



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 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
- Low profile SOIC package

APPLICATIONS

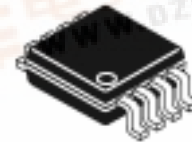
- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

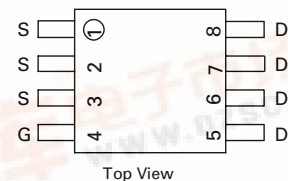
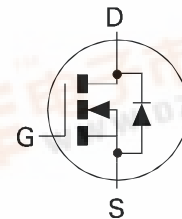
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXM64N03XTA	7	12mm embossed	1000 units
ZXM64N03XTC	13	12mm embossed	4000 units

DEVICE MARKING

- ZXM4N03



MSOP8



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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	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

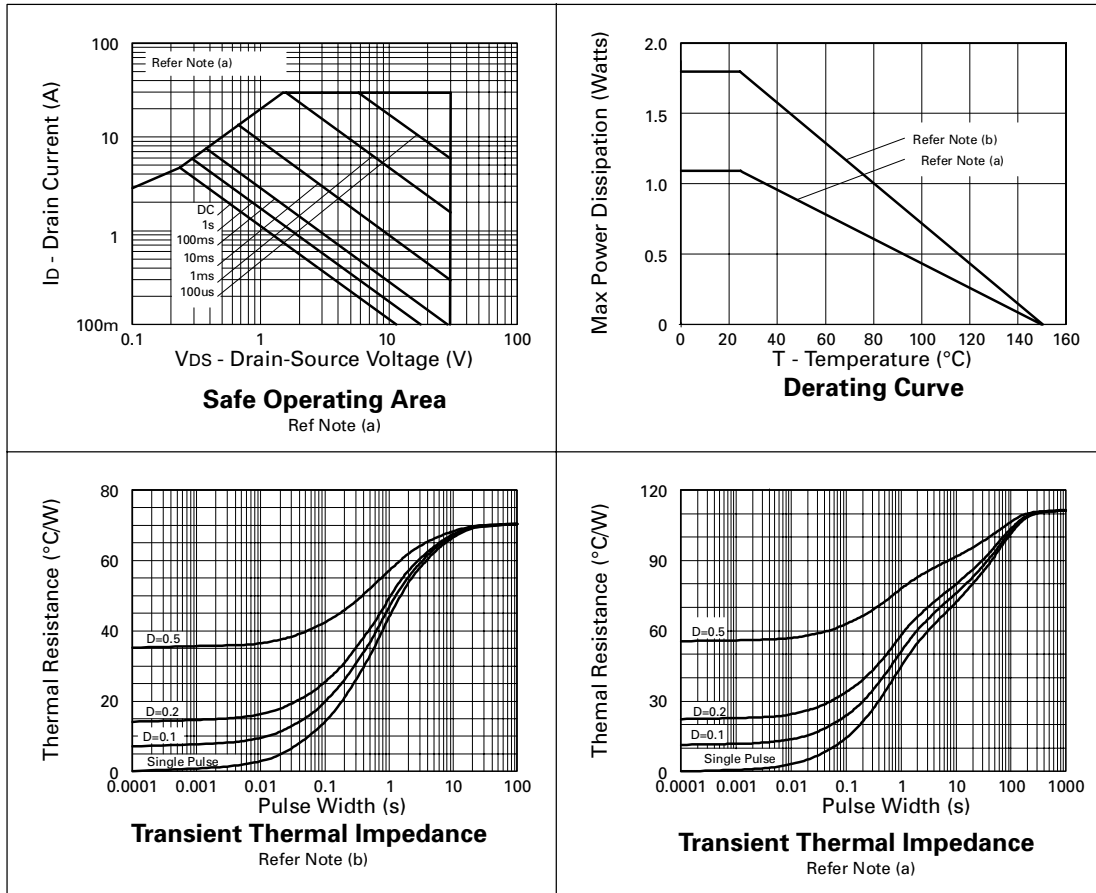
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(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 _j =25°C, I _F =3.7A, di/dt= 100A/μs
Reverse Recovery Charge(3)	Q _{rr}		19.1		nC	

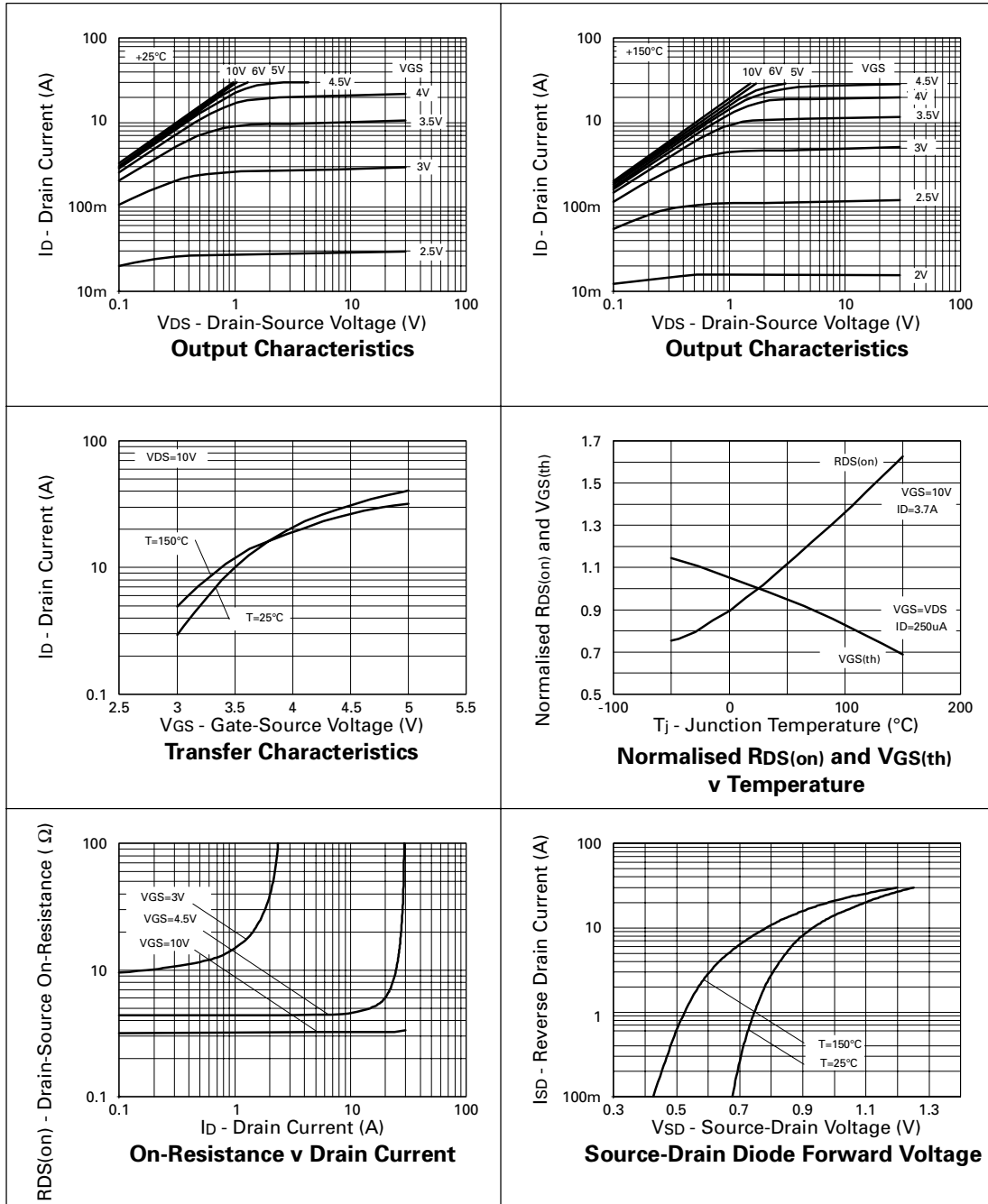
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.

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

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

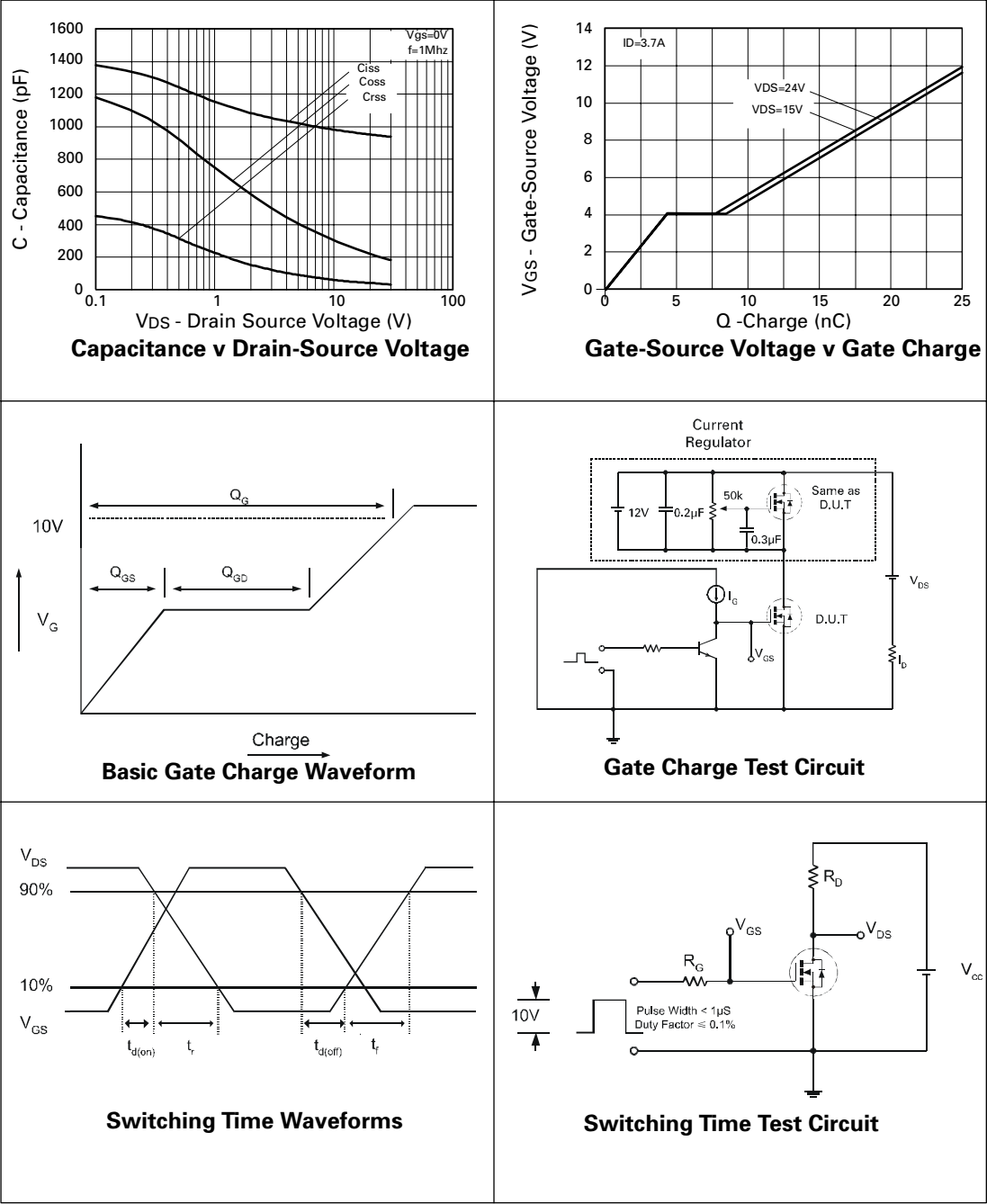
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TYPICAL CHARACTERISTICS



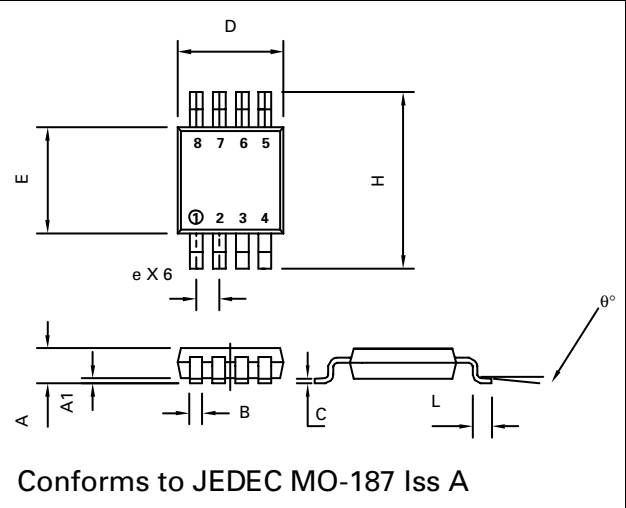
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TYPICAL CHARACTERISTICS



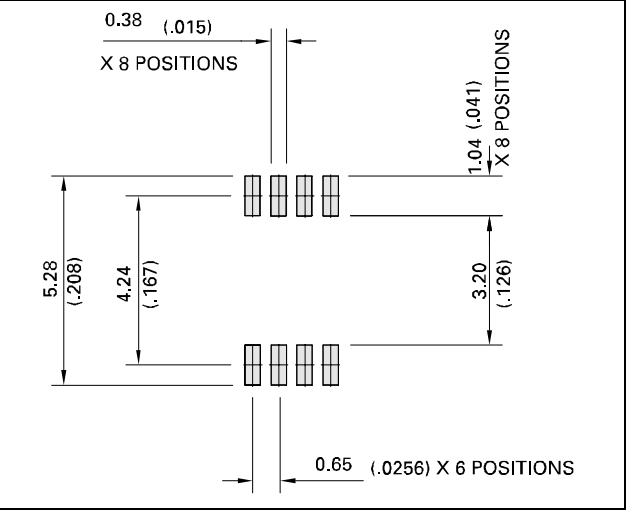
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PACKAGE DIMENSIONS



DIM	Millimetres		Inches	
	MIN	MAX	MIN	MAX
A		1.10		0.043
A1	0.05	0.15	0.002	0.006
B	0.25	0.40	0.010	0.016
C	0.13	0.23	0.005	0.009
D	2.90	3.10	0.114	0.122
e	0.65	BSC	0.0256	BSC
E	2.90	3.10	0.114	0.122
H	4.90	BSC	0.193	BSC
L	0.40	0.70	0.016	0.028
q°	0°	6°	0°	6°

PAD LAYOUT DETAILS



ZETEX Zetex plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc.
47 Mall Drive, Unit 4
Commack NY 11725
USA
Telephone: (516) 543-7100
Fax: (516) 864-7630

Zetex (Asia) Ltd.
3510 Metroplaza, Tower 2
Hing Fong Road,
Kwai Fong, Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494

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