



**THE DATASHEET OF  
ZXM61N03FTR**



**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.

**FEATURES**

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

**APPLICATIONS**

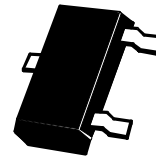
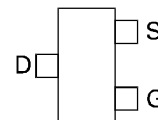
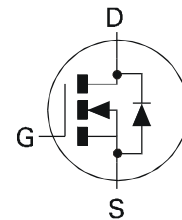
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

**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

**SOT23**

Top View

# ZXM61N03F

## 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) ( $V_{GS}=10V$ ; $T_A=70^\circ C$ )(b)	$I_D$	1.4 1.1	A
Pulsed Drain Current (c)	$I_{DM}$	7.3	A
Continuous Source Current (Body Diode) (b)	$I_S$	0.8	A
Pulsed Source Current (Body Diode)	$I_{SM}$	7.3	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

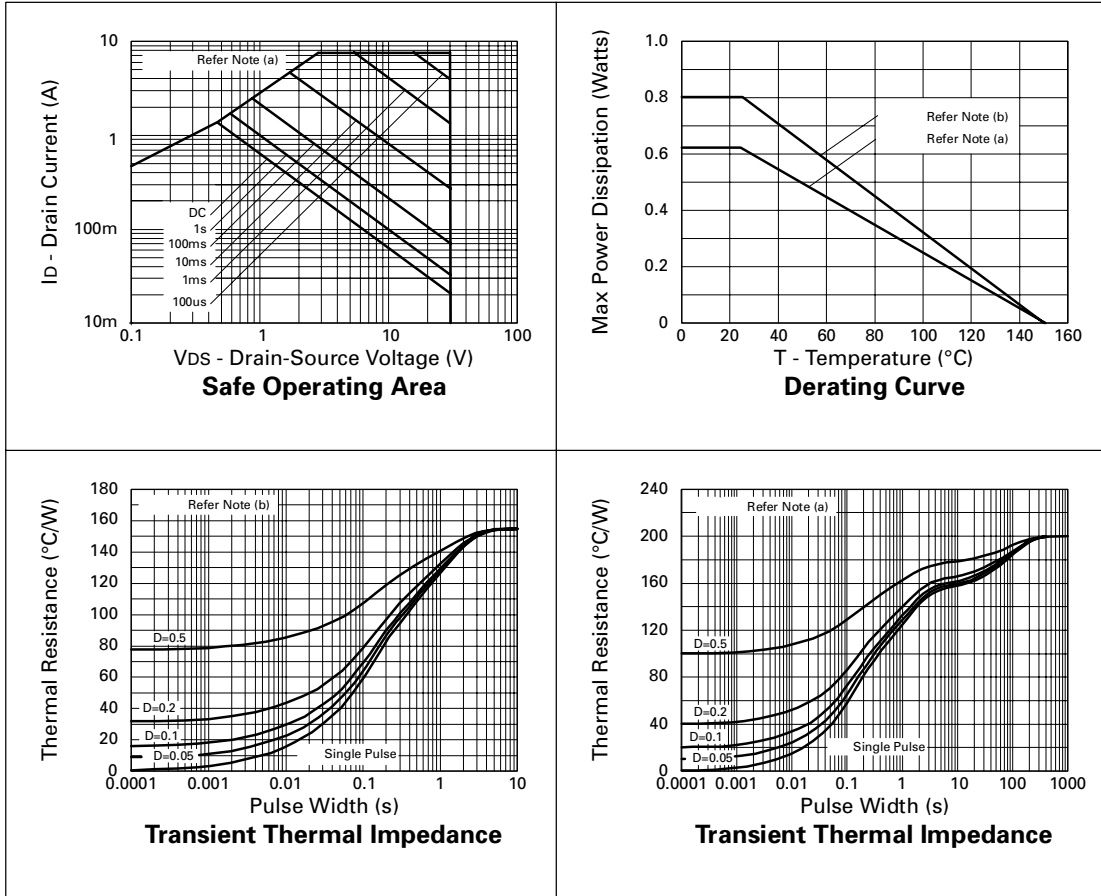
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(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. Refer to Transient Thermal Impedance graph.

# ZXM61N03F

## CHARACTERISTICS



# ZXM61N03F

## ELECTRICAL CHARACTERISTICS (at T<sub>A</sub> = 25°C unless otherwise stated).

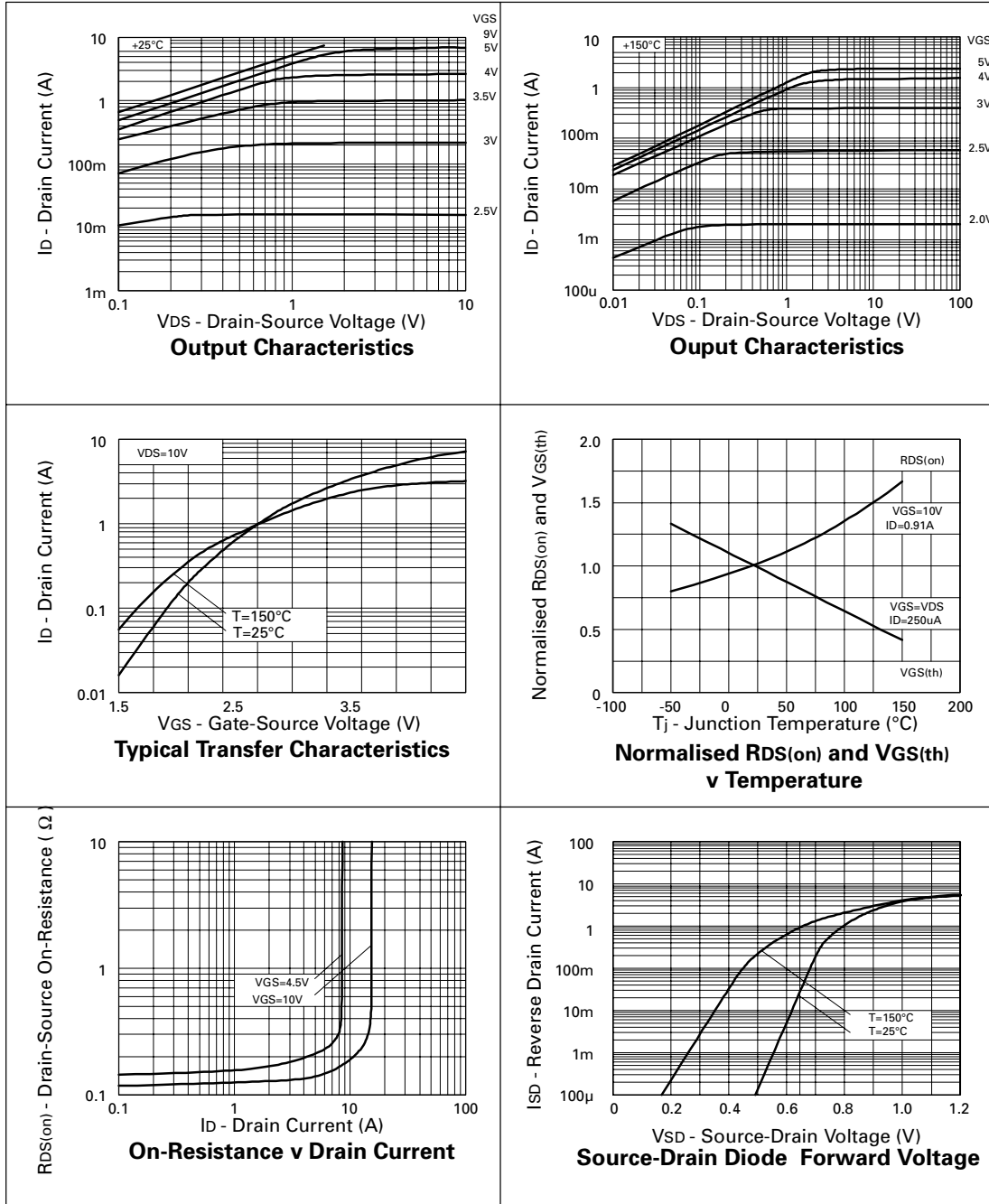
PARAMETER	SYMBOL	MIN.	TYP.(3)	MAX.	UNIT	CONDITIONS.
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	30			V	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>			1	μA	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V
Gate-Body Leakage	I <sub>GSS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

### NOTES

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

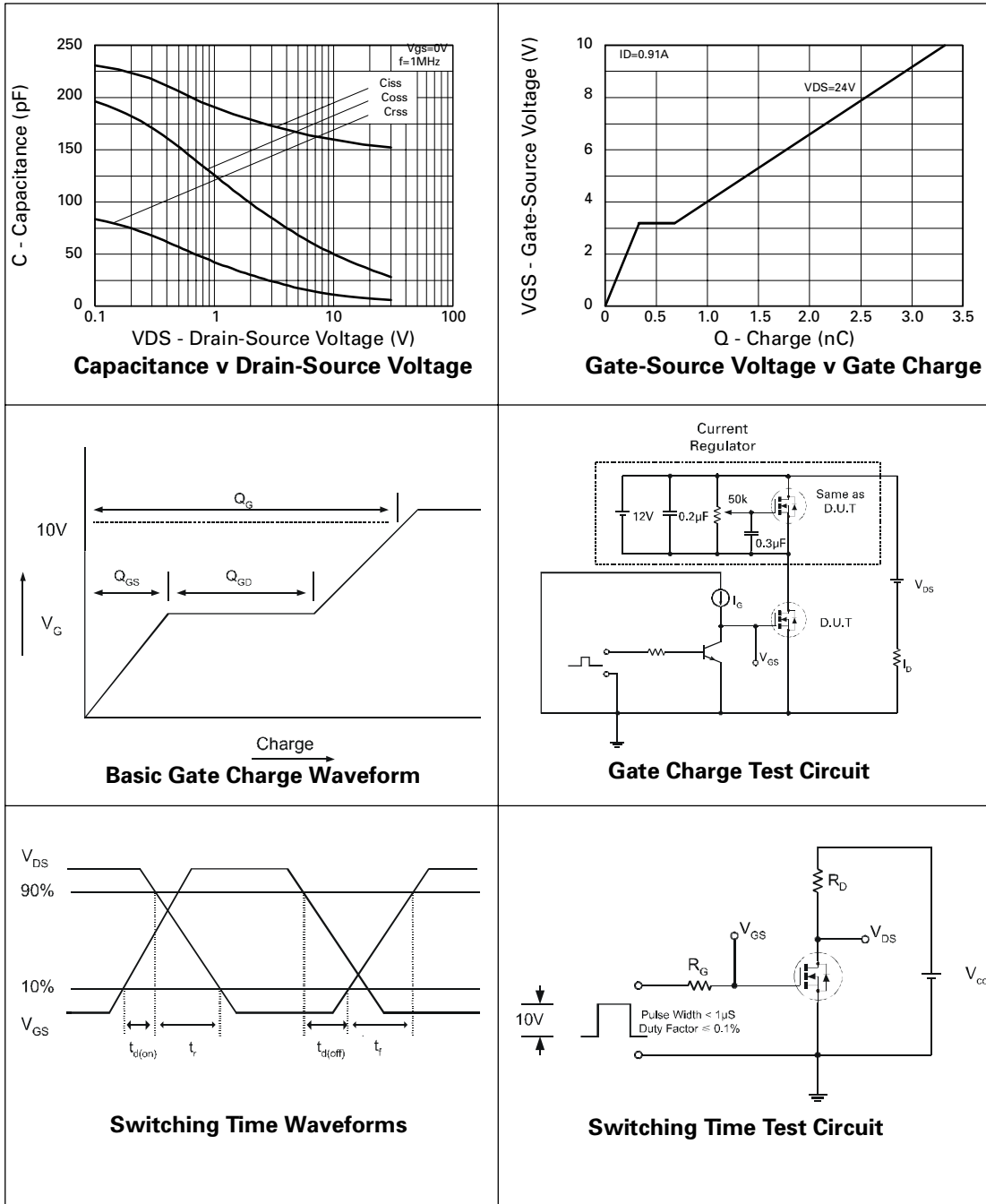
# ZXM61N03F

## TYPICAL CHARACTERISTICS



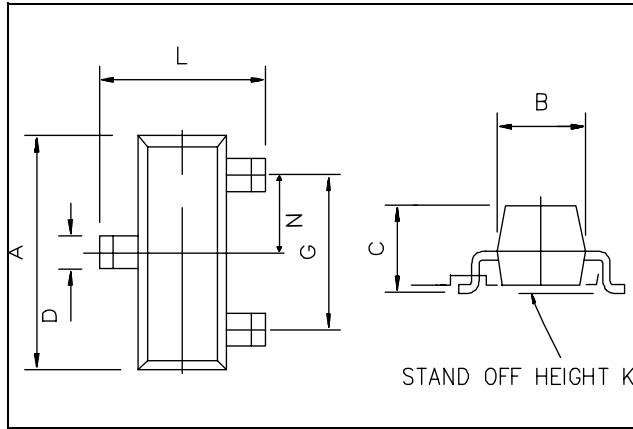
# ZXM61N03F

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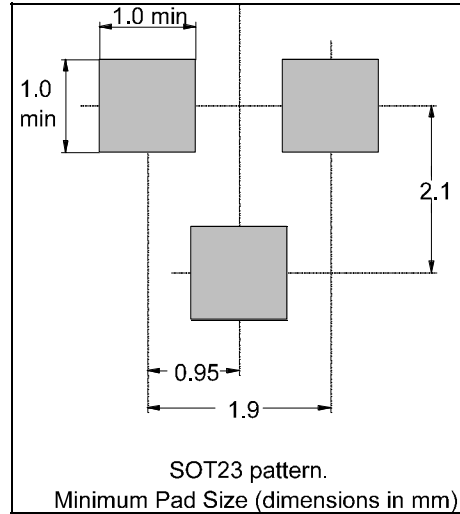
# ZXM61N03F

## PACKAGE DIMENSIONS



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	

## PAD LAYOUT DETAILS



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