



ZXMD65P03N8

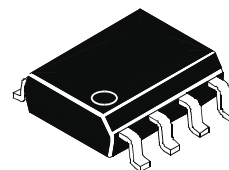
## DUAL 30V P-CHANNEL ENHANCEMENT MODE MOSFET

### SUMMARY

$V_{(BR)DSS} = -30V$ ;  $R_{DS(ON)} = 0.055\Omega$ ;  $I_D = -4.8A$

### DESCRIPTION

This new generation of high density MOSFETs from Zetex utilises a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



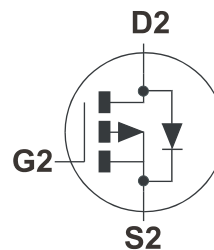
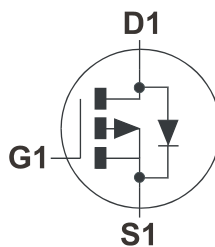
SO8

### FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

### APPLICATIONS

- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control



### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMD65P03N8TA	7"	12mm	500 units
ZXMD65P03N8TC	13"	12mm	2500 units



Top View

### DEVICE MARKING

- ZXMD  
65P03



# ZXMD65P03N8

## 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)(d) $V_{GS}=-10V$ ; $T_A=70^{\circ}C$ (b)(d) $V_{GS}=-10V$ ; $T_A=25^{\circ}C$ (a)(d)	$I_D$	-4.8 -3.8 -3.8	A
Pulsed Drain Current (c)(d)	$I_{DM}$	-18	A
Continuous Source Current (Body Diode)(b)(d)	$I_S$	-3.0	A
Pulsed Source Current (Body Diode)(c)(d)	$I_{SM}$	-18	A
Power Dissipation at $T_A=25^{\circ}C$ (a)(d) Linear Derating Factor	$P_D$	1.25 10	W mW/ $^{\circ}C$
Power Dissipation at $T_A=25^{\circ}C$ (a)(e) Linear Derating Factor	$P_D$	1.75 14	W mW/ $^{\circ}C$
Power Dissipation at $T_A=25^{\circ}C$ (b)(d) Linear Derating Factor	$P_D$	2.0 16	W mW/ $^{\circ}C$

## THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)(d)	$R_{\theta JA}$	100	$^{\circ}C/W$
Junction to Ambient (a)(e)	$R_{\theta JA}$	71.4	$^{\circ}C/W$
Junction to Ambient (b)(d)	$R_{\theta JA}$	62.5	$^{\circ}C/W$

### NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at  $t \leq 10$  secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB,  $D = 0.05$ , pulse width 10 $\mu s$  - pulse width limited by maximum junction temperature.

(d) For device with one active die.

(e) For device with two active die running at equal power.

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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 <sub>(BR)DSS</sub>	-30			V	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>			-1	μA	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V
Gate-Body Leakage	I <sub>GSS</sub>			-100	nA	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	-1.0			V	I <sub>D</sub> =-250μA, V <sub>DS</sub> = V <sub>GS</sub>
Static Drain-Source On-State Resistance (1)	R <sub>DS(on)</sub>			0.055 0.080	Ω Ω	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.9A V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.6A
Forward Transconductance (1)(3)	g <sub>fs</sub>		8.8		S	V <sub>DS</sub> =-15V, I <sub>D</sub> =-4.9A
DYNAMIC (3)						
Input Capacitance	C <sub>iss</sub>		930		pF	V <sub>DS</sub> =-25 V, V <sub>GS</sub> =0V, f=1MHz
Output Capacitance	C <sub>oss</sub>		311		pF	
Reverse Transfer Capacitance	C <sub>rss</sub>		113		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t <sub>d(on)</sub>		3.8		ns	V <sub>DD</sub> = -15V, I <sub>D</sub> =-4.9A R <sub>G</sub> =6.0Ω, V <sub>GS</sub> =-10V
Rise Time	t <sub>r</sub>		6.4		ns	
Turn-Off Delay Time	t <sub>d(off)</sub>		49.5		ns	
Fall Time	t <sub>f</sub>		26.2		ns	
Gate Charge	Q <sub>g</sub>		13		nC	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-5V I <sub>D</sub> =-4.9A
Total Gate Charge	Q <sub>g</sub>		25.7		nC	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V I <sub>D</sub> =-4.9A
Gate-Source Charge	Q <sub>gs</sub>		3.2		nC	
Gate Drain Charge	Q <sub>gd</sub>		7.0		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V <sub>SD</sub>			0.95	V	T <sub>J</sub> =25°C, I <sub>S</sub> =-4.9A, V <sub>GS</sub> =0V
Reverse Recovery Time (3)	t <sub>rr</sub>		31.5		ns	T <sub>J</sub> =25°C, I <sub>F</sub> =-4.9A, di/dt= 100A/μs
Reverse Recovery Charge(3)	Q <sub>rr</sub>		63.9		nC	

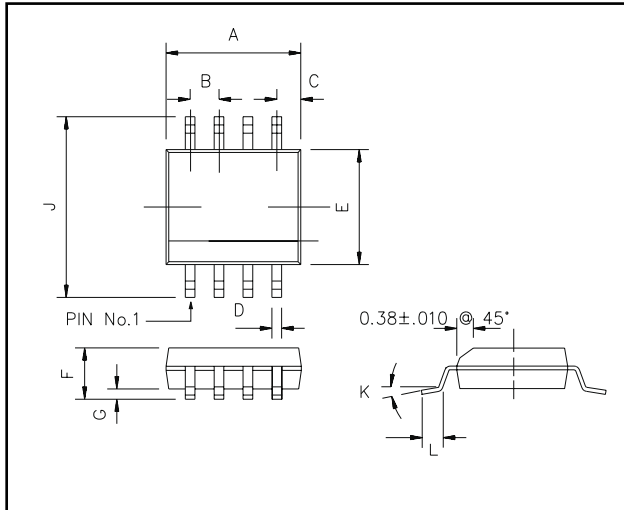
(1) Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

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

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

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## PACKAGE DIMENSIONS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	4.80	4.98	0.189	0.196
B	1.27 BSC		0.05 BSC	
C	0.53 REF		0.02 REF	
D	0.36	0.46	0.014	0.018
E	3.81	3.99	0.15	0.157
F	1.35	1.75	0.05	0.07
G	0.10	0.25	0.004	0.010
J	5.80	6.20	0.23	0.24
K	0°	8°	0°	8°
L	0.41	1.27	0.016	0.050



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