

ZXMN6A25N8

60V SO8 N-channel enhancement mode MOSFET

Summary

$V_{(BR)DSS}$	$R_{DS(on)} (\Omega)$	$I_D (A)$
60	0.050 @ $V_{GS}=10V$	7.0
	0.070 @ $V_{GS}=4.5V$	



Description

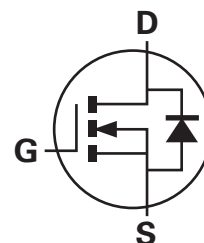
This new generation Trench MOSFET from Zetex features low on-resistance and fast switching, making it ideal for high efficiency power management applications.

Features

- Low on-resistance
- Fast switching speed
- Low gate drive
- SO8 package

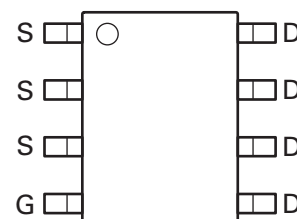
Applications

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



Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN6A25N8TA	7	12	500



Top view

Device marking

ZXMN6A25

ZXMN6A25N8

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) @ $V_{GS} = 10V$; $T_L = 25^\circ C$ ^{(a)(d)}	I_D	5.7 4.5 4.3 7.0	A
Pulsed Drain current ^(c)	I_{DM}	25.7	A
Continuous Source current (Body diode) ^(b)	I_S	4.1	A
Pulsed Source current (Body diode) ^(c)	I_{SM}	25.7	A
Power dissipation at $T_A = 25^\circ C$ ^(a) Linear derating factor	P_D	1.56 12.5	W mW/°C
Power dissipation at $T_A = 25^\circ C$ ^(b) Linear derating factor	P_D	2.8 22.2	W mW/°C
Power dissipation at $T_L = 25^\circ C$ ^(d) Linear derating factor	P_D	4.14 33.1	W mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

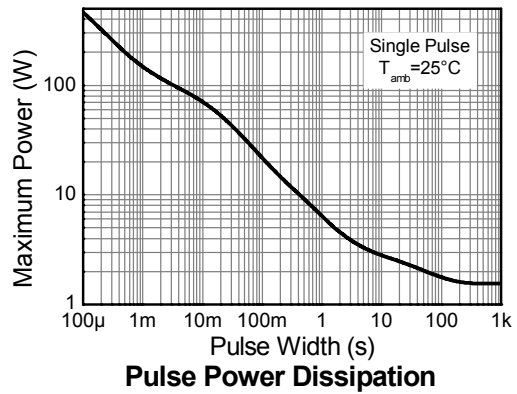
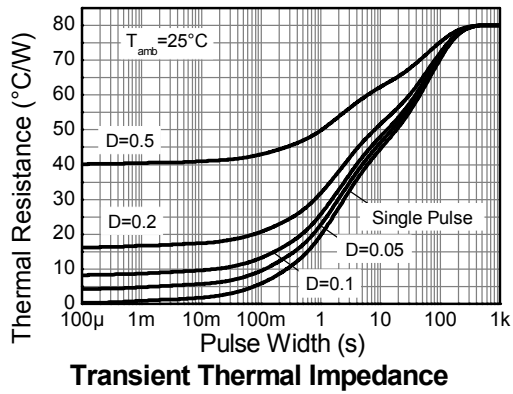
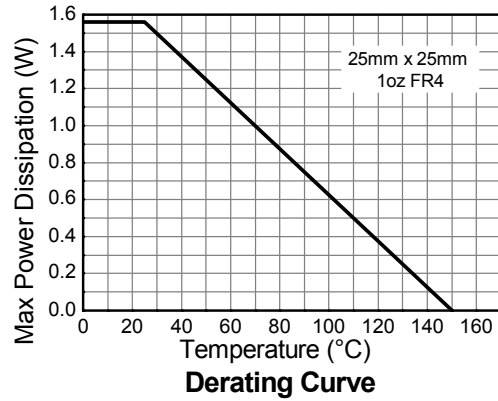
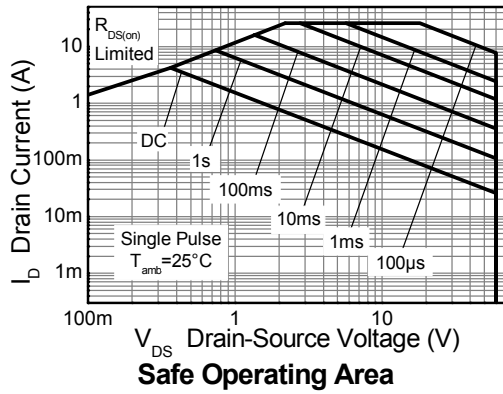
Thermal resistance

Parameter	Symbol	Value	Unit
Junction to ambient ^(a)	$R_{\theta JA}$	80	°C/W
Junction to ambient ^(b)	$R_{\theta JA}$	45	°C/W
Junction to lead ^(d)	$R_{\theta JL}$	30.2	°C/W

NOTES:

- (a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- (b) Mounted on FR4 PCB measured at $t \leq 10$ sec.
- (c) Repetitive rating on 25mm x 25mm FR4 PCB, $D=0.02$, pulse width 300us – pulse width limited by maximum junction temperature.
- (d) Thermal resistance from junction to solder-point (at the end of the drain lead).

Thermal 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}	60			V	I _D =250μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}			1.0	μA	V _{DS} =60V, V _{GS} =0V
Gate-Body leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source threshold voltage	V _{GS(th)}	1		3	V	I _D =250μA, V _{DS} =V _{GS}
Static Drain-Source on-state resistance (*)	R _{DS(on)}			0.050 0.070	Ω	V _{GS} = 10V, I _D = 3.6A V _{GS} = 4.5V, I _D = 3.0A
Forward Transconductance (*) (†)	g _{fs}		10.2		S	V _{DS} = 15V, I _D = 4.5A
Dynamic (†)						
Input capacitance	C _{iss}		1063		pF	V _{DS} = 30V, V _{GS} =0V f=1MHz
Output capacitance	C _{oss}		104		pF	
Reverse transfer capacitance	C _{rss}		64		pF	
Switching (‡) (†)						
Turn-on-delay time	t _{d(on)}		3.8		ns	V _{DD} = 30V, V _{GS} = 10V I _D = 1A R _G ≐ 6.0Ω,
Rise time	t _r		4.0		ns	
Turn-off delay time	t _{d(off)}		26.2		ns	
Fall time	t _f		10.6		ns	
Gate charge	Q _g		11.0		nC	V _{DS} = 30V, V _{GS} = 5V I _D = 4.5A
Total gate charge	Q _g		20.4		nC	V _{DS} = 30V, V _{GS} = 10V I _D = 4.5A
Gate-Source charge	Q _{gs}		4.1		nC	
Gate-Drain charge	Q _{gd}		5.1		nC	
Source-Drain diode						
Diode forward voltage (*)	V _{SD}		0.85	0.95	V	I _S = 5.5A,V _{GS} =0V
Reverse recovery time (‡)	t _{rr}		22.0		ns	I _S = 2.2A,di/dt=100A/μs
Reverse recovery charge(‡)	Q _{rr}		21.4		nC	

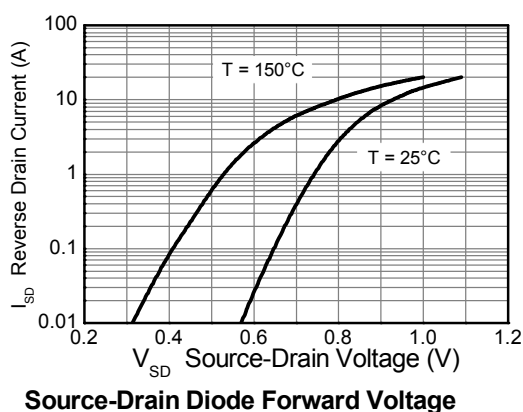
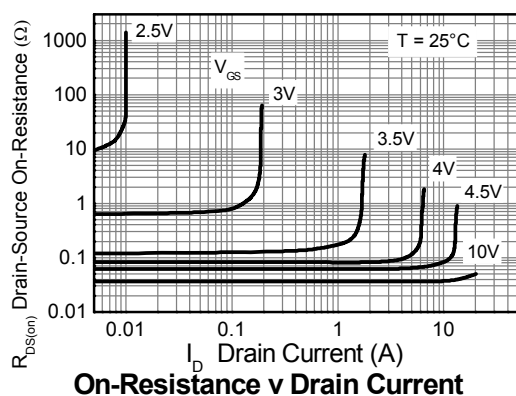
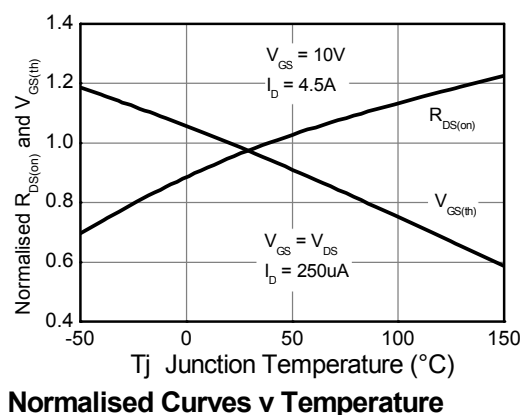
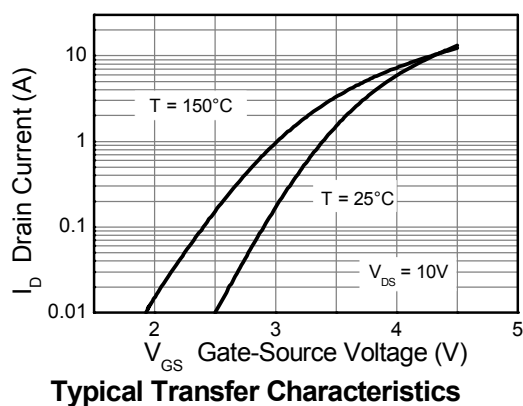
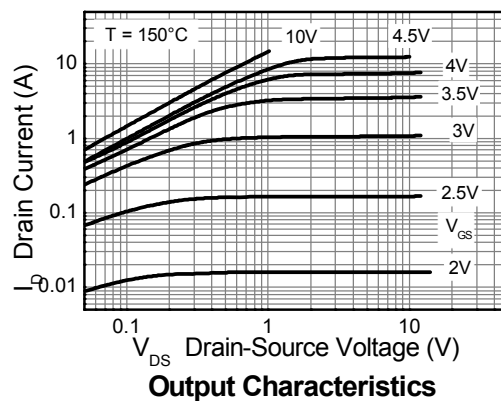
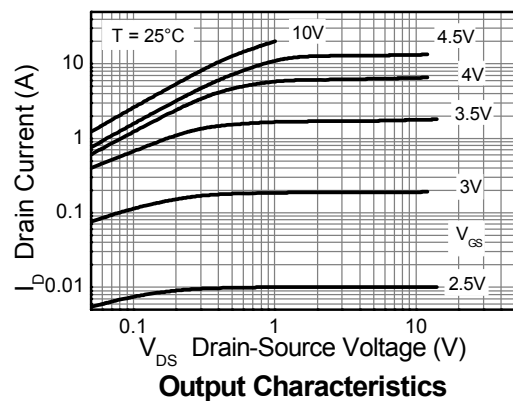
NOTES:

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

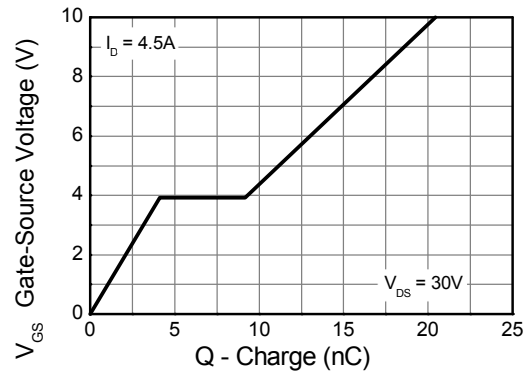
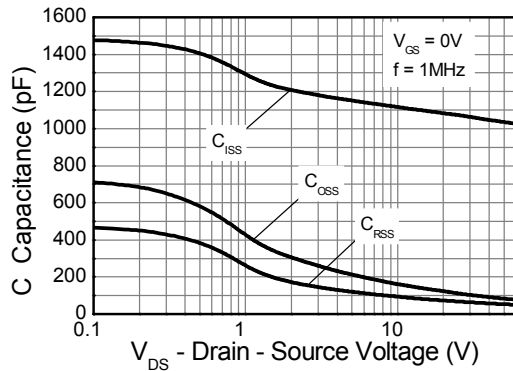
(†) Switching characteristics are independent of operating junction temperature.

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

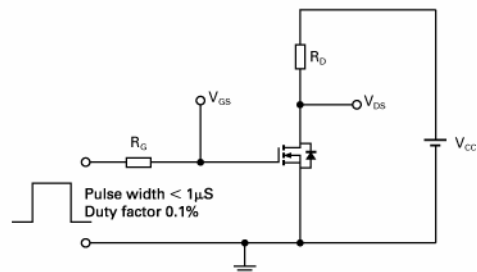
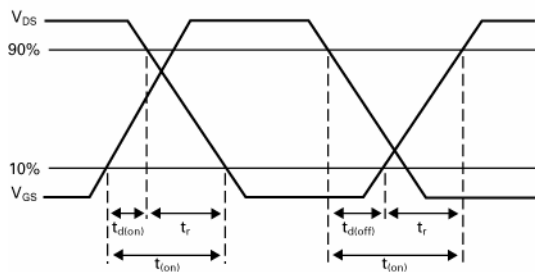
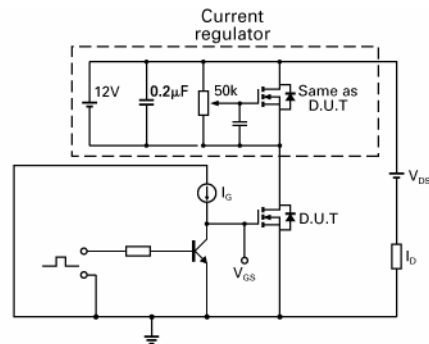
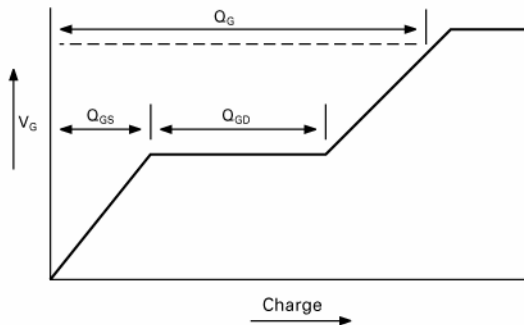
Typical characteristics



Typical characteristics

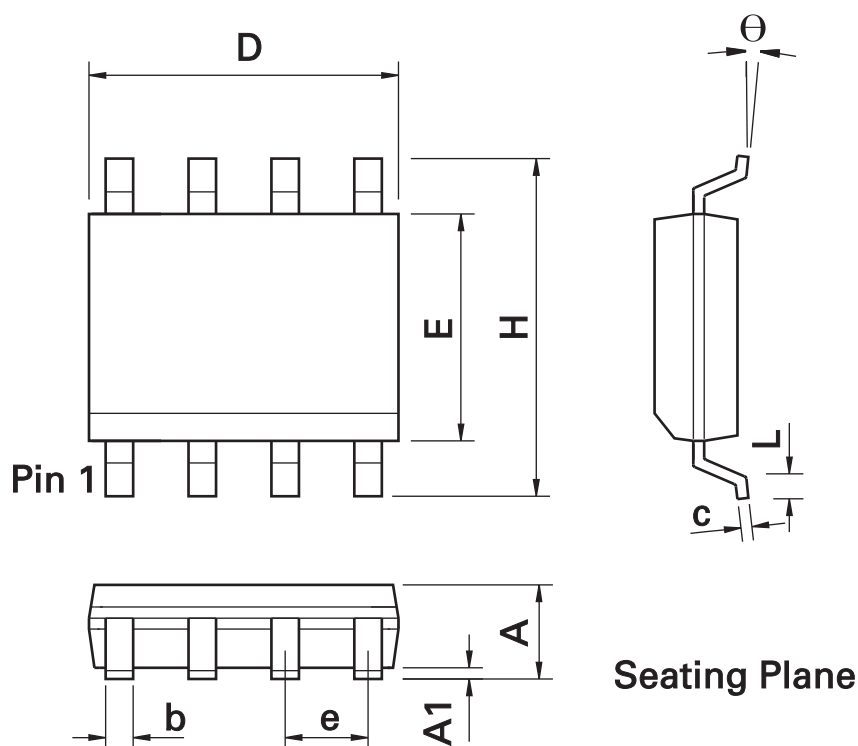


Test circuits



ZXMN6A25N8

Package outline SO8



SO8 Package Information

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.053	0.069	1.35	1.75	e	0.050 BSC		1.27 BSC	
A1	0.004	0.010	0.10	0.25	b	0.013	0.020	0.33	0.51
D	0.189	0.197	4.80	5.00	c	0.008	0.010	0.19	0.25
H	0.228	0.244	5.80	6.20	U	0°	8°	0°	8°
E	0.150	0.157	3.80	4.00	h	0.010	0.020	0.25	0.50
L	0.016	0.050	0.40	1.27	-	-	-	-	-

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

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Zetex sales offices

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-Park Balanstraße 59 D-81541 München Germany Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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