

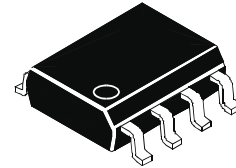
DUAL 20V P-CHANNEL ENHANCEMENT MODE MOSFET

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 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.



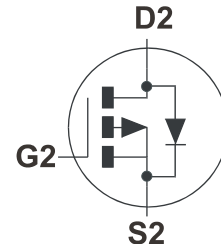
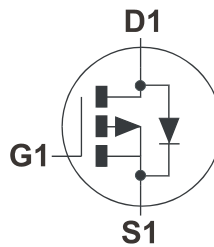
SO8

FEATURES

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

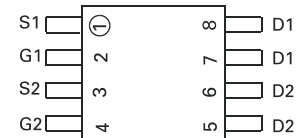
APPLICATIONS

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



ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
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/ $^\circ C$
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.	UNI T	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 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	

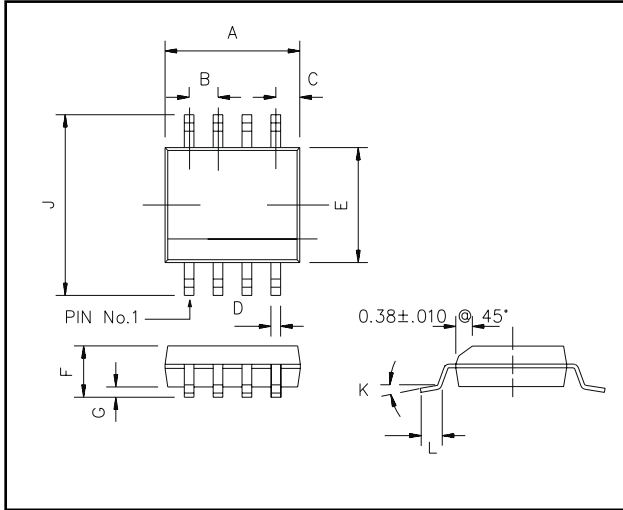
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.

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

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

ZXMD65P02N8

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



Zetex plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc.
47 Mall Drive, Unit 4
Commack NY 11725
USA
Telephone: (631) 543-7100
Fax: (631) 864-7630

Zetex (Asia) Ltd.
3701-04 Metroplaza, Tower 1
Hing Fong Road,
Kwai Fong, Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494

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