

## 30V N-CANNEL ENHANCEMENT MODE MOSFET

### SUMMARY

$V_{(BR)DSS}=30V$ ;  $R_{DS(ON)}=0.015\Omega$ ;  $I_D=9A$

### 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

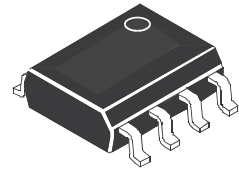
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

### ORDERING INFORMATION

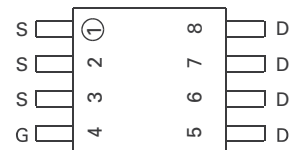
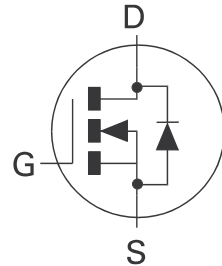
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXM66N03N8TA	13	12mm embossed	1000 units

### DEVICE MARKING

- ZXM6  
6N03



**SO8**



Top View

# ZXM66N03N8

## 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)	$I_D$	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)	$R_{\theta JA}$	50	$^\circ C/W$

### 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.
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30			V	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$			1	$\mu\text{A}$	$V_{DS}=24\text{V}$ , $V_{GS}=0\text{V}$
Gate-Body Leakage	$I_{GSS}$			100	nA	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.0			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	$\Omega$	$V_{GS}=10\text{V}$ , $I_D=7.3\text{A}$ $V_{GS}=4.5\text{V}$ , $I_D=3.7\text{A}$
Forward Transconductance (3)	$g_{fs}$	12			S	$V_{DS}=15\text{V}$ , $I_D=3.7\text{A}$
<b>DYNAMIC (3)</b>						
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	
<b>SWITCHING(2) (3)</b>						
Turn-On Delay Time	$t_{d(on)}$		-		ns	$V_{DD}=15\text{V}$ , $I_D=7.3\text{A}$ $R_G=6.0\Omega$ , $R_D=2.0\Omega$ (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	$V_{DS}=15\text{V}$ , $V_{GS}=10\text{V}$ $I_D=7.3\text{A}$ (Refer to test circuit)
Gate-Source Charge	$Q_{gs}$			-	nC	
Gate Drain Charge	$Q_{gd}$			-	nC	
<b>SOURCE-DRAIN DIODE</b>						
Diode Forward Voltage (1)	$V_{SD}$			0.95	V	$T_j=25^{\circ}\text{C}$ , $I_S=7.3\text{A}$ , $V_{GS}=0\text{V}$
Reverse Recovery Time (3)	$t_{rr}$		-		ns	$T_j=25^{\circ}\text{C}$ , $I_F=7.3\text{A}$ , $di/dt=100\text{A}/\mu\text{s}$
Reverse Recovery Charge(3)	$Q_{rr}$		-		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.

# ZXM66N03N8



## ZETEX

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