

20V N-CANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=20V$; $R_{DS(ON)}=0.015\Omega$; $I_D=9A$

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.

FEATURES

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

APPLICATIONS

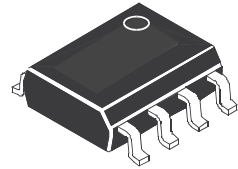
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

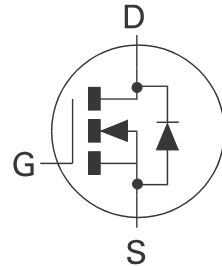
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXM66N02N8TA	13	12mm embossed	1000 units

DEVICE MARKING

- ZXM6
6N02



SO8



Top View

ZXM66N02N8

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)	I_D	9.0 8.0	A
Pulsed Drain Current (c)(d)	I_{DM}	35	A
Continuous Source Current (Body Diode)(b)(d)	I_S	3.1	A
Pulsed Source Current (Body Diode)(c)(d)	I_{SM}	35	A
Power Dissipation at $T_A=25^\circ C$ (a)(d) Linear Derating Factor	P_D	- -	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (a)(e) Linear Derating Factor	P_D	- -	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b)(d) Linear Derating Factor	P_D	2.5 20	W mW/ $^\circ C$
Operating and Storage Temperature Range	T_j : T_{stg}	-55 to +150	$^\circ C$

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	-	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	30	$^\circ C/W$

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 - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

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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)	$R_{DS(on)}$			0.015 0.020	Ω	$V_{GS}=4.5\text{V}, I_D=4.1\text{A}$ $V_{GS}=2.5\text{V}, I_D=3.5\text{A}$
Forward Transconductance (3)	g_{fs}	11			S	$V_{DS}=15\text{V}, I_D=4.1\text{A}$
DYNAMIC (3)						
Input Capacitance	C_{iss}		-		pF	$V_{DS}=15\text{V}, V_{GS}=0\text{V},$ $f=1\text{MHz}$
Output Capacitance	C_{oss}		-		pF	
Reverse Transfer Capacitance	C_{rss}		-		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		-		ns	$V_{DD}=10\text{V}, I_D=4.1\text{A}$ $R_G=6.0\Omega, R_D=2.4\Omega$ (Refer to test circuit)
Rise Time	t_r		-		ns	
Turn-Off Delay Time	$t_{d(off)}$		-		ns	
Fall Time	t_f		-		ns	
Total Gate Charge	Q_g			-	nC	$V_{DS}=16\text{V}, V_{GS}=4.5\text{V}$ $I_D=4.1\text{A}$ (Refer to test circuit)
Gate-Source Charge	Q_{gs}			-	nC	
Gate Drain Charge	Q_{gd}			-	nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}			0.95	V	$T_j=25^{\circ}\text{C}, I_S=4.1\text{A},$ $V_{GS}=0\text{V}$
Reverse Recovery Time (3)	t_{rr}		-		ns	$T_j=25^{\circ}\text{C}, I_F=4.1\text{A},$ $di/dt= 100\text{A}/\mu\text{s}$
Reverse Recovery Charge(3)	Q_{rr}		-		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.

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ZETEX

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**DRAFT ISSUE A - AUGUST 2000
ADVANCED INFORMATION**