

ZXMP3F30FH

30V SOT23 P-CHANNEL ENHANCEMENT MODE MOSFET

Summary

$V_{(BR)DSS}$ (V)	$R_{DS(on)}$ (Ω)	I_D (A)
-30	0.080 @ $V_{GS} = -10V$	-4.0
	0.140 @ $V_{GS} = -4.5V$	

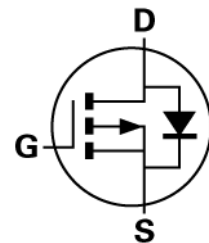


Description

This new generation Trench MOSFET from TY has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance.

Features

- Low on-resistance
- Fast switching speed
- 4.5V gate drive capability
- Thermally enhanced SOT23 package

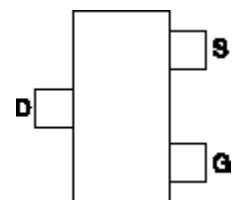


Applications

- Power management
- Portable Equipment
- Battery charging

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMP3F30FHTA	7"	8mm	3,000



Pinout – top view

Device marking

KPA

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Absolute Maximum Ratings

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-Source voltage	V_{DS}	-30	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) @ $V_{GS} = -10V$; $T_L = 25^\circ C$ ^(d)	I_D	-3.4 -2.7 -2.8 -4.0	V
Pulsed Drain current ^(c)	I_{DM}	-15.3	A
Continuous Source current (Body diode) ^(b)	I_S	-2	A
Pulsed Source current (Body diode) ^(c)	I_{SM}	-15.3	A
Power dissipation at $T_A = 25^\circ C$ ^(a) Linear derating factor	P_D	0.95 7.6	W mW/°C
Power dissipation at $T_A = 25^\circ C$ ^(b) Linear derating factor	P_D	1.4 11.2	W mW/°C
Power dissipation at $T_L = 25^\circ C$ ^(d) Linear derating factor	P_D	1.96 15.7	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)	$R_{\theta JA}$	131	°C/W
Junction to ambient ^(b)	$R_{\theta JA}$	89	°C/W
Junction to lead ^(d)	$R_{\theta JL}$	63.77	°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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Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symb ol	Min.	Typ.	Max.	Unit	Conditions
Static						
Drain-Source breakdown voltage	V _{(BR)DSS}	-30			V	I _D = -250μA, 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)}	-1.0			V	I _D = -250μA, V _{DS} =V _{GS}
Static Drain-Source on-state resistance ^(*)	R _{DS(on)}			0.080 0.140	Ω	V _{GS} = -10V, I _D = -2.5A V _{GS} = -4.5V, I _D = -1.9A
Forward Transconductance ^(*) ^(†)	g _{fs}		5		S	V _{DS} = -15V, I _D = -3A
Dynamic ^(†)						
Input capacitance	C _{iSS}		370		pF	V _{DS} = -15V, V _{GS} =0V f=1MHz
Output capacitance	C _{oSS}		72		pF	
Reverse transfer capacitance	C _{rSS}		38		pF	
Switching ^(‡) ^(†)						
Turn-on-delay time	t _{d(on)}		1.3		ns	V _{DD} = -15V, V _{GS} = -10V I _D = -1A R _G ≅ 6.0Ω,
Rise time	t _r		2.6		ns	
Turn-off delay time	t _{d(off)}		49		ns	
Fall time	t _f		22		ns	
Gate charge						
Total Gate charge	Q _g		7		nC	V _{DS} = -15V, V _{GS} = -10V I _D = -3A
Gate-Source charge	Q _{gs}		1.2		nC	
Gate-Drain charge	Q _{gd}		1.3		nC	
Source–Drain diode						
Diode forward voltage ^(*)	V _{SD}		-0.80	-1.2	V	I _S = -1.7A,V _{GS} =0V
Reverse recovery time ^(‡)	t _{rr}		14.6		ns	I _S = -1.5A,di/dt=100A/μs
Reverse recovery charge ^(‡)	Q _{rr}		9.5		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