

ZXMN10A07Z

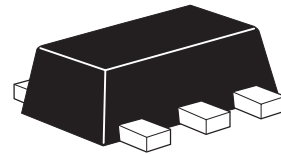
100V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=100V$; $R_{DS(on)}=0.7\Omega$; $I_D=1.4A$

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.



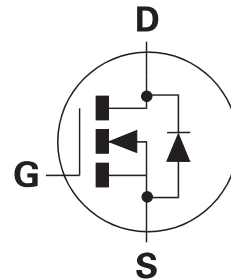
SOT89

FEATURES

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

APPLICATIONS

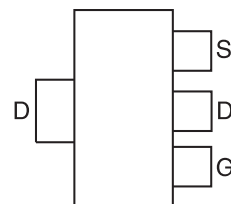
- DC-DC converters
- Power management functions
- Disconnect switches
- Motor control



ORDERING INFORMATION

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

PINOUT



(Top view)

DEVICE MARKING

- 7N10

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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V_{DSS}	100	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current @ $V_{GS}=10V$; $T_A=25^\circ C$ (b) @ $V_{GS}=10V$; $T_A=70^\circ C$ (b) @ $V_{GS}=10V$; $T_A=25^\circ C$ (a)	I_D	1.4 1.1 1.0	A
Pulsed drain current (c)	I_{DM}	4.2	A
Continuous source current (body diode) (b)	I_S	2.1	A
Pulsed source current (body diode) (c)	I_{SM}	4.2	A
Power dissipation at $T_A = 25^\circ C$ (a)	P_D	1.5	W
Linear derating factor		12	mW/ $^\circ C$
Power dissipation at $T_A = 25^\circ C$ (b)	P_D	2.6	W
Linear derating factor		21	mW/ $^\circ C$
Operating and storage temperature range	T_J, T_{stg}	-55 to +150	$^\circ C$

THERMAL RESISTANCE

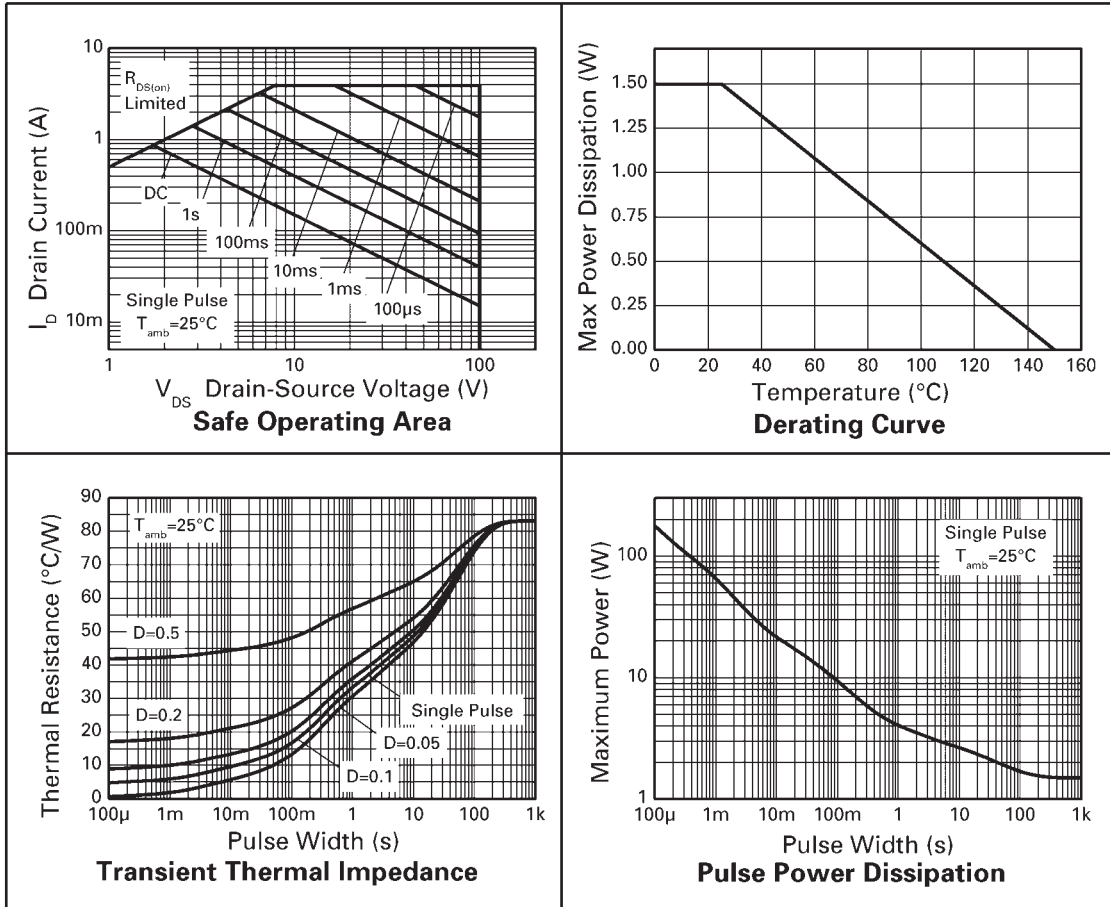
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient (a)	$R_{\theta JA}$	83.3	$^\circ C/W$
Junction to ambient (b)	$R_{\theta JA}$	47.4	$^\circ C/W$

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 a device surface mounted on FR4 PCB measured at $t \leq 10$ sec.
(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.02$, pulse width 300 μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

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CHARACTERISTICS



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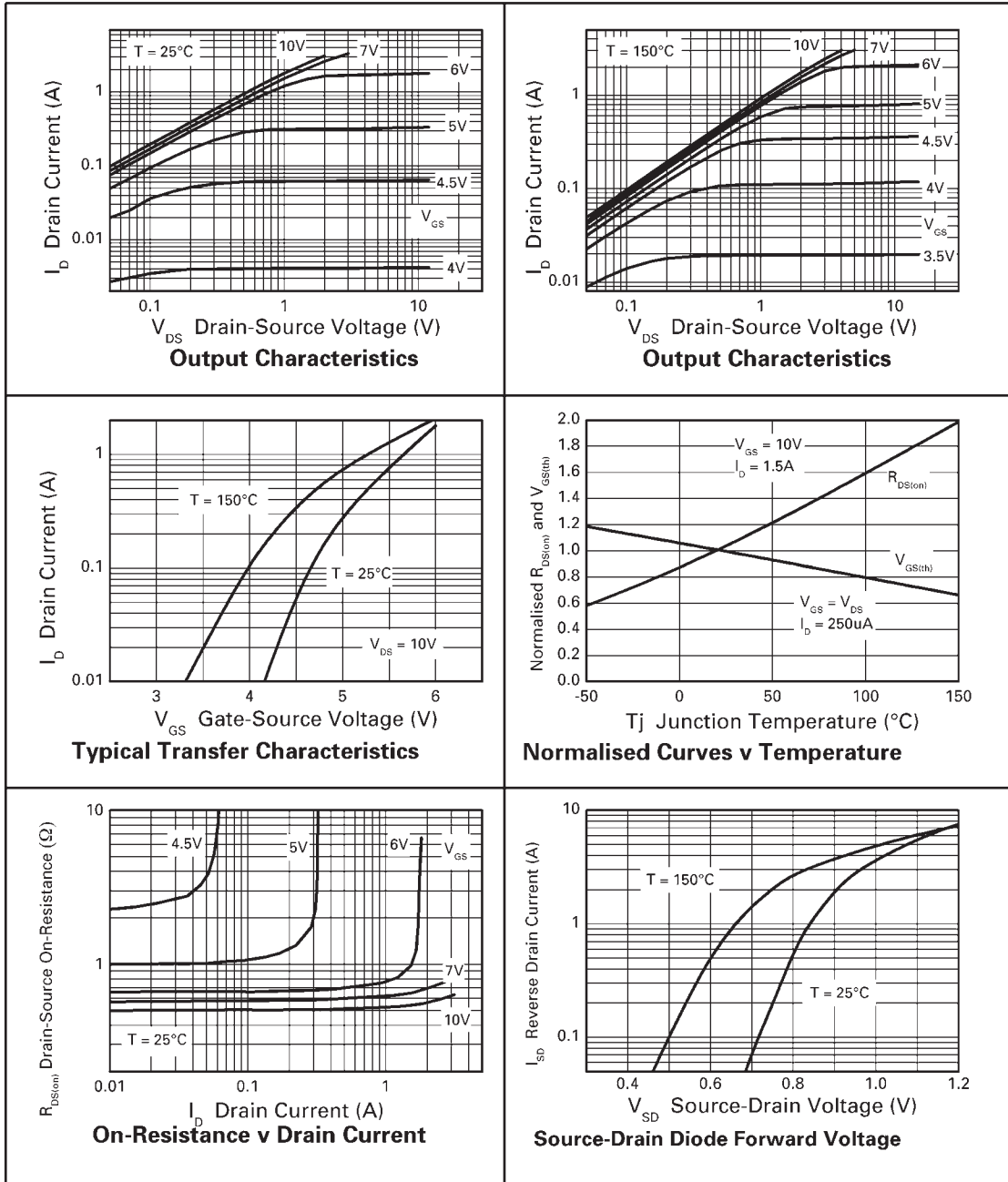
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-source breakdown voltage	$V_{(BR)DSS}$	100			V	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$
Zero gate voltage drain current	I_{DSS}			1	μA	$V_{DS} = 100\text{V}$, $V_{GS} = 0\text{V}$
Gate-body leakage	I_{GSS}			100	nA	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$
Gate-source threshold voltage	$V_{GS(th)}$	2.0			V	$I_D = 250\mu\text{A}$, $V_{DS} = V_{GS}$
Static drain-source on-state resistance ⁽¹⁾	$R_{DS(on)}$			0.7	Ω	$V_{GS} = 10\text{V}$, $I_D = 1.5\text{A}$
				0.9	Ω	$V_{GS} = 6\text{V}$, $I_D = 1\text{A}$
Forward transconductance ⁽¹⁾ ⁽³⁾	g_{fs}		1.6		S	$V_{DS} = 15\text{V}$, $I_D = 1\text{A}$
DYNAMIC ⁽³⁾						
Input capacitance	C_{iss}		138		pF	$V_{DS} = 50\text{V}$, $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$
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	$V_{DD} = 50\text{V}$, $I_D = 1\text{A}$ $R_G = 6.0\Omega$, $V_{GS} = 10\text{V}$
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	
Gate-source charge	Q_{gs}		0.7		nC	$V_{DS} = 50\text{V}$, $V_{GS} = 10\text{V}$
Gate drain charge	Q_{gd}		1		nC	$I_D = 1\text{A}$
SOURCE-DRAIN DIODE						
Diode forward voltage ⁽¹⁾	V_{SD}		0.85	0.95	V	$T_J = 25^{\circ}\text{C}$, $I_S = 1.5\text{A}$, $V_{GS} = 0\text{V}$
Reverse recovery time ⁽³⁾	t_{rr}		27		ns	$T_J = 25^{\circ}\text{C}$, $I_F = 1\text{A}$,
Reverse recovery charge ⁽³⁾	Q_{rr}		12		nC	$di/dt = 100\text{A}/\mu\text{s}$

NOTES

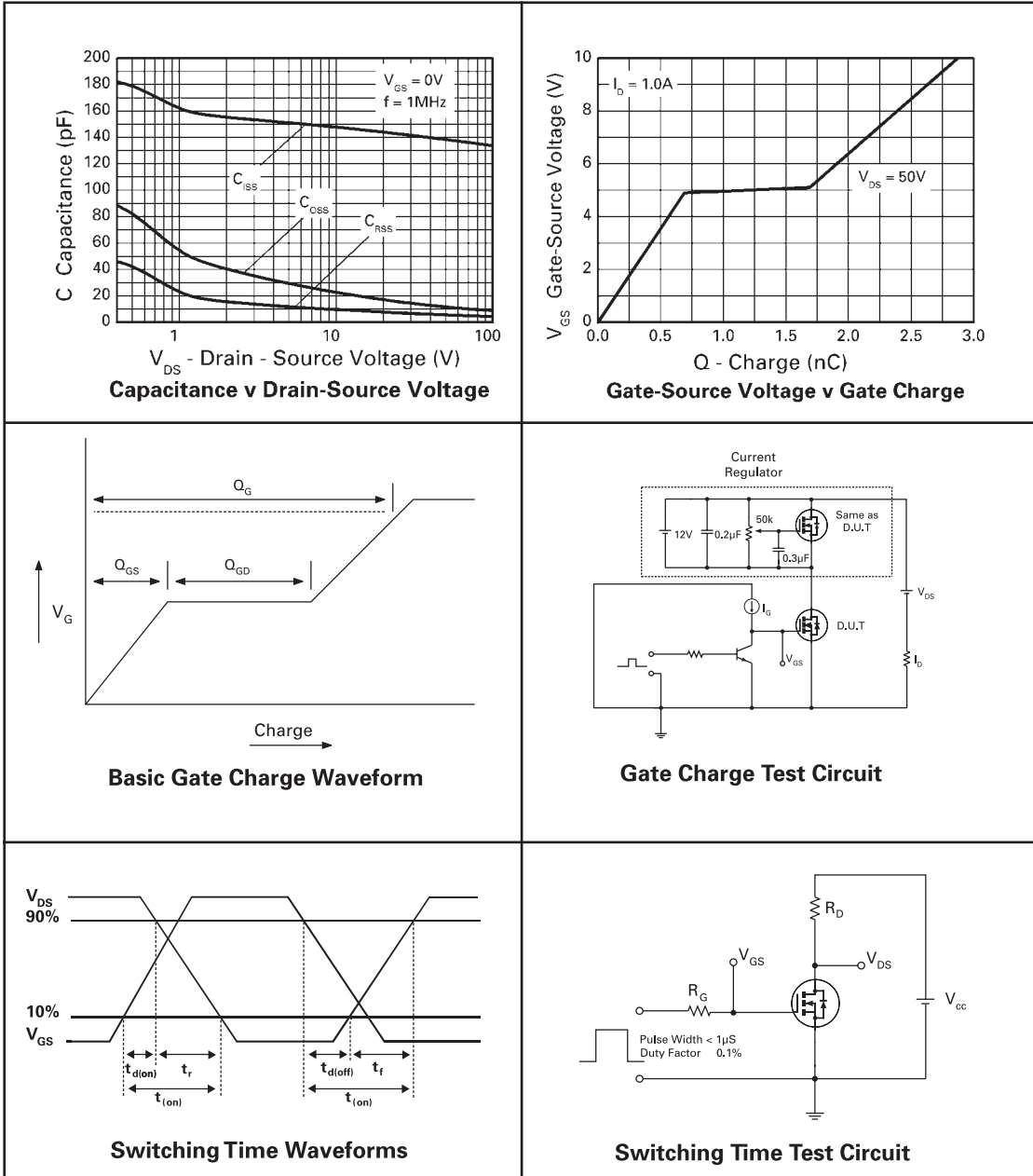
- (1) Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

TYPICAL CHARACTERISTICS



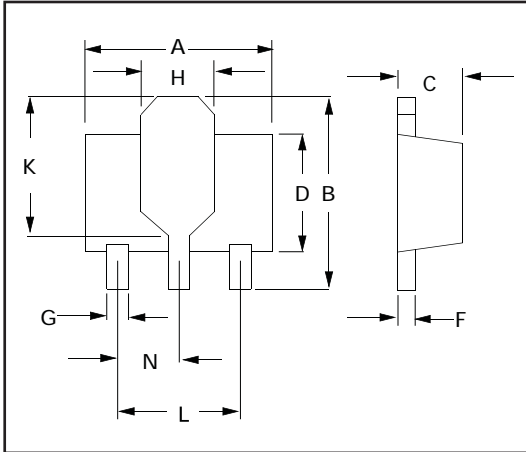
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TYPICAL CHARACTERISTICS

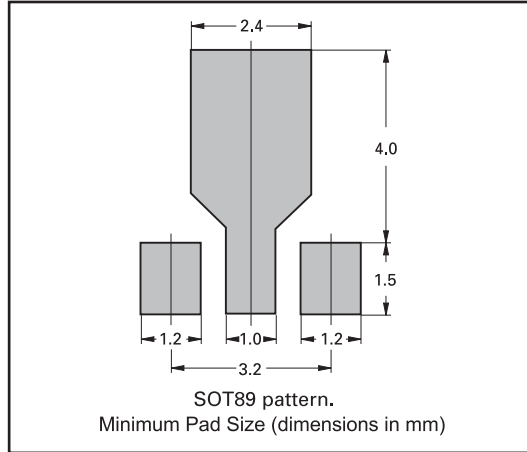


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PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



DIM	Millimeters		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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