

ZXM64N03X

30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=30V$; $R_{DS(ON)}=0.045\Omega$; $I_D=5.0A$

DESCRIPTION

This new generation of high density MOSFETs from Zetex 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
- Low profile SOIC package

APPLICATIONS

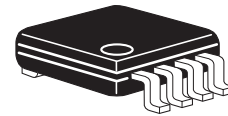
- DC - DC converters
- Power management functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

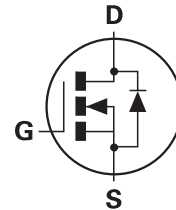
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXM64N03XTA	7	12 embossed	1,000
ZXM64N03XTC	13	12 embossed	4,000

DEVICE MARKING

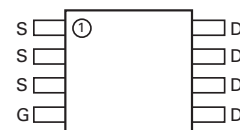
ZXM4P03



MSOP8



Pin out



Top view

ZXM64N03X

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate- Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS}=4.5V$; $T_A=25^{\circ}C$)(b) ($V_{GS}=4.5V$; $T_A=70^{\circ}C$)(b)	I_D	5.0 4.0	A
Pulsed Drain Current (c)	I_{DM}	30	A
Continuous Source Current (Body Diode)(b)	I_S	2.4	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	30	A
Power Dissipation at $T_A=25^{\circ}C$ (a) Linear Derating Factor	P_D	1.1 8.8	W mW/ $^{\circ}C$
Power Dissipation at $T_A=25^{\circ}C$ (b) Linear Derating Factor	P_D	1.8 14.4	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)	$R_{\theta JA}$	113	$^{\circ}C/W$
Junction to Ambient (b)	$R_{\theta JA}$	70	$^{\circ}C/W$

NOTES:

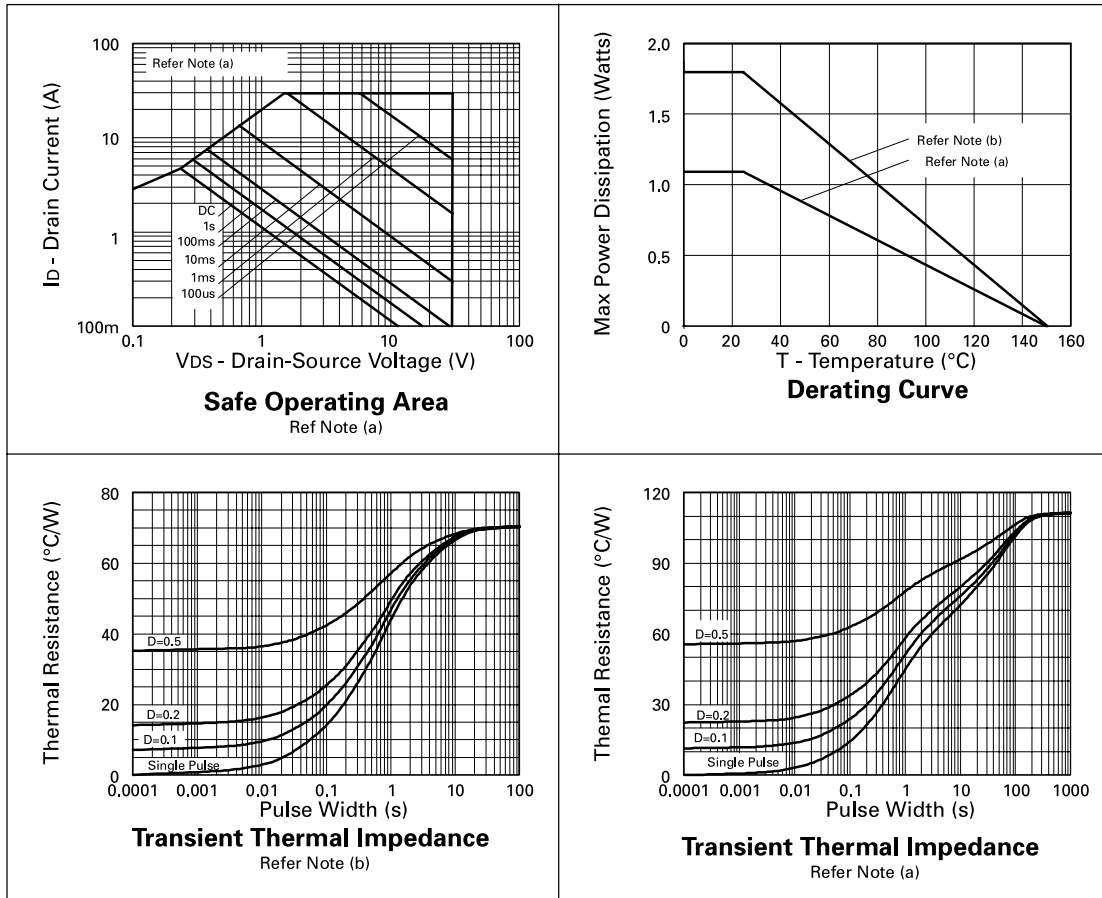
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(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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CHARACTERISTICS



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

PARAMETER	SYMBOL	MIN.	TYP.	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	μA	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 = -250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.045 0.060	Ω Ω	V _{GS} =10V, I _D =3.7A V _{GS} =4.5V, I _D =1.9A
Forward Transconductance (3)	g _{fs}	4.3			S	V _{DS} =10V,I _D =-1.9A
DYNAMIC (3)						
Input Capacitance	C _{iss}		950		pF	V _{DS} =25 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		200		pF	
Reverse Transfer Capacitance	C _{rss}		50		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		4.2		ns	V _{DD} =5V, I _D =3.7A R _G =6.2Ω, R _D =4.0Ω (Refer to test circuit)
Rise Time	t _r		4.5		ns	
Turn-Off Delay Time	t _{d(off)}		20.5		ns	
Fall Time	t _f		8		ns	
Total Gate Charge	Q _g			27	nC	V _{DS} =24V,V _{GS} =10V, I _D =3.7A (Refer to test circuit)
Gate-Source Charge	Q _{gs}			5	nC	
Gate Drain Charge	Q _{gd}			4.5	nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}			0.95	V	T _j =25°C, I _S =3.7A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		24.5		ns	T _i =25°C, I _F =3.7A, di/dt= 100A/μs
Reverse Recovery Charge(3)	Q _{rr}		19.1		nC	

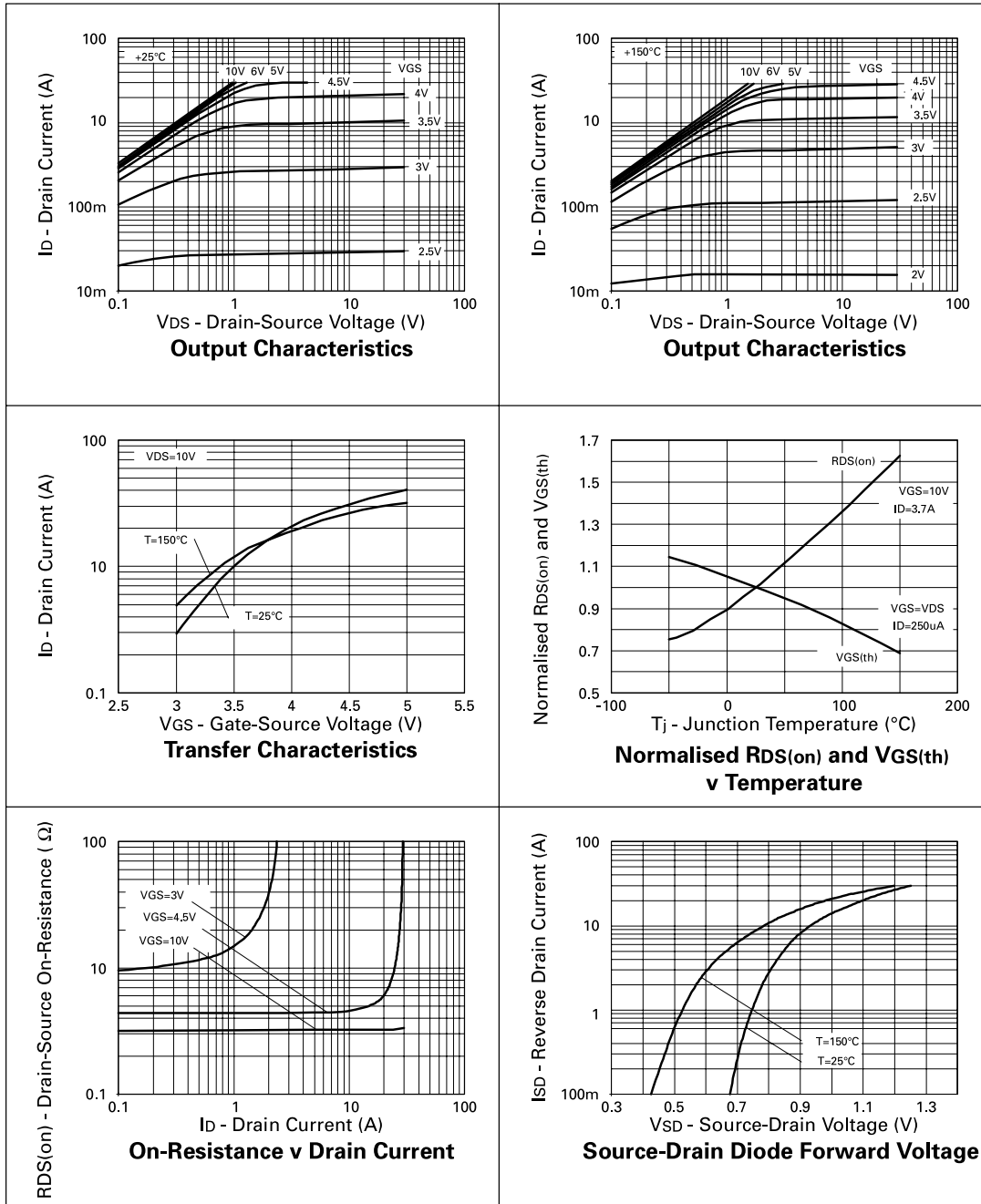
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.

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

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

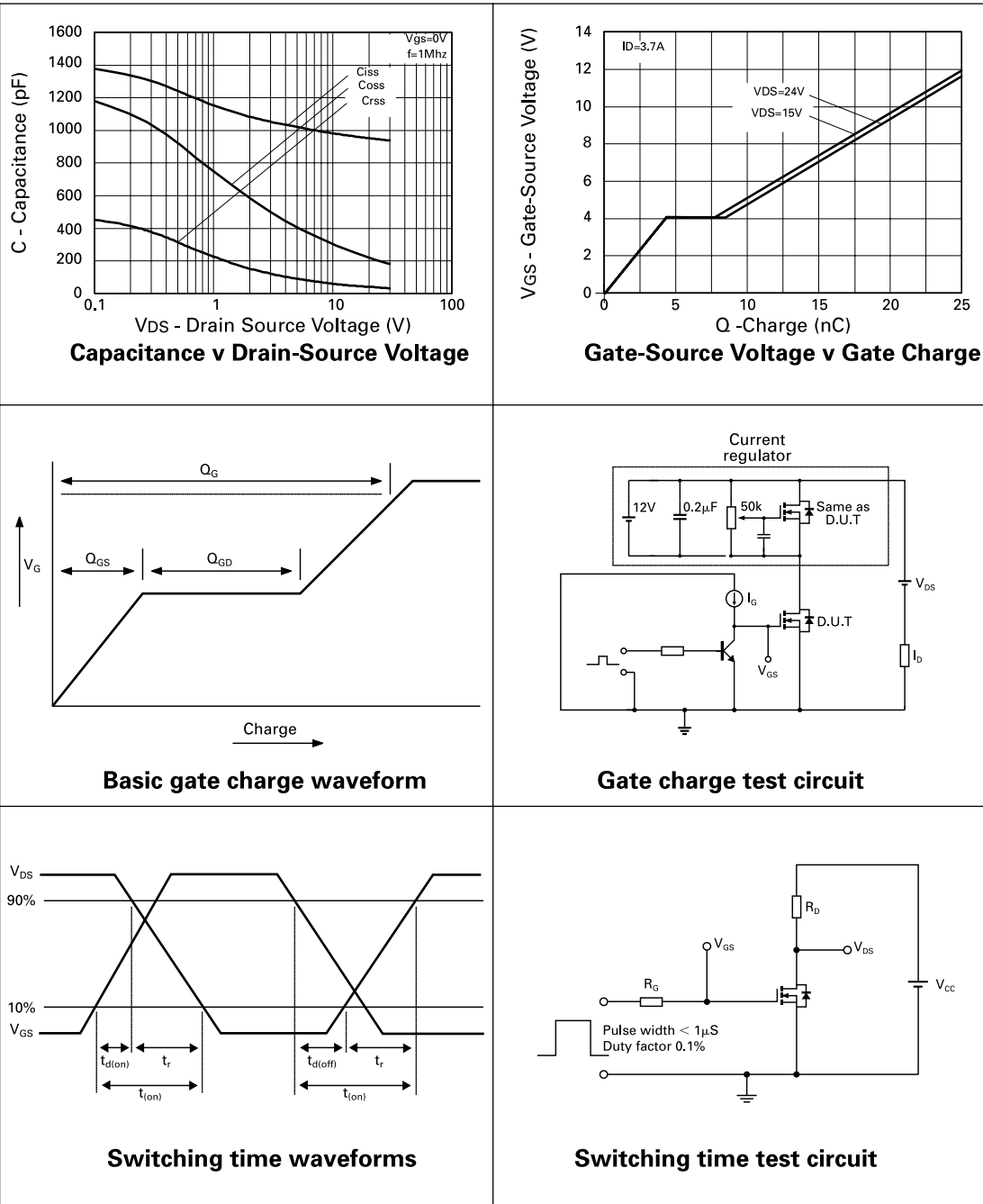
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TYPICAL CHARACTERISTICS



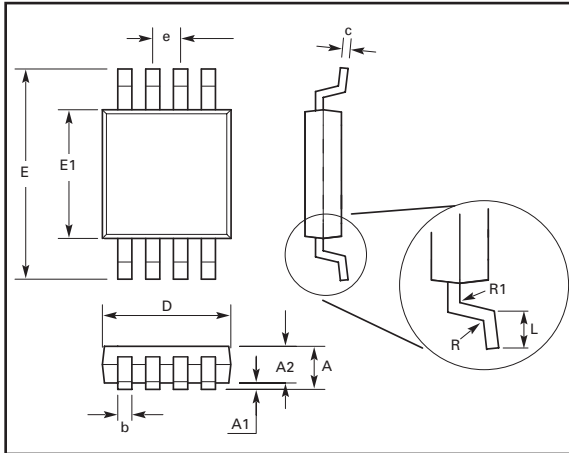
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TYPICAL CHARACTERISTICS

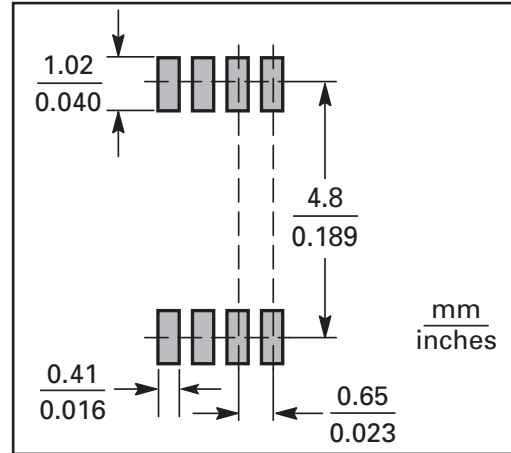


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PACKAGE DETAILS



PAD LAYOUT DETAILS



PACKAGE DIMENSIONS

DIM	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.91	1.11	0.036	0.044
A1	0.10	0.20	0.004	0.008
B	0.25	0.36	0.010	0.014
C	0.13	0.18	0.005	0.007
D	2.95	3.05	0.116	0.120
e	0.65NOM		0.0256	
e1	0.33NOM		0.0128	
E	2.95	3.05	0.116	0.120
H	4.78	5.03	0.188	0.198
L	0.41	0.66	0.016	0.026
θ°	0°	6°	0°	6°

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Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park Chadderton, Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europa.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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ISSUE 1 - OCTOBER 2005