

ZXMN2A01F

20V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY
V_{(BR)DSS} = 20V; R_{DS(ON)} = 0.12Ω; I_D = 2.2A

DESCRIPTION
This new generation of trench MOSFETs from TY 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.

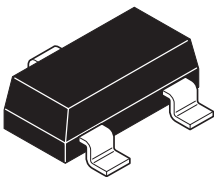
- FEATURES
- Low on-resistance
 - Fast switching speed
 - Low threshold
 - Low gate drive
 - SOT23 package

- APPLICATIONS
- DC - DC converters
 - Power management functions
 - Disconnect switches
 - Motor control

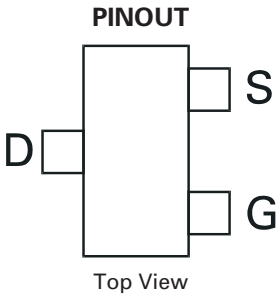
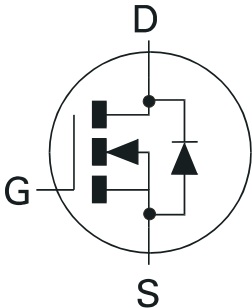
ORDERING INFORMATION

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

- DEVICE MARKING
- 7N2



SOT23



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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current $V_{GS}=10V$; $T_A=25^\circ C$ (b) $V_{GS}=10V$; $T_A=70^\circ C$ (b) $V_{GS}=10V$; $T_A=25^\circ C$ (a)	I_D	2.2 1.7 1.9	A
Pulsed Drain Current (c)	I_{DM}	8	A
Continuous Source Current (Body Diode) (b)	I_S	1.29	A
Pulsed Source Current (Body Diode) (c)	I_{SM}	8	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 25mm x 25mm FR4 PCB, $D = 0.02$, pulse width 300 μs - pulse width limited by maximum junction temperature.

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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)}			0.12 0.225	Ω Ω	V _{GS} =4.5V, I _D =4A V _{GS} =2.5V, I _D =1.5A
Forward Transconductance (1)(3)	g _{fs}		6.1		S	V _{DS} =10V, I _D =4A
DYNAMIC (3)						
Input Capacitance	C _{iss}		303		pF	V _{DS} =15 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		59		pF	
Reverse Transfer Capacitance	C _{rss}		30		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		2.49		ns	V _{DD} =10V, I _D =4A R _G =6.0Ω, V _{GS} =5V
Rise Time	t _r		5.21		ns	
Turn-Off Delay Time	t _{d(off)}		7.47		ns	
Fall Time	t _f		4.62		ns	
Total Gate Charge	Q _g		3.0		nC	V _{DS} =10V, V _{GS} =4.5V, I _D =4A
Gate-Source Charge	Q _{gs}		0.8		nC	
Gate-Drain Charge	Q _{gd}		1.0		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}		0.85	0.95	V	T _J =25°C, I _S =3.2A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		23		ns	T _J =25°C, I _F = 4A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		5.65		nC	

NOTES:

- (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.