

ZXMN2A01F

20V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=20V$; $R_{DS(ON)}=0.12\Omega$ $I_D=2.09A$

DESCRIPTION

This new generation of TRENCH 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
- SOT23 package

APPLICATIONS

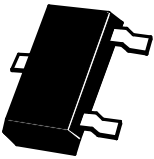
- DC - DC Converters
- Power Management Functions
- Motor control

ORDERING INFORMATION

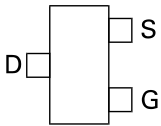
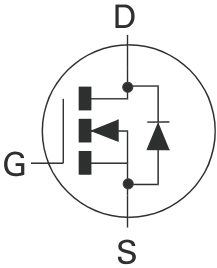
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN2A01FTA	7"	8mm	3000 units
ZXMN2A01FTC	13"	8mm	10000 units

DEVICE MARKING

- 7N2



SOT23



Top View

ZXMN2A01F

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate Source Voltage	V_{GS}	12	V
Continuous Drain Current $V_{GS}=4.5V$; $T_A=25^{\circ}C$ (b) $V_{GS}=4.5V$; $T_A=70^{\circ}C$ (b) $V_{GS}=4.5V$; $T_A=25^{\circ}C$ (a)	I_D	2.09 1.67 1.84	A
Pulsed Drain Current (c)	I_{DM}	10	A
Continuous Source Current (Body Diode) (b)	I_S	1.05	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	10	A
Power Dissipation at $T_A=25^{\circ}C$ (a) Linear Derating Factor	P_D	625 5	mW mW/ $^{\circ}C$
Power Dissipation at $T_A=25^{\circ}C$ (b) Linear Derating Factor	P_D	806 6.4	mW 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)	$R_{\theta JA}$	200	$^{\circ}C/W$
Junction to Ambient (b)	$R_{\theta JA}$	155	$^{\circ}C/W$

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 $t \leq 5$ secs.

(c) Repetitive rating - pulse width limited by maximum junction temperature.

ZXMN2A01F

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	20			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} =20V, 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)}		0.09	0.12 0.30	Ω Ω	V _{GS} =4.5V, I _D =4A V _{GS} =2.5V, I _D =1.5A
Forward Transconductance (3)	g _{fs}		6.2		S	V _{DS} =10V,I _D =4A
DYNAMIC (3)						
Input Capacitance	C _{iss}		299		pF	V _{DS} =15 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		60		pF	
Reverse Transfer Capacitance	C _{rss}		33		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		2.31		ns	V _{DD} =10V, I _D =4A R _G =6.0Ω, V _{GS} =5V
Rise Time	t _r		2.60		ns	
Turn-Off Delay Time	t _{d(off)}		1.55		ns	
Fall Time	t _f		1.31		ns	
Total Gate Charge	Q _g		3.1		nC	V _{DS} =10V,V _{GS} =4.5V, I _D =4A
Gate-Source Charge	Q _{gs}		0.7		nC	
Gate-Drain Charge	Q _{gd}		1.0		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}		0.84	0.95	V	T _J =25°C, I _S =0.6A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		11.2		ns	T _J =25°C, I _F =4A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		3.64		nC	

NOTES

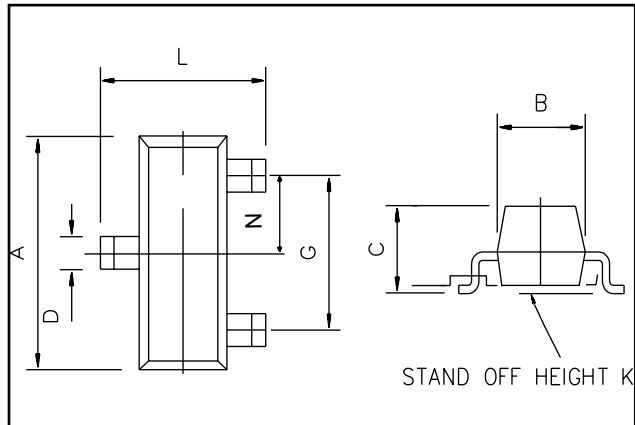
(1) Measured under pulsed conditions. Width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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

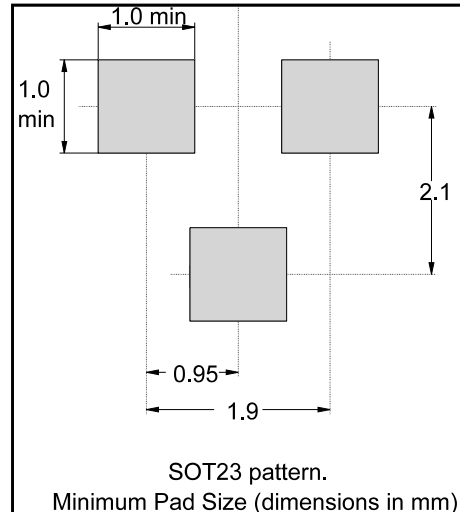
(3) For design aid only, not subject to production testing.

ZXMN2A01F

PACKAGE DIMENSIONS



PAD LAYOUT DETAILS



PAD LAYOUT DETAILS

DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	2.67	3.05	0.105	0.120
B	1.20	1.40	0.047	0.055
C	–	1.10	–	0.043
D	0.37	0.53	0.0145	0.021
F	0.085	0.15	0.0033	0.0059
G	NOM 1.9		NOM 0.075	
K	0.01	0.10	0.0004	0.004
L	2.10	2.50	0.0825	0.0985
N	NOM 0.95		NOM 0.037	

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PROVISIONAL ISSUE B - JUNE 2001

ZETEX