

ZXMP3F36N8 30V SO8 P-channel enhancement mode MOSFET

Summary

V _{(BR)DSS} (V)	R _{DS(on)} (Ω)	I _D (A)
-30	0.020 @ V _{GS} =-10V	-12.6
	0.028 @ 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.

Features

- Low on-resistance
- SO8 package

Applications

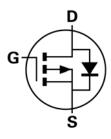
- Battery Protection
- Battery disconnect
- Power management functions

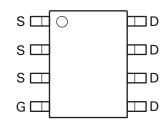
Ordering information

Device	Reel size	Tape width	Quantity	
	(inches)	(mm)	per reel	
ZXMP3F36N8TA	7	12	500	

Device marking

ZXMP 3F36





Top view

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-Source voltage	V _{DSS}	-30	V
Gate-Source voltage	V _{GS}	±20	V
Continuous Drain current @ V_{GS} = -10V; T_A =25°C (b)	Ι _D	-9.6	V
(b) $V_{GS} = -10V; T_A = 70^{\circ}C$		-7.7	
@ V_{GS} = -10V; T_A =25°C ^(a)		-7.2	
@ V_{GS} = -10V; T_L =25°C ^(d)		-12.6	
Pulsed Drain current (C)	I _{DM}	-45	А
Continuous Source current (Body diode) (b)	I _S	-4.7	А
Pulsed Source current (Body diode) (C)	I _{SM}	-45	А
Power dissipation at T _A =25°C ^(a) Linear derating factor	P _D	1.56 12.5	W mW/°C
Power dissipation at T _A =25°C ^(b) Linear derating factor	PD	2.8 22.2	W mW/°C
Power dissipation at T _L =25°C ^(d) Linear derating factor	PD	4.7 37.9	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)	$R_{ ext{ heta}JL}$	26.4	°C/W

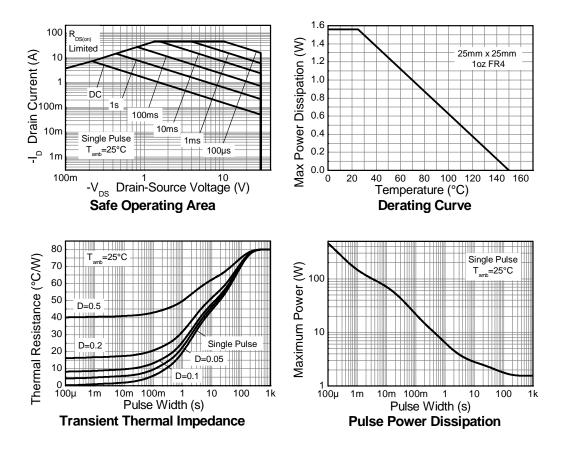
NOTES:

(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



Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Static	· · ·			• -		·
Drain-Source breakdown voltage	V _{(BR)DSS}	-30			V	$I_{D} = -250 \mu A, V_{GS} = 0V$
Zero Gate voltage Drain current	I _{DSS}			-1.0	μA	V _{DS} =-30V, 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		-2.5	V	I_{D} = -250µA, V_{DS} = V_{GS}
Static Drain-Source on-state resistance ^(*)	R _{DS(on)}			0.020 0.028	Ω	V _{GS} = -10V, I _D = -10A V _{GS} = -4.5V, I _D = -8.0A
Forward Transconductance ^{(*) (†)}	9 _{fs}		29		S	V _{DS} = -15V, I _D = -10A
Dynamic ^(†)						·
Input capacitance	C _{iss}		2265		pF	
Output capacitance	C _{oss}		424		pF	V _{DS} = -15V, V _{GS} =0V
Reverse transfer capacitance	C _{rss}		266		pF	f=1MHz
Switching ^{(‡) (†)}	· ·					
Turn-on-delay time	t _{d(on)}		3.1		ns	
Rise time	t _r		5		ns	V_{DD} = -15V, V_{GS} = -10V
Turn-off delay time	t _{d(off)}		75		ns	I _D = -1A
Fall time	t _f		40		ns	R _G ≅ 6.0Ω,
Gate charge	1		1	1	1	1
Total Gate charge	Qg		43.9		nC	
Gate-Source charge	Q _{gs}		6		nC	V _{DS} = -15V, V _{GS} = -10V
Gate-Drain charge	Q _{gd}		9.8		nC	I _D = -10A
Source-Drain diode						
Diode forward voltage (*)	V _{SD}		-0.73	-1.2	V	I _S = -1.7A,V _{GS} =0V
Reverse recovery time (‡)	t _{rr}		17.7		ns	-I _S = -2.9A,di/dt=100A/μs
Reverse recovery charge ^(‡)	Q _{rr}		11.7		nC	

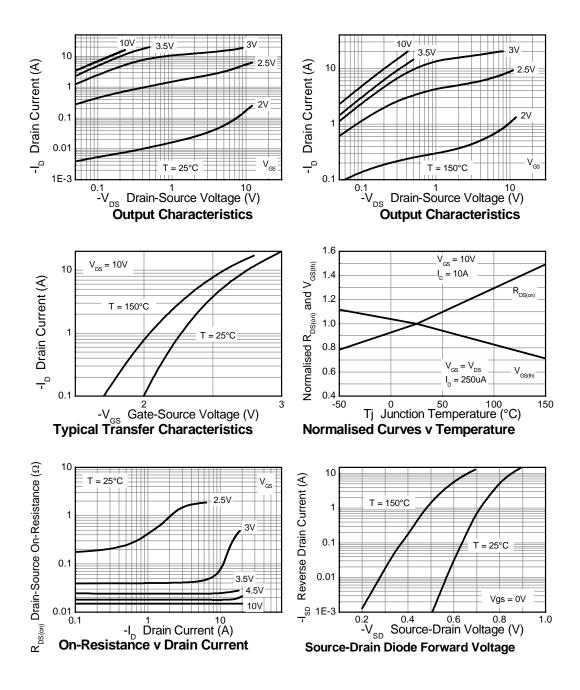
Electrical characteristics (at $T_{amb} = 25^{\circ}C$ unless otherwise stated)

NOTES:

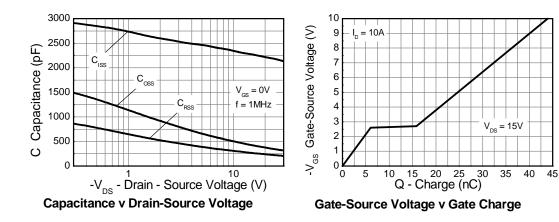
(*) Measured under pulsed conditions. Pulse width \leq 300 μ s; duty cycle \leq 2%. (†)Switching characteristics are independent of operating junction temperature.

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

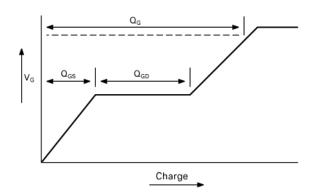
Typical characteristics



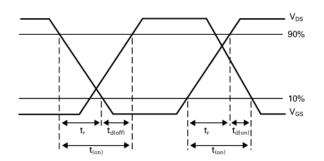
Typical characteristics



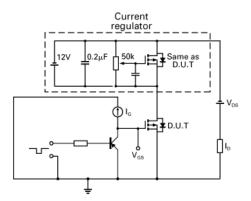
Test circuits



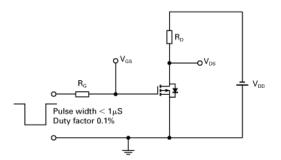
Basic gate charge waveform



Switching time waveforms

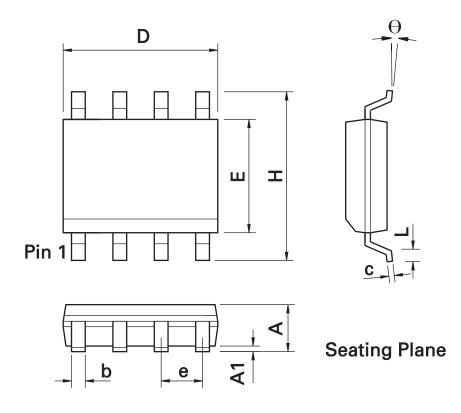


Gate charge test circuit



Switching time test circuit

Package outline SO8



SO8 Package Information

DIM	Inc	hes	Millin	neters	DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
А	0.053	0.069	1.35	1.75	е	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	С	0.008	0.010	0.19	0.25
н	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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