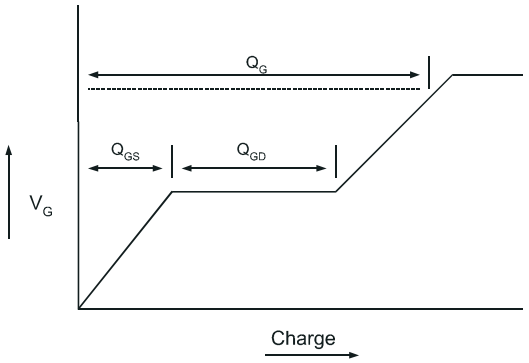
TYPICAL CHARACTERISTICS



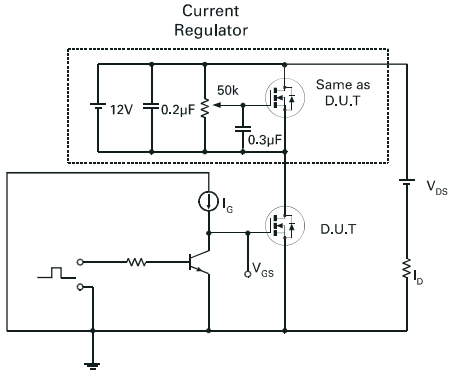
Capacitance v Drain-Source Voltage



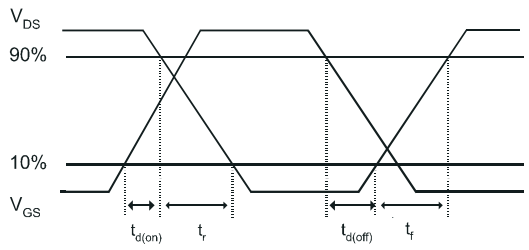
Gate-Source Voltage v Gate Charge



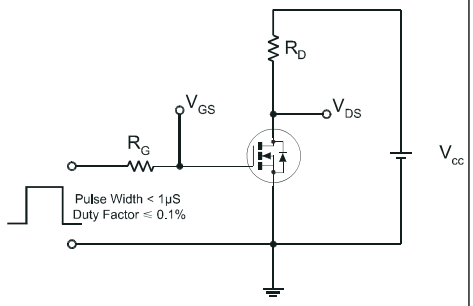
Basic Gate Charge Waveform



Gate Charge Test Circuit

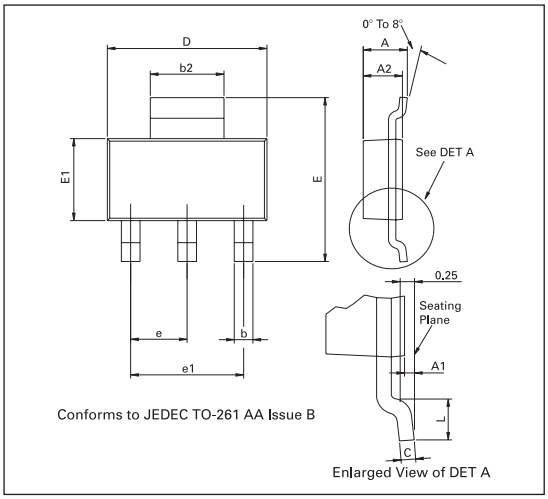


Switching Time Waveforms



Switching Time Test Circuit

PACKAGE OUTLINE



PACKAGE DIMENSIONS

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	-	-	-	-	-

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex plc Lansdowne Road, Chadderton Oldham, OL9 9TY United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

For the latest product information, log on to www.zetex.com

ISSUE 5 - DECEMBER 2004