

ZXMN10A07Z

100V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=100V$; $R_{DS(ON)}=1\Omega$; $I_D=1.15A$

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.

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT89 package

APPLICATIONS

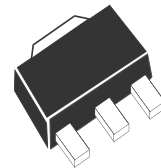
- DC - DC Converters
- Power Management Functions
- Relay and Solenoid driving
- Motor control

ORDERING INFORMATION

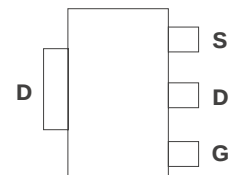
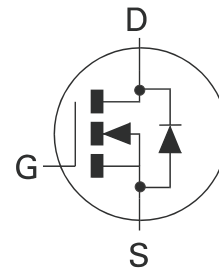
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN10A07ZTA	7"	12mm	1000 units

DEVICE MARKING

- 7N10



SOT89



Top View

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ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	100	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)	I_D	1.15 0.92	A
Continuous Drain Current $V_{GS}=10V$; $T_A=25^\circ C$ (a)		0.87	
Pulsed Drain Current (c)	I_{DM}	3.9	A
Continuous Source Current (Body Diode) (b)	I_S	2.1	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	3.9	A
Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor	P_D	1.5 12	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor	P_D	2.6 21	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)	$R_{\theta JA}$	83.3	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	47.4	$^\circ C/W$

NOTES

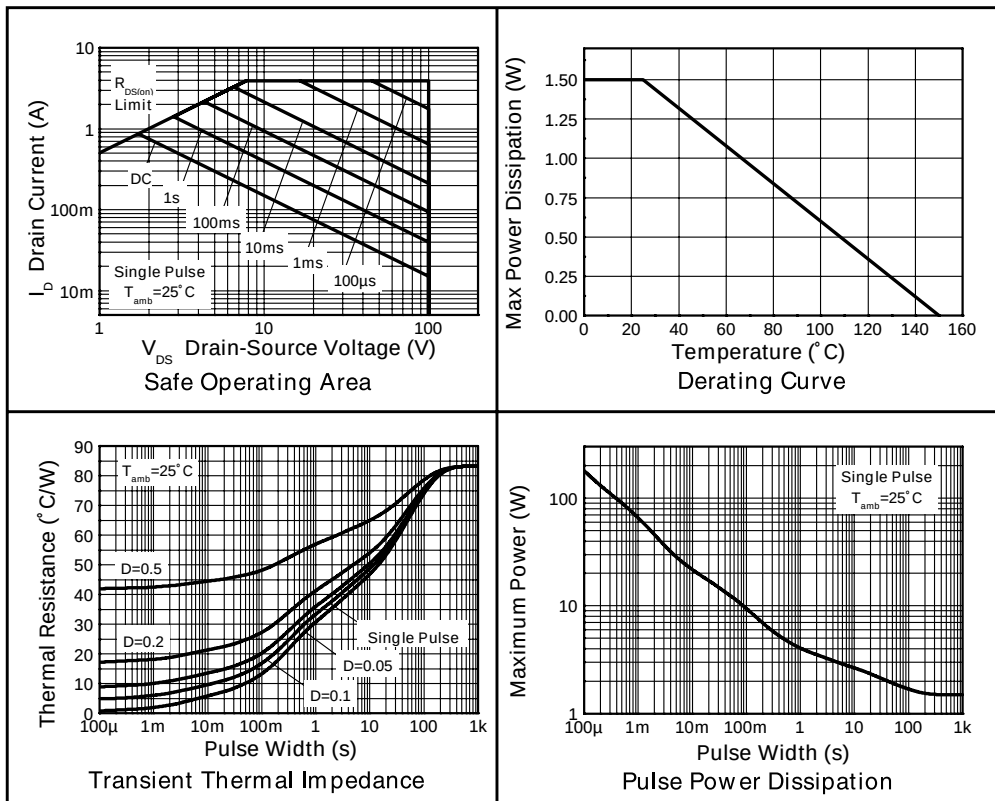
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For device surface mounted on FR4 PCB measured at $t \leq 10$ sec.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.05$, pulse width 10 us - pulse width limited by maximum junction temperature. Refer to transient Thermal Impedance graph.

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THERMAL CHARACTERISTICS



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

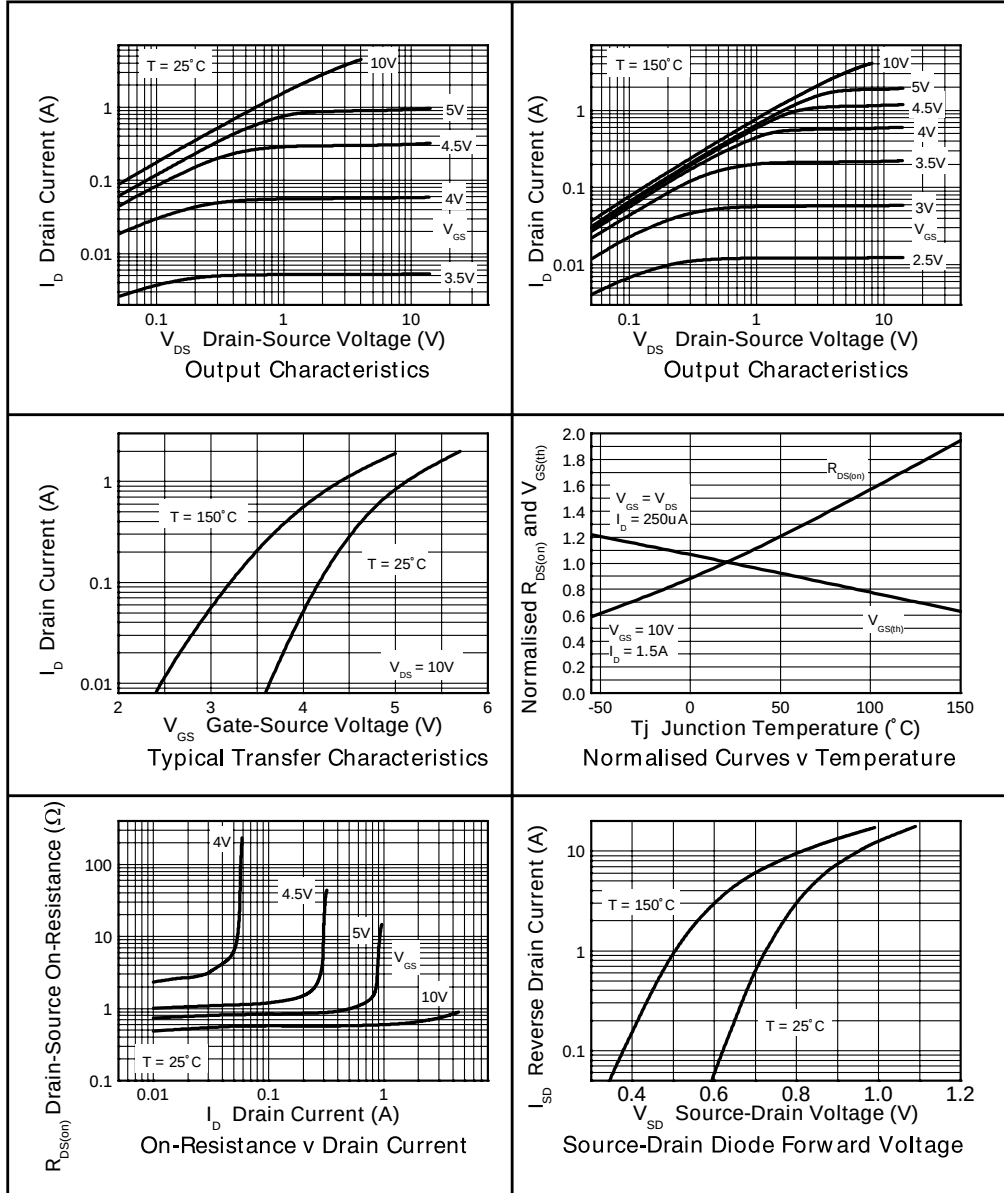
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	100			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =100V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	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)}			1.0 1.1	Ω Ω	V _{GS} =10V, I _D =1.5A V _{GS} =6V, I _D =1A
Forward Transconductance (3)	g _{fs}		1.6		S	V _{DS} =15V, I _D =1A
DYNAMIC (3)						
Input Capacitance	C _{iss}		138		pF	V _{DS} =50 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		12		pF	
Reverse Transfer Capacitance	C _{rss}		6		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		1.8		ns	V _{DD} =50V, I _D =1.0A R _G =6.0Ω, V _{GS} =10V
Rise Time	t _r		1.5		ns	
Turn-Off Delay Time	t _{d(off)}		4.1		ns	
Fall Time	t _f		2.1		ns	
Total Gate Charge	Q _g		2.9		nC	V _{DS} =50V, V _{GS} =10V, I _D =1.0A
Gate-Source Charge	Q _{gs}		0.7		nC	
Gate-Drain Charge	Q _{gd}		1		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}		0.84	0.95	V	T _J =25°C, I _S =1.5A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		27		ns	T _J =25°C, I _F =1.0A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		12		nC	

NOTES

- (1) Measured under pulsed conditions. Width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.
 (2) Switching characteristics are independent of operating junction temperature.
 (3) For design aid only, not subject to production testing.

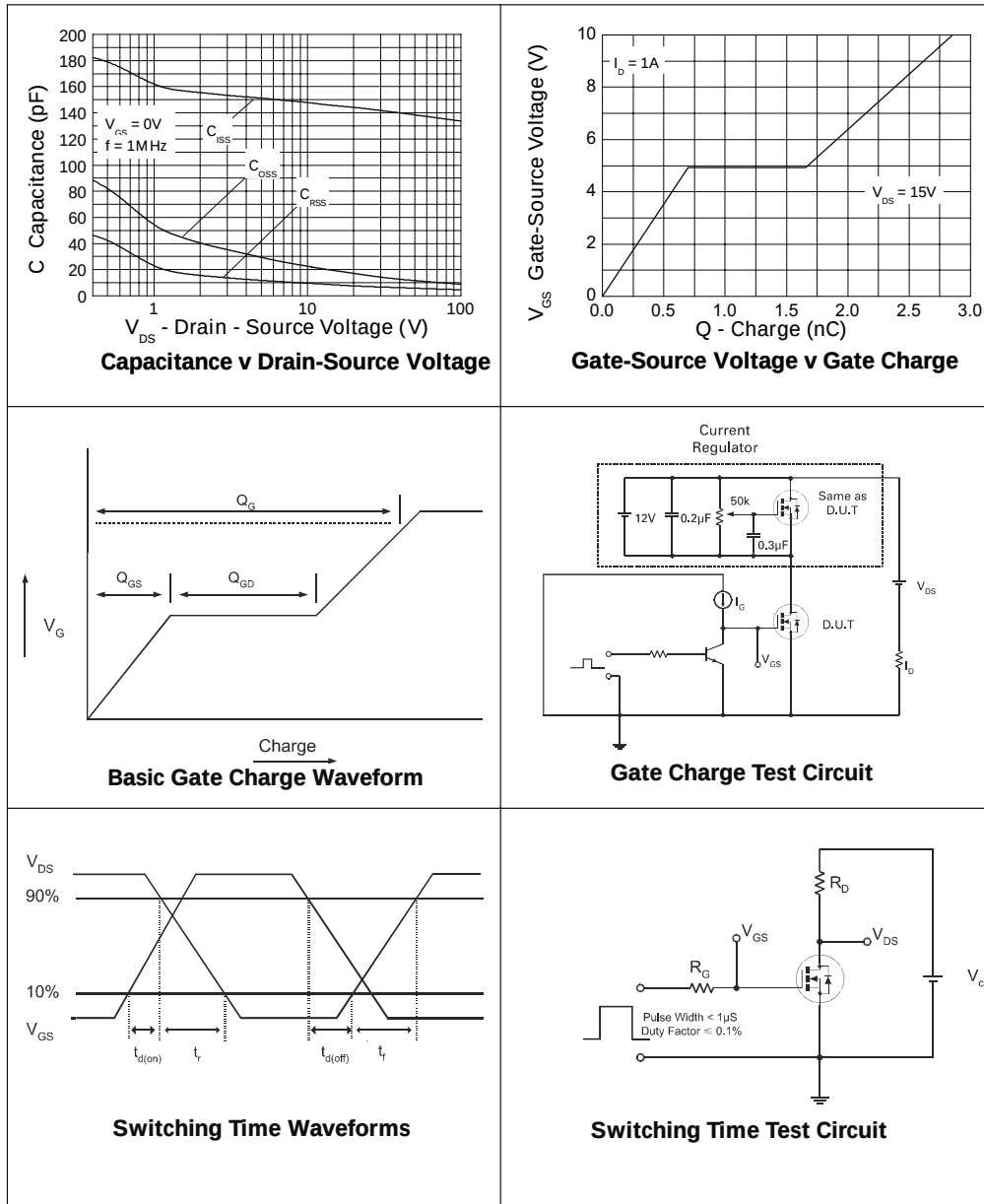
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TYPICAL CHARACTERISTICS



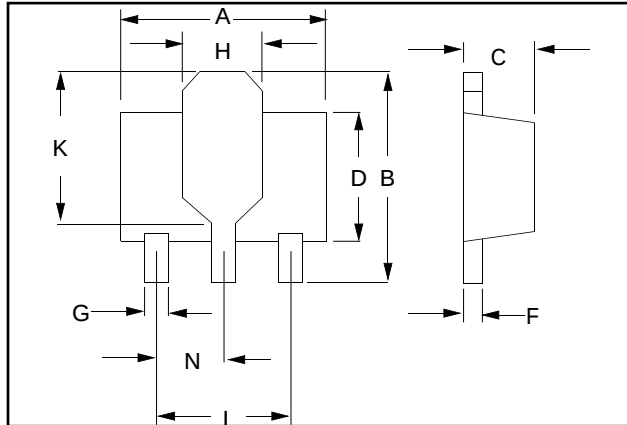
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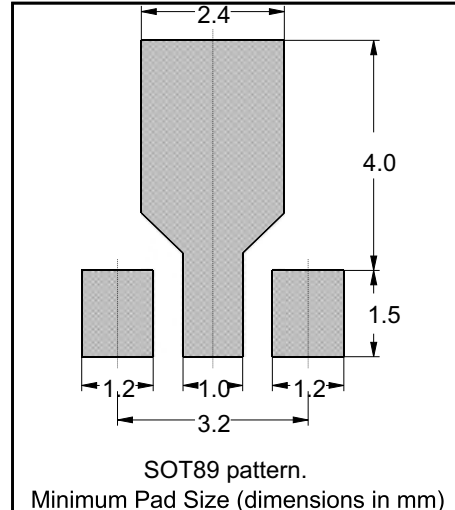


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PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



PAD LAYOUT DETAILS

DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	4.40	4.60	0.173	0.181
B	3.75	4.25	.150	0.167
C	1.40	1.60	0.550	0.630
D	-	2.60	-	0.102
F	0.28	0.45	0.011	0.018
G	0.38	0.55	0.015	0.022
H	1.50	1.80	0.060	0.072
K	2.60	2.85	0.102	0.112
L	2.90	3.10	0.114	0.112
N	1.4	1.60	0.055	0.063

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Zetex plc
Fields New Road
Chadderton
Oldham, OL9 8NP
United Kingdom
Telephone (44) 161 622 4422
Fax: (44) 161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc
Suite 315
700 Veterans Memorial Highway
Hauppauge NY11788
USA
Telephone: (631) 360 2222
Fax: (631) 360 8222

Zetex (Asia) Ltd
3701-04 Metroplaza, Tower 1
Hing Fong Road
Kwai Fong, Hong Kong
China
Telephone: (852) 26100 611
Fax: (852) 24250 494

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