

# ZXMP3F30FH

## 30V SOT23 P-CHANNEL ENHANCEMENT MODE MOSFET

### Summary

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

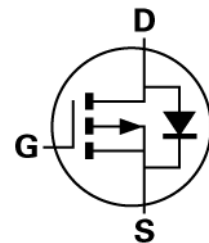


### Description

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

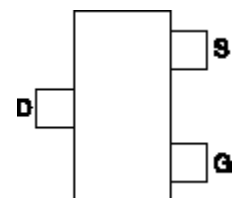


### Applications

- 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	$V_{DSS}$	-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)	$I_D$	-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
<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	$V_{GS(th)}$	-1.0			V	$I_D = -250\mu\text{A}, V_{DS} = V_{GS}$
Static Drain-Source on-state resistance (*)	$R_{DS(on)}$			0.080 0.140	$\Omega$	$V_{GS} = -10\text{V}, I_D = -2.5\text{A}$ $V_{GS} = -4.5\text{V}, I_D = -1.9\text{A}$
Forward Transconductance (*) (†)	$g_{fs}$		5		S	$V_{DS} = -15\text{V}, I_D = -3\text{A}$
<b>Dynamic</b> (†)						
Input capacitance	$C_{iss}$		370		pF	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}$ $f = 1\text{MHz}$
Output capacitance	$C_{oss}$		72		pF	
Reverse transfer capacitance	$C_{rss}$		38		pF	
<b>Switching</b> (‡) (†)						
Turn-on-delay time	$t_{d(on)}$		1.3		ns	$V_{DD} = -15\text{V}, V_{GS} = -10\text{V}$ $I_D = -1\text{A}$ $R_G \cong 6.0\Omega,$
Rise time	$t_r$		2.6		ns	
Turn-off delay time	$t_{d(off)}$		49		ns	
Fall time	$t_f$		22		ns	
<b>Gate charge</b>						
Total Gate charge	$Q_g$		7		nC	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V}$ $I_D = -3\text{A}$
Gate-Source charge	$Q_{gs}$		1.2		nC	
Gate-Drain charge	$Q_{gd}$		1.3		nC	
<b>Source-Drain diode</b>						
Diode forward voltage (*)	$V_{SD}$		-0.80	-1.2	V	$I_S = -1.7\text{A}, V_{GS} = 0\text{V}$
Reverse recovery time (‡)	$t_{rr}$		14.6		ns	$I_S = -1.5\text{A}, di/dt = 100\text{A}/\mu\text{s}$
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