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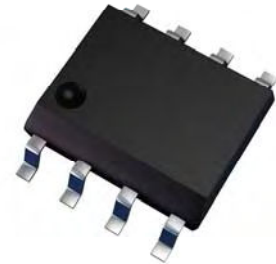
A Product Line of  
Diodes Incorporated



## ZXMP3F35N8 30V SO8 P-channel enhancement mode MOSFET

### Summary

$V_{(BR)DSS}$ (V)	$R_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-30	0.012 @ $V_{GS}=-10V$	-17.1
	0.018 @ $V_{GS}=-4.5V$	

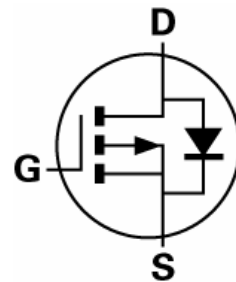


### Description

This new generation Trench MOSFET from Zetex has been designed to minimize the on-state resistance ( $R_{DS(on)}$ ) and yet maintain superior switching performance making it ideal for battery protection and reverse connection applications

### Features

- Low on-resistance
- Low gate drive
- SO8 package

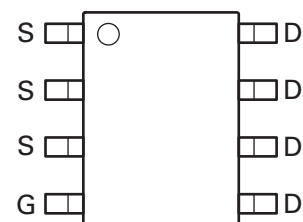


### Applications

- Power management functions
- Disconnect switches
- Reverse battery protection

### Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMP3F35N8TA	7	12	500



Top view

### Device marking

ZXMP 3F35

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### Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-Source voltage	$V_{DSS}$	-30	V
Gate-Source voltage	$V_{GS}$	$\pm 20$	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) @ $V_{GS} = -10V$ ; $T_L = 25^\circ C$ (d)	$I_D$	-12.3 -9.9 -9.3 -17.1	V
Pulsed Drain current (c)	$I_{DM}$	-58	A
Continuous Source current (Body diode) (b)	$I_S$	-4.9	A
Pulsed Source current (Body diode) (c)	$I_{SM}$	-58	A
Power dissipation at $T_A = 25^\circ C$ (a) Linear derating factor	$P_D$	1.56 12.5	W mW/ $^\circ C$
Power dissipation at $T_A = 25^\circ C$ (b) Linear derating factor	$P_D$	2.8 22.2	W mW/ $^\circ C$
Power dissipation at $T_L = 25^\circ C$ (d) Linear derating factor	$P_D$	5.35 42.9	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)	$R_{\theta JA}$	80	$^\circ C/W$
Junction to ambient (b)	$R_{\theta JA}$	45	$^\circ C/W$
Junction to lead (d)	$R_{\theta JL}$	23.33	$^\circ C/W$

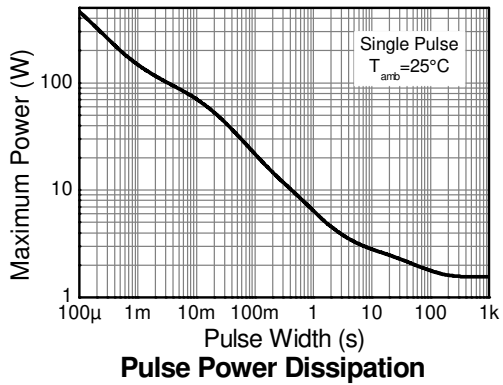
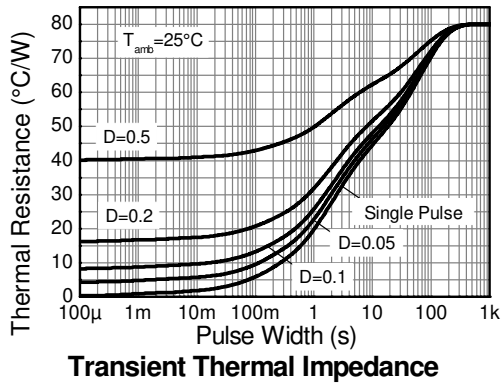
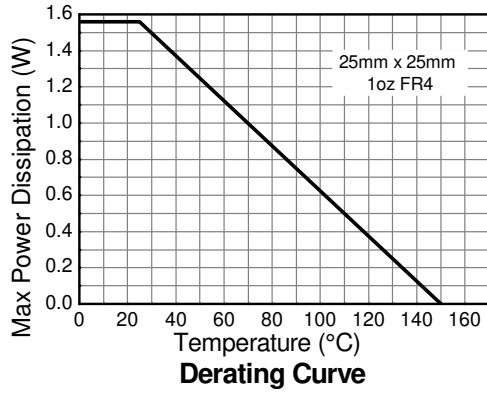
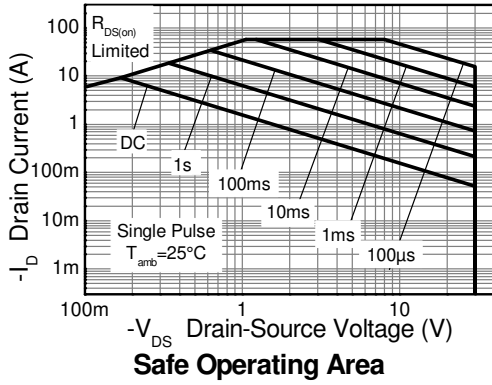
#### NOTES:

- (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).

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### 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
<b>Static</b>						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	-30			V	$I_D = -250\mu\text{A}$ , $V_{GS}=0\text{V}$
Zero Gate voltage Drain current	$I_{DSS}$			-1.0	$\mu\text{A}$	$V_{DS}=-30\text{V}$ , $V_{GS}=0\text{V}$
Gate-Body leakage	$I_{GSS}$			100	nA	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$
Gate-Source threshold voltage	$V_{GS(th)}$	-1.4		-2.6	V	$I_D = -250\mu\text{A}$ , $V_{DS}=V_{GS}$
Static Drain-Source on-state resistance (*)	$R_{DS(on)}$			0.012 0.018	$\Omega$	$V_{GS} = -10\text{V}$ , $I_D = -12\text{A}$ $V_{GS} = -4.5\text{V}$ , $I_D = -10\text{A}$
Forward Transconductance (*) (†)	$g_{fs}$		35		S	$V_{DS} = -15\text{V}$ , $I_D = -12\text{A}$
<b>Dynamic</b> (†)						
Input capacitance	$C_{iss}$		4600		pF	$V_{DS} = -15\text{V}$ , $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$
Output capacitance	$C_{oss}$		730		pF	
Reverse transfer capacitance	$C_{rss}$		466		pF	
<b>Switching</b> (‡) (†)						
Turn-on-delay time	$t_{d(on)}$		5.4		ns	$V_{DD} = -15\text{V}$ , $V_{GS} = -10\text{V}$ $I_D = -1\text{A}$ $R_G \cong 6.0\Omega$ ,
Rise time	$t_r$		9.9		ns	
Turn-off delay time	$t_{d(off)}$		103		ns	
Fall time	$t_f$		55.6		ns	
<b>Gate charge</b>						
Total Gate charge	$Q_g$		77.1		nC	$V_{DS} = -15\text{V}$ , $V_{GS} = -10\text{V}$ $I_D = -12\text{A}$
Gate-Source charge	$Q_{gs}$		11.6		nC	
Gate-Drain charge	$Q_{gd}$		15.7		nC	
<b>Source-Drain diode</b>						
Diode forward voltage (*)	$V_{SD}$		-0.73	-1.2	V	$I_S = -1.7\text{A}$ , $V_{GS} = 0\text{V}$
Reverse recovery time (‡)	$t_{rr}$		20.6		ns	$I_S = -3\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$
Reverse recovery charge (‡)	$Q_{rr}$		12.4		nC	

#### NOTES:

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

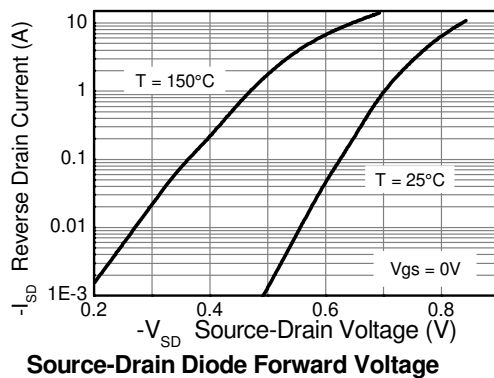
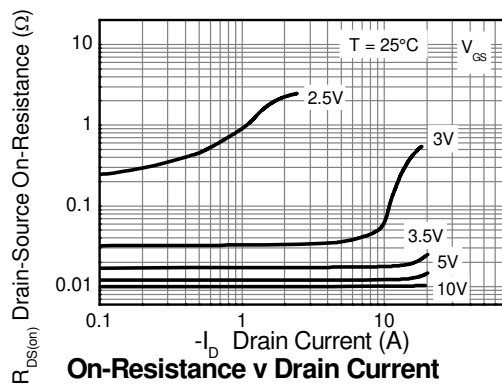
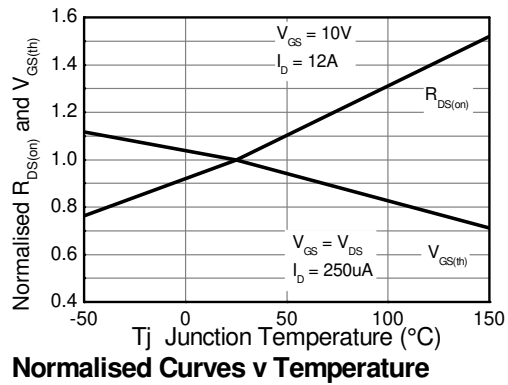
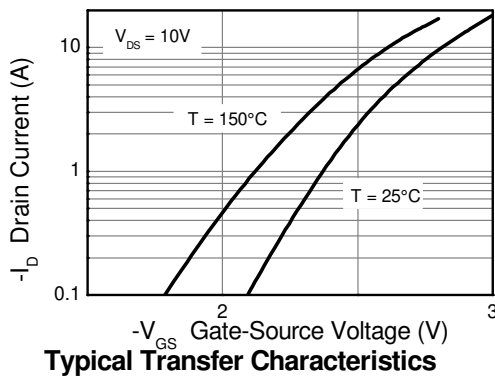
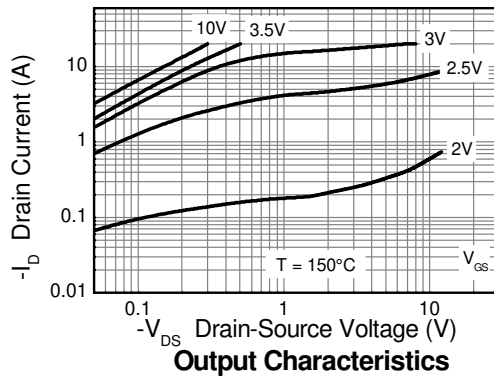
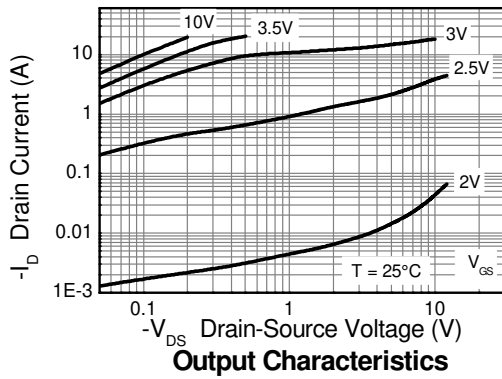
(†) Switching characteristics are independent of operating junction temperature.

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

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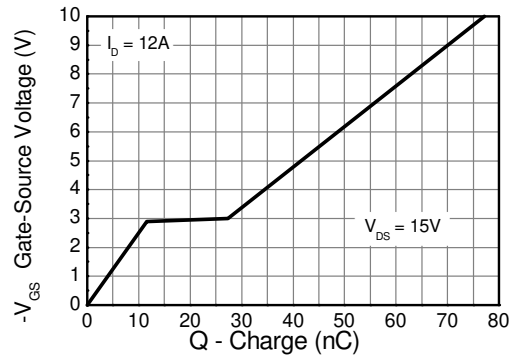
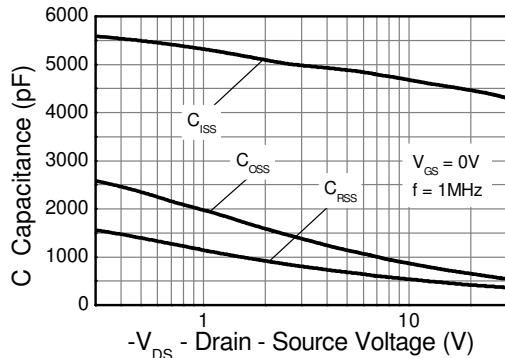
### Typical characteristics



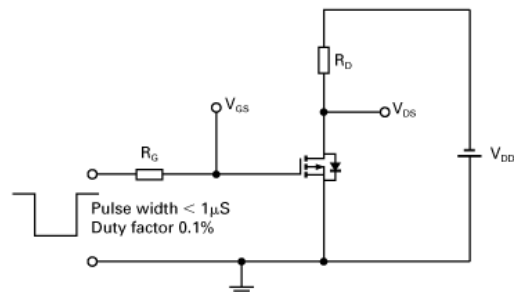
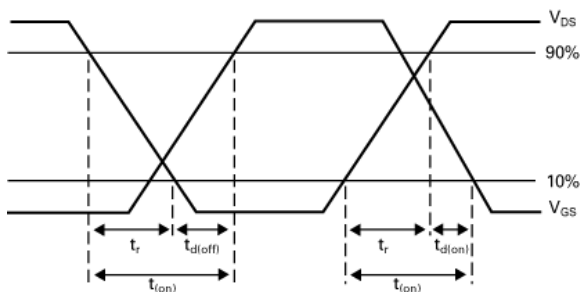
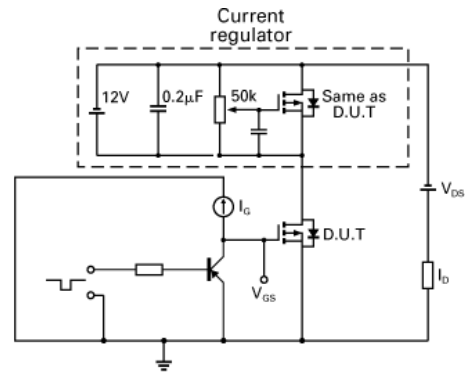
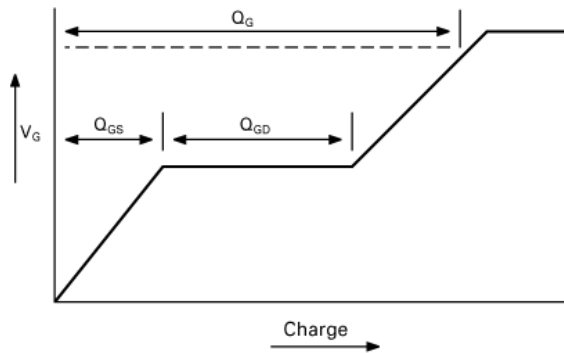
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## ZXMP3F35N8

### Typical characteristics



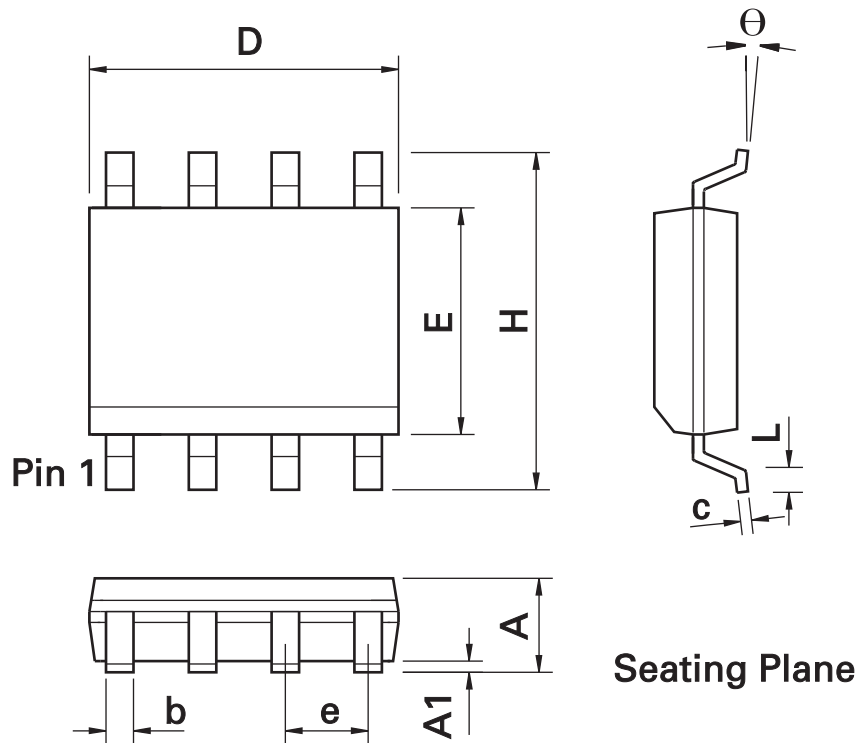
### Test circuits



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## ZXMP3F35N8

### 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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## ZXMP3F35N8

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"Last time buy (LTB)"	Device will be discontinued and last time buy period and delivery is in effect
"Not recommended for new designs"	Device is still in production to support existing designs and production
"Obsolete"	Production has been discontinued

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