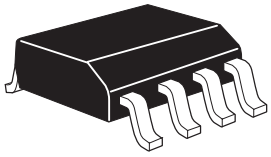
DUAL 20V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

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

DESCRIPTION

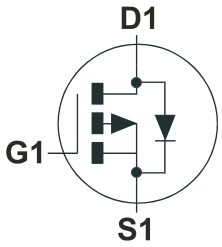
This new generation of high density MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.

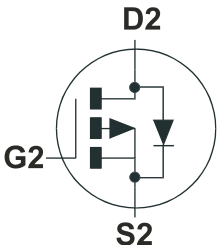


SO8

FEATURES

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



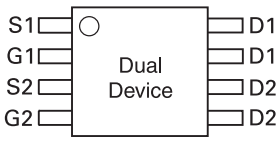


APPLICATIONS

- 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

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°C (b)(d) V_{GS}=-4.5V; T_A=70°C (b)(d) V_{GS}=-4.5V; T_A=25°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°C (a)(d) Linear Derating Factor	P_D	1.25 10	W mW/°C
Power Dissipation at T_A=25°C (a)(e) Linear Derating Factor	P_D	1.75 14	W mW/°C
Power Dissipation at T_A=25°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≤10 secs.

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

(d) For device with one active die.

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-20			V	I_D=-250µA, V_{GS}=0V
Zero Gate Voltage Drain Current	I_{DSS}			-1	µA	V_{DS}=-16V, V_{GS}=0V
Gate-Body Leakage	I_{GSS}			-100	nA	V_{GS}=±12V, V_{DS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	-0.7			V	I_D=-250µA, V_{DS}= V_{GS}
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.050 0.080	Ω Ω	V_{GS}=-4.5V, I_D=-2.9A V_{GS}=-2.5V, I_D=-1.5A
Forward Transconductance (1)(3)	g_{fs}		8.5		S	V_{DS}=-10V,I_D=-2.9A
DYNAMIC (3)						
Input Capacitance	C_{iss}		960		pF	V_{DS}=-15 V, V_{GS}=0V, f=1MHz
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} =-10V, I_D=-2.9A R_G=6.0Ω, V_{GS}=-5V
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}=-10V,V_{GS}=-4.5V I_D=-2.9A
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°C, I_S=-2.9A, V_{GS}=0V
Reverse Recovery Time (3)	t_{rr}		39.2		ns	T_j=25°C, I_F=-2.9A, di/dt= 100A/µs
Reverse Recovery Charge(3)	Q_{rr}		28.8		nC	

NOTES:

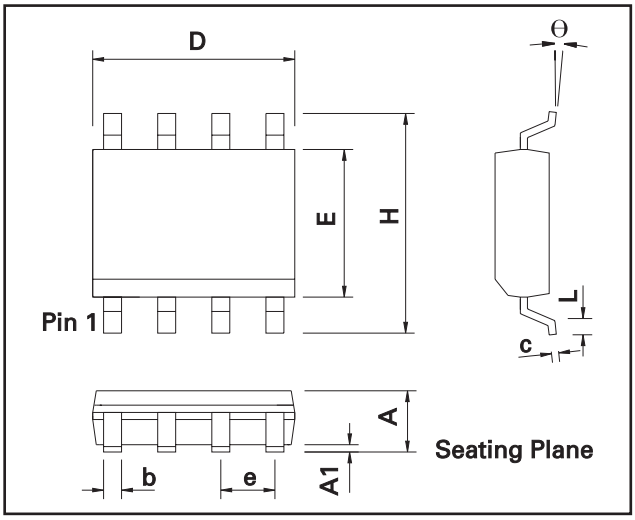
(1) Measured under pulsed conditions. Width=300µs. Duty cycle ≤2% .

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

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

ZXMD65P02N8

PACKAGE DIMENSIONS



PACKAGE DIMENSIONS

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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