

30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

 $V_{(BR)DSS}=30V$; $R_{DS(ON)}=0.22\Omega$; $I_{D}=1.4A$

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.

SOT23

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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 (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXM61N03FTA	7	8mm embossed	3000 units
ZXM61N03FTC	13	8mm embossed	10000 units



DEVICE MARKING

N03

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V _{DSS}	30	V
Gate Source Voltage	V _{GS}	±20	V
Continuous Drain Current ($V_{GS}=10V$; $T_A=25^{\circ}C$)(b) ($V_{GS}=10V$; $T_A=70^{\circ}C$)(b)	I _D	1.4 1.1	А
Pulsed Drain Current (c)	I _{DM}	7.3	Α
Continuous Source Current (Body Diode) (b)	Is	0.8	Α
Pulsed Source Current (Body Diode)	I _{SM}	7.3	Α
Power Dissipation at T _A =25°C (a) Linear Derating Factor	P_{D}	625 5	mW mW/°C
Power Dissipation at T _A =25°C (b) Linear Derating Factor	P_{D}	806 6.4	mW mW/°C
Operating and Storage Temperature Range	T _j :T _{stg}	-55 to +150	°C

THERMAL RESISTANCE

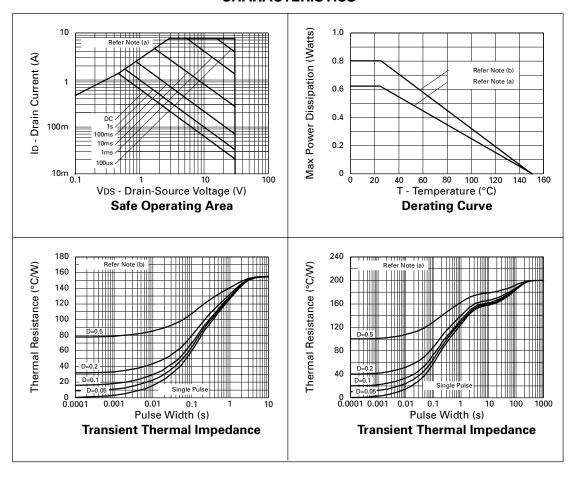
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	200	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	155	°C/W

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≤5 secs.
- (c) Repetitive rating pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.



CHARACTERISTICS





ELECTRICAL CHARACTERISTICS (at T_A = 25°C unless otherwise stated).

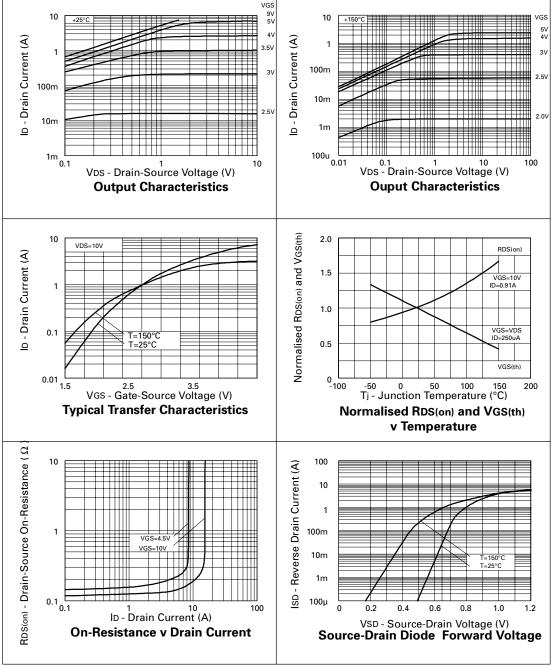
PARAMETER	SYMBOL	MIN.	TYP.(3)	MAX.	UNIT	CONDITIONS.	
STATIC	·				•		
Drain-Source Breakdown Voltage	V _{(BR)DSS}	30			V	I _D =250μA, V _{GS} =0V	
Zero Gate Voltage Drain Current	I _{DSS}			1	μА	V _{DS} =30V, V _{GS} =0V	
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =± 20V, V _{DS} =0V	
Gate-Source Threshold Voltage	V _{GS(th)}	1.0			V	I_{D} =250 μ A, V_{DS} = V_{GS}	
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.22 0.30	Ω	V _{GS} =10V, I _D =0.91A V _{GS} =4.5V, I _D =0.46A	
Forward Transconductance (3)	g _{fs}	0.87			S	V _{DS} =10V,I _D =0.46A	
DYNAMIC (3)							
Input Capacitance	C _{iss}		150		pF	V _{DS} =25 V, V _{GS} =0V, f=1MHz	
Output Capacitance	Coss		35		pF		
Reverse Transfer Capacitance	C _{rss}		15		pF	-	
SWITCHING(2) (3)	•		•		•		
Turn-On Delay Time	t _{d(on)}		1.9		ns	V_{DD} =15V, I_{D} =0.91A R_{G} =6.2 Ω , R_{D} =16 Ω (refer to test circuit)	
Rise Time	t _r		2.5		ns		
Turn-Off Delay Time	t _{d(off)}		5.8		ns		
Fall Time	t _f		3.0		ns		
Total Gate Charge	Qg			4.1	nC	V _{DS} =24V,V _{GS} =10V, I _D =0.91A (refer to test circuit)	
Gate-Source Charge	Q_{gs}			0.4	nC		
Gate-Drain Charge	Q_{gd}			0.63	nC		
SOURCE-DRAIN DIODE	<u> </u>	1	1	1	1	1	
Diode Forward Voltage (1)	V _{SD}			0.95	V	$T_J = 25$ °C, $I_S = 0.91$ A, $V_{GS} = 0$ V	
Reverse Recovery Time (3)	t _{rr}		11.0		ns	T _J =25°C, I _F =0.91A,	
Reverse Recovery Charge (3)	Q _{rr}		3.5		nC	di/dt= 100A/μs	
	-			1		1	

NOTES

- (1) Measured under pulsed conditions. Width \leq 300 μ s. Duty cycle \leq 2% .
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

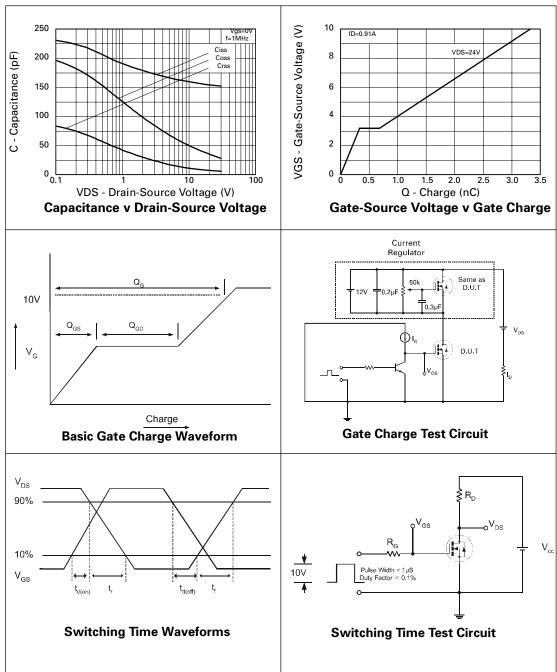


TYPICAL CHARACTERISTICS



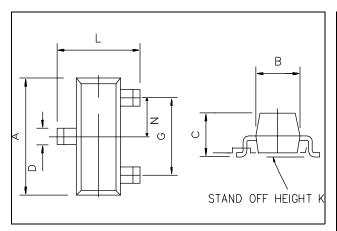


TYPICAL CHARACTERISTICS



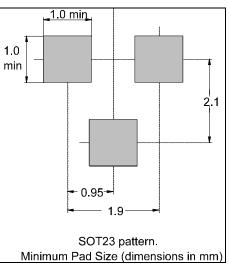


PACKAGE DIMENSIONS



DIM	Millimetres		Inches			
	Min	Max	Min	Max		
Α	2.67	3.05	0.105	0.120		
В	1.20	1.40	0.047	0.055		
С	_	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			

PAD LAYOUT DETAILS





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