

ZXMP4A16G

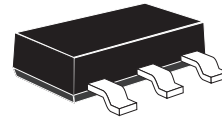
40V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = -40V$; $R_{DS(on)} = 0.060\Omega$; $I_D = -6.4A$

DESCRIPTION

This new generation of Trench 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.



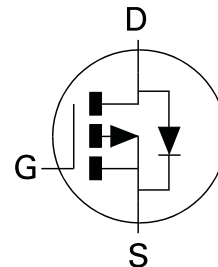
SOT223

FEATURES

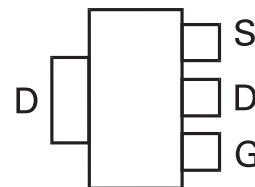
- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT223 package

APPLICATIONS

- DC-DC Converters
- Disconnect switches
- Audio output stages
- Motor Control



PINOUT



Top View

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMP4A16GTA	7"	12mm	1000 units
ZXMP4A16GTC	13"	12mm	4000 units

DEVICE MARKING

ZXMP
4A16

ZXMP4A16G

ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	-40	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) ($V_{GS} = -10V$; $T_A = 25^\circ C$) ^(a)	I_D	-6.4 -5.1 -4.6	A
Pulsed Drain Current ^(c)	I_{DM}	-21	A
Continuous Source Current (Body Diode) ^(b)	I_S	-5.2	A
Pulsed Source Current (Body Diode) ^(c)	I_{SM}	-21	A
Power Dissipation at $T_A = 25^\circ C$ ^(a) Linear Derating Factor	P_D	2.0 16	W mW/ $^\circ C$
Power Dissipation at $T_A = 25^\circ C$ ^(b) Linear Derating Factor	P_D	3.9 31	W mW/ $^\circ C$
Operating and Storage Temperature Range	$T_j: T_{stg}$	-55 to +150	$^\circ C$

THERMAL RESISTANCE

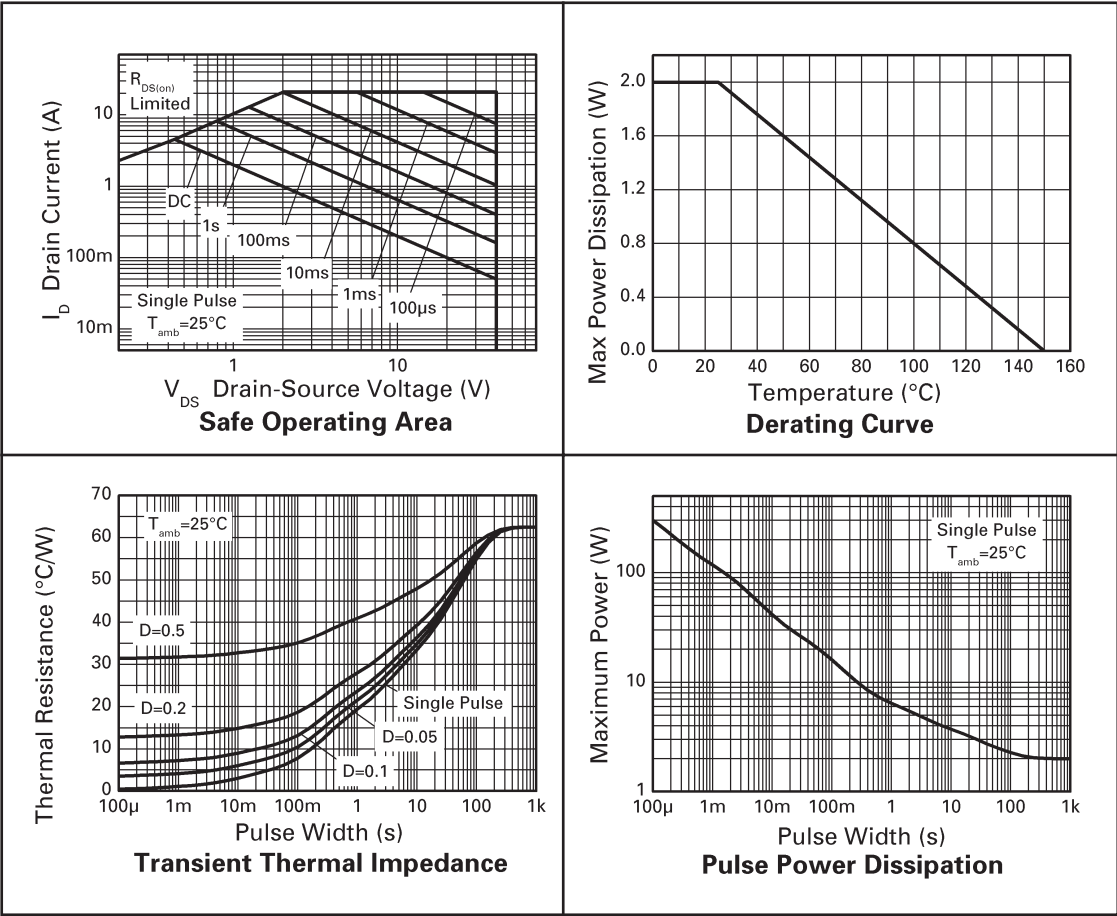
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient ^(a)	$R_{\theta JA}$	62.5	$^\circ C/W$
Junction to Ambient ^(b)	$R_{\theta JA}$	32.2	$^\circ C/W$

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 25mm x 25mm FR4 PCB, $D=0.05$ pulse width limited by maximum junction temperature.

ZXMP4A16G

CHARACTERISTICS



ZXMP4A16G

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}	-40			V	I _D =-250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			-1	μA	V _{DS} =-40V, 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)}			0.060 0.100	Ω Ω	V _{GS} =-10V, I _D =-3.8A V _{GS} =-4.5V, I _D =-2.9A
Forward Transconductance ⁽¹⁾⁽³⁾	g _{fs}		8.85		S	V _{DS} =-15V, I _D =-3.8A
DYNAMIC ⁽³⁾						
Input Capacitance	C _{iss}		1007		pF	V _{DS} =-20V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		130		pF	
Reverse Transfer Capacitance	C _{rss}		85		pF	
SWITCHING ⁽²⁾⁽³⁾						
Turn-On Delay Time	t _{d(on)}		2.33		ns	V _{DD} =-20V, I _D =-1A R _G ≈6.0Ω, V _{GS} =-10V
Rise Time	t _r		8.84		ns	
Turn-Off Delay Time	t _{d(off)}		29.18		ns	
Fall Time	t _f		12.54		ns	
Gate Charge	Q _g		13.6		nC	V _{DS} =-20V, V _{GS} =-5V, I _D =-3.8A
Total Gate Charge	Q _g		26.1		nC	V _{DS} =-20V, V _{GS} =-10V, I _D =-3.8A
Gate-Source Charge	Q _{gs}		2.8		nC	
Gate-Drain Charge	Q _{gd}		4.8		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage ⁽¹⁾	V _{SD}		-0.85	-1.2	V	T _J =25°C, I _S =-3.4A, V _{GS} =0V
Reverse Recovery Time ⁽³⁾	t _{rr}		27.2		ns	T _J =25°C, I _F =-3A, di/dt= 100A/μs
Reverse Recovery Charge ⁽³⁾	Q _{rr}		25.4		nC	

NOTES

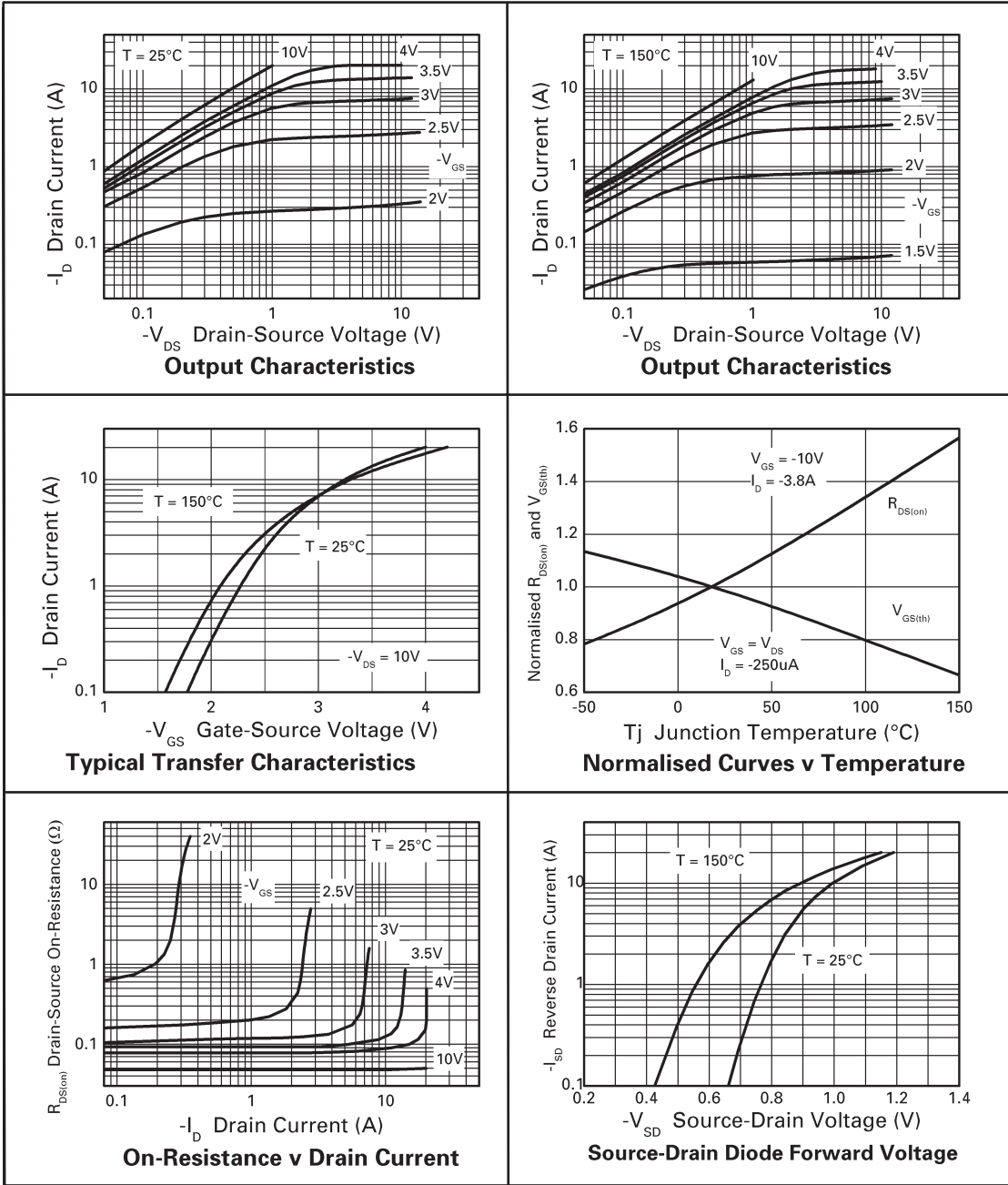
(1) Measured under pulsed conditions. Width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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

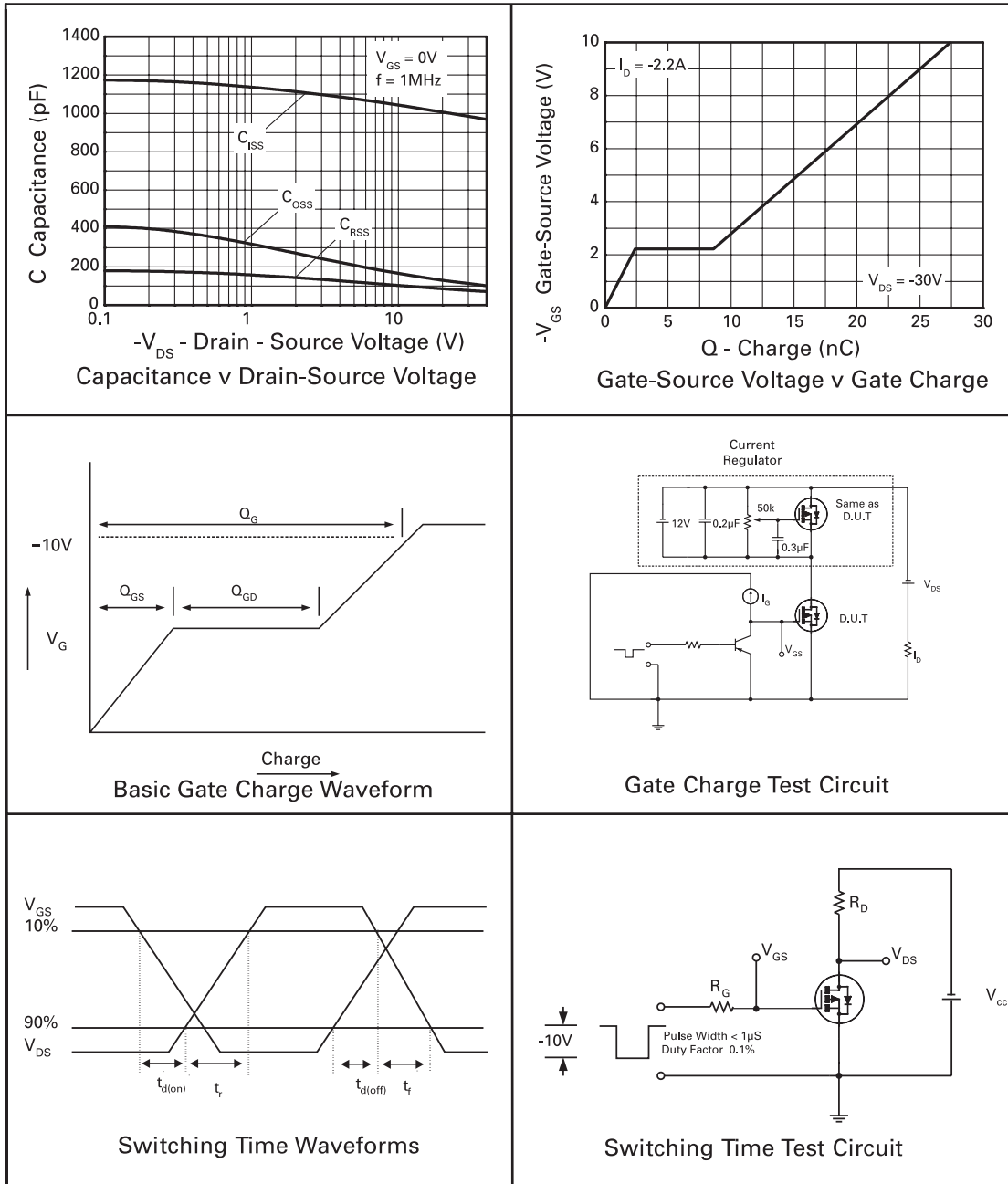
(3) For design aid only, not subject to production testing.

ZXMP4A16G

TYPICAL CHARACTERISTICS

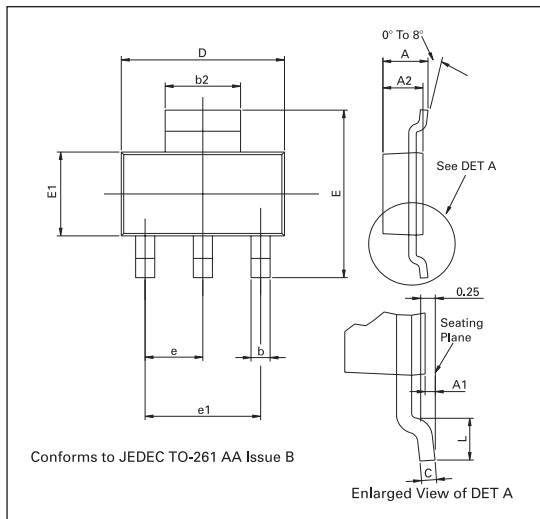


ZXMP4A16G

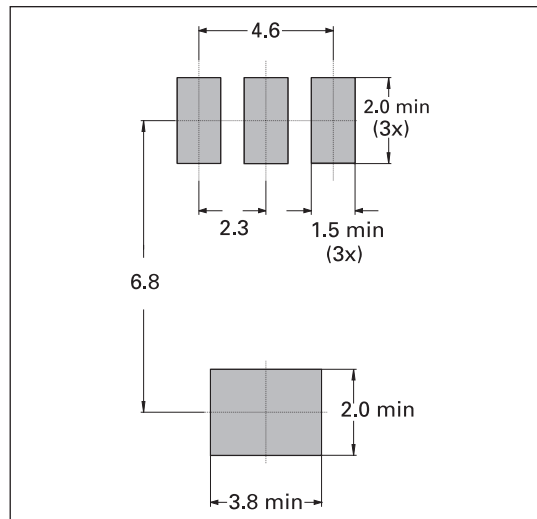


ZXMP4A16G

PACKAGE OUTLINE



PAD LAYOUT DETAILS



PACKAGE DIMENSIONS

DIM	Millimetres		Inches		DIM	Millimetres		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.0355	-
D	6.30	6.70	0.248	0.264					

© Zetex plc 2003

Europe

Zetex plc
Fields New Road
Chadderton
Oldham, OL9 8NP
United Kingdom
Telephone (44) 161 622 4444
Fax: (44) 161 622 4446
hq@zetex.com

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49
europe.sales@zetex.com

Americas

Zetex Inc
700 Veterans Memorial Hwy
Hauppauge, NY 11788
USA
Telephone: (1) 631 360 2222
Fax: (1) 631 360 8222
usa.sales@zetex.com

Asia Pacific

Zetex (Asia) Ltd
3701-04 Metroplaza Tower 1
Hing Fong Road
Kwai Fong
Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494
asia.sales@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to www.zetex.com

ISSUE 4 - JULY 2003