

ZXMD65P02N8

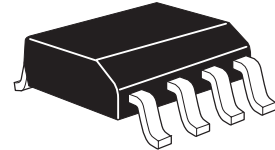
DUAL 20V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = -20V$; $R_{DS(ON)} = 0.050\Omega$; $I_D = -5.1A$

DESCRIPTION

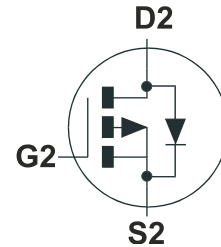
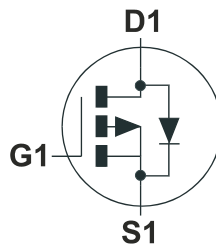
This new generation of high density MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



SO8

FEATURES

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

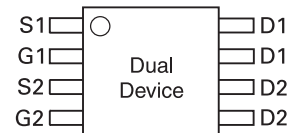


APPLICATIONS

- DC - DC converters
- Power management functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMD65P02N8TA	7"	12mm	500 units
ZXMD65P02N8TC	13"	12mm	2500 units



TOP VIEW

DEVICE MARKING

- ZXMD
65P02

ZXMD65P02N8

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	-20	V
Gate- Source Voltage	V_{GS}	± 12	V
Continuous Drain Current $V_{GS} = -4.5V; T_A = 25^\circ C$ (b)(d) $V_{GS} = -4.5V; T_A = 70^\circ C$ (b)(d) $V_{GS} = -4.5V; T_A = 25^\circ C$ (a)(d)	I_D	-5.1 -4.1 -4.0	A
Pulsed Drain Current (c)(d)	I_{DM}	-18	A
Continuous Source Current (Body Diode)(b)(d)	I_S	-3.1	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/°C
Power Dissipation at $T_A = 25^\circ C$ (a)(e) Linear Derating Factor	P_D	1.75 14	W mW/°C
Power Dissipation at $T_A = 25^\circ C$ (b)(d) Linear Derating Factor	P_D	2.0 16	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)(d)	$R_{\theta JA}$	100	°C/W
Junction to Ambient (a)(e)	$R_{\theta JA}$	71.4	°C/W
Junction to Ambient (b)(d)	$R_{\theta JA}$	62.5	°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 μ s - pulse width limited by maximum junction temperature.
 (d) For device with one active die.

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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

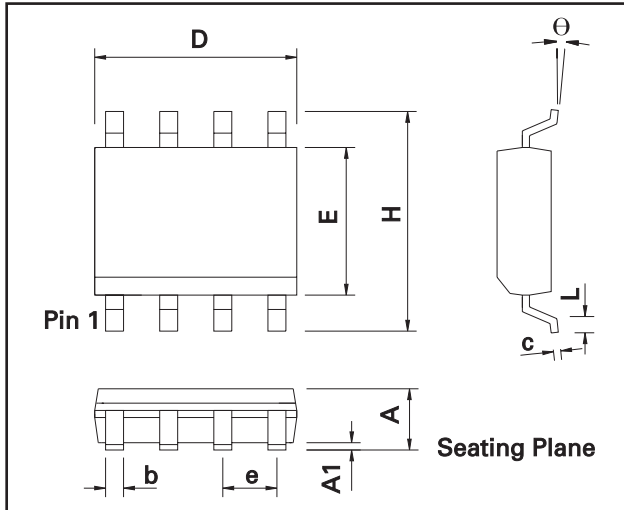
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-20			V	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			-1	μA	$V_{DS} = -16\text{V}$, $V_{GS} = 0\text{V}$
Gate-Body Leakage	I_{GSS}			-100	nA	$V_{GS} = \pm 12\text{V}$, $V_{DS} = 0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-0.7			V	$I_D = -250\mu\text{A}$, $V_{DS} = V_{GS}$
Static Drain-Source On-State Resistance ⁽¹⁾	$R_{DS(on)}$			0.050 0.080	Ω	$V_{GS} = -4.5\text{V}$, $I_D = -2.9\text{A}$ $V_{GS} = -2.5\text{V}$, $I_D = -1.5\text{A}$
Forward Transconductance ⁽¹⁾⁽³⁾	g_{fs}		8.5		S	$V_{DS} = -10\text{V}$, $I_D = -2.9\text{A}$
DYNAMIC ⁽³⁾						
Input Capacitance	C_{iss}		960		pF	$V_{DS} = -15\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$
Output Capacitance	C_{oss}		480		pF	
Reverse Transfer Capacitance	C_{rss}		240		pF	
SWITCHING ^{(2) (3)}						
Turn-On Delay Time	$t_{d(on)}$		6.6		ns	$V_{DD} = -10\text{V}$, $I_D = -2.9\text{A}$ $R_G = 6.0\Omega$, $V_{GS} = -5\text{V}$
Rise Time	t_r		29.9		ns	
Turn-Off Delay Time	$t_{d(off)}$		57.9		ns	
Fall Time	t_f		63.2		ns	
Total Gate Charge	Q_g		20		nC	$V_{DS} = -10\text{V}$, $V_{GS} = -4.5\text{V}$ $I_D = -2.9\text{A}$
Gate-Source Charge	Q_{gs}		1.8		nC	
Gate Drain Charge	Q_{gd}		10		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage ⁽¹⁾	V_{SD}			0.95	V	$T_J = 25^{\circ}\text{C}$, $I_S = -2.9\text{A}$, $V_{GS} = 0\text{V}$
Reverse Recovery Time ⁽³⁾	t_{rr}		39.2		ns	$T_J = 25^{\circ}\text{C}$, $I_F = -2.9\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge ⁽³⁾	Q_{rr}		28.8		nC	

NOTES:

- (1) Measured under pulsed conditions. Width=300 μs . 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



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DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.35	1.75	0.053	0.069	e	1.27 BSC		0.050 BSC	
A1	0.10	0.25	0.004	0.010	b	0.33	0.51	0.013	0.020
D	4.80	5.00	0.189	0.197	c	0.19	0.25	0.008	0.010
H	5.80	6.20	0.228	0.244	Θ	0°	8°	0°	8°
E	3.80	4.00	0.150	0.157	h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050	-	-	-	-	-

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Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex plc Lansdowne Road, Chadderton Oldham, OL9 9TY United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europa.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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