

ZXMP3A16N8

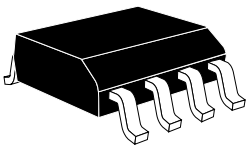
30V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = -30V$; $R_{DS(ON)} = 0.040\Omega$; $I_D = -6.7A$

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.



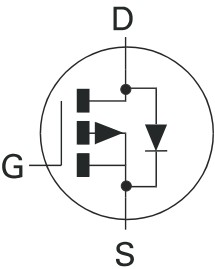
SO8

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

APPLICATIONS

- Disconnect switches
- Motor control



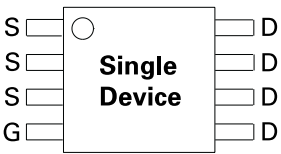
ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMP3A16N8TA	7"	12mm	500 units
ZXMP3A16N8TC	13"	12mm	2500 units

DEVICE MARKING

- ZXMP
3A16

PINOUT



Top View

ZXMP3A16N8

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) $V_{GS}=-10V$; $T_A=25^\circ C$ (a)	I_D	-6.7 -5.4 -5.6	A
Pulsed Drain Current (c)	I_{DM}	-26	A
Continuous Source Current (Body Diode) (b)	I_S	-3.2	A
Pulsed Source Current (Body Diode) (c)	I_{SM}	-26	A
Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor	P_D	1.9 15.2	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor	P_D	2.8 22.4	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)	$R_{\theta JA}$	65	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	45	$^\circ C/W$

NOTES

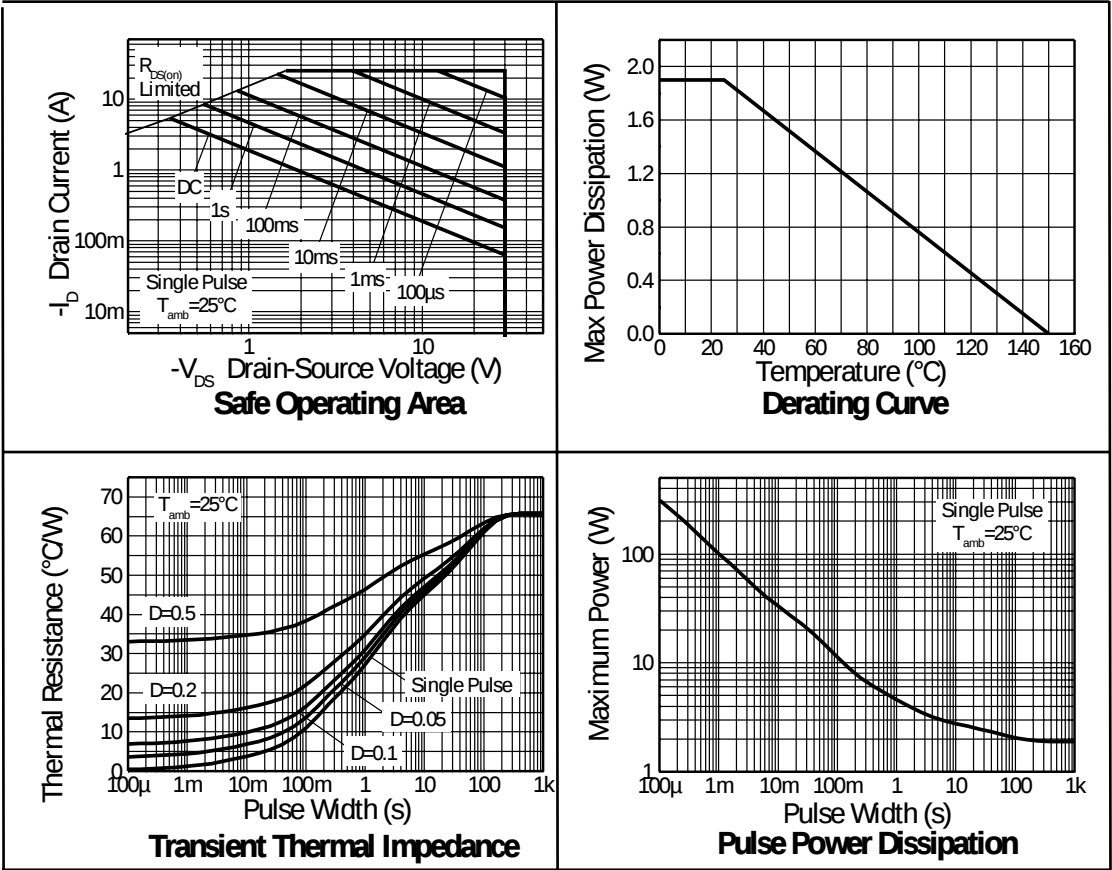
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.05$, pulse width 10 μs - 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}			-1.0	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)}			0.040 0.070	Ω Ω	V _{GS} =-10V, I _D =-4.2A V _{GS} =-4.5V, I _D =-3.4A
Forward Transconductance (1)(3)	g _{fs}		9.2		S	V _{DS} =-15V,I _D =-4.2A
DYNAMIC (3)						
Input Capacitance	C _{iss}		970		pF	V _{DS} =-15 V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		166		pF	
Reverse Transfer Capacitance	C _{rss}		116		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		1.95		ns	V _{DD} =-15V, I _D =-1A R _G =6.0Ω, V _{GS} =-10V
Rise Time	t _r		3.82		ns	
Turn-Off Delay Time	t _{d(off)}		31.8		ns	
Fall Time	t _f		10.2		ns	
Gate Charge	Q _g		12.9		nC	V _{DS} =-15V,V _{GS} =-5V, I _D =-4.2A
Total Gate Charge	Q _g		24.9		nC	V _{DS} =-15V,V _{GS} =-10V, I _D =-4.2A
Gate-Source Charge	Q _{gs}		2.67		nC	
Gate-Drain Charge	Q _{gd}		3.86		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}		-0.85	-0.95	V	T _J =25°C, I _S =-3.6A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		21.2		ns	T _J =25°C, I _F =-2A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		18.7		nC	

NOTES

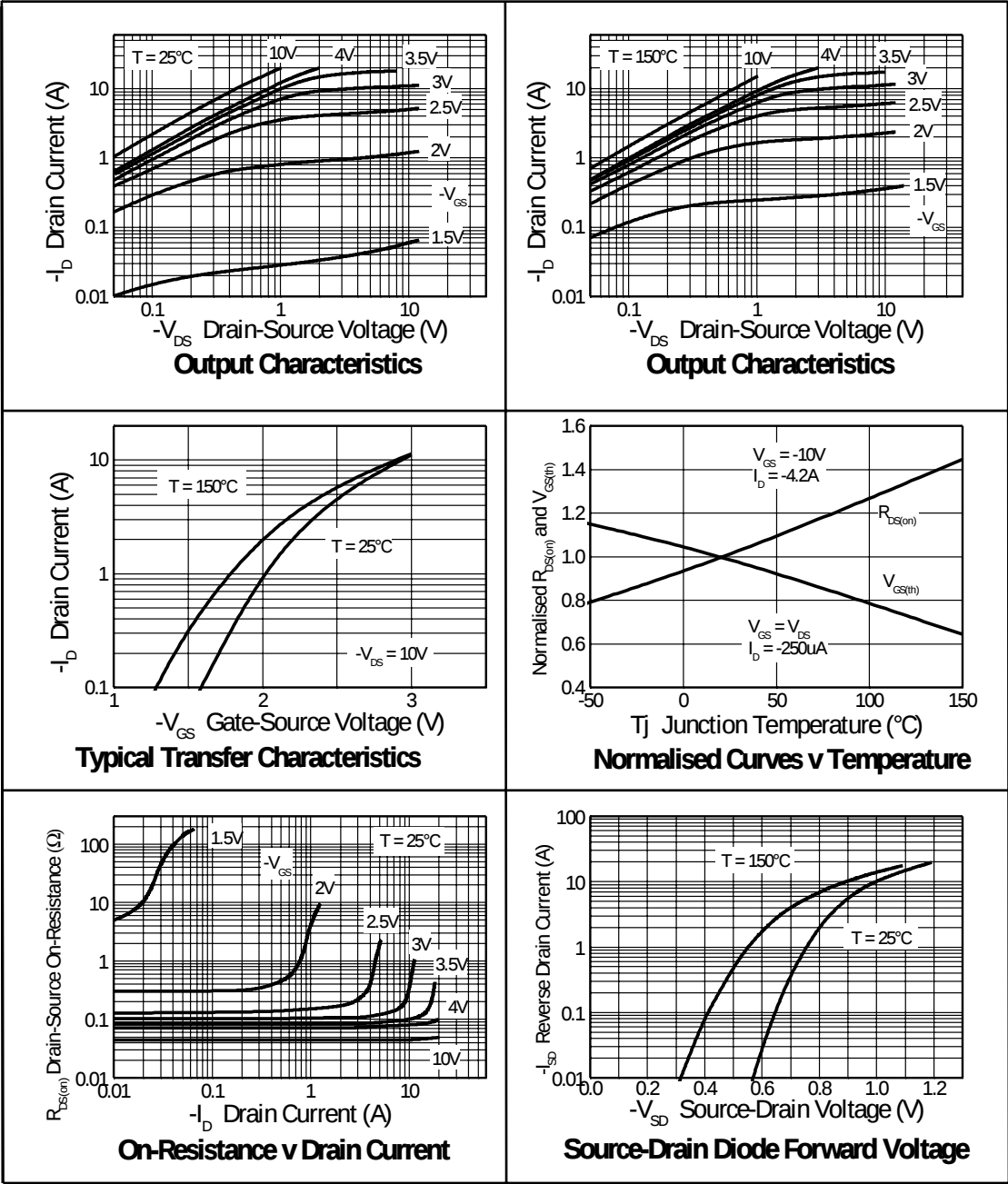
- (1) Measured under pulsed conditions. Width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.
 (2) Switching characteristics are independent of operating junction temperature.
 (3) For design aid only, not subject to production testing.



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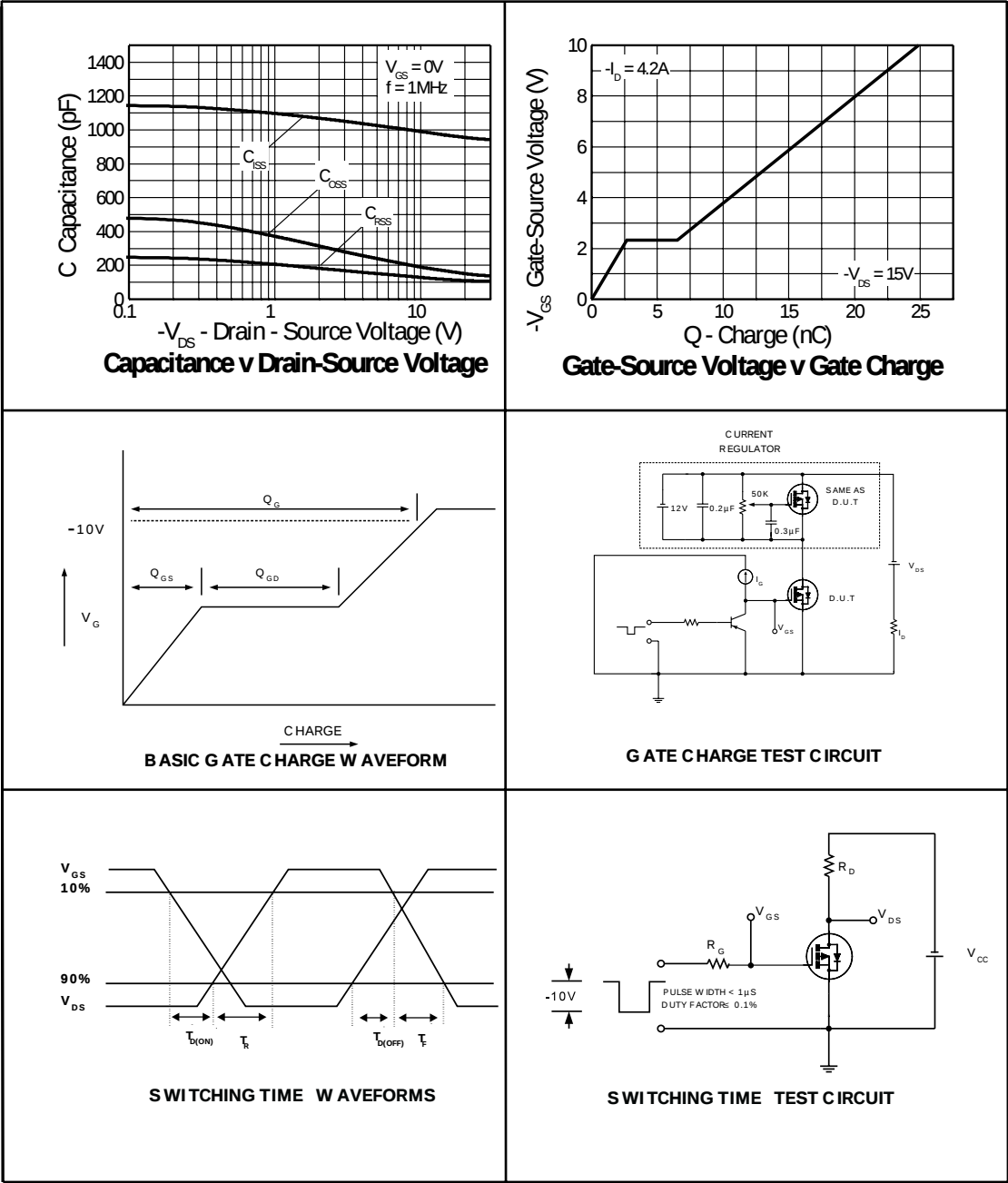
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CHARACTERISTICS



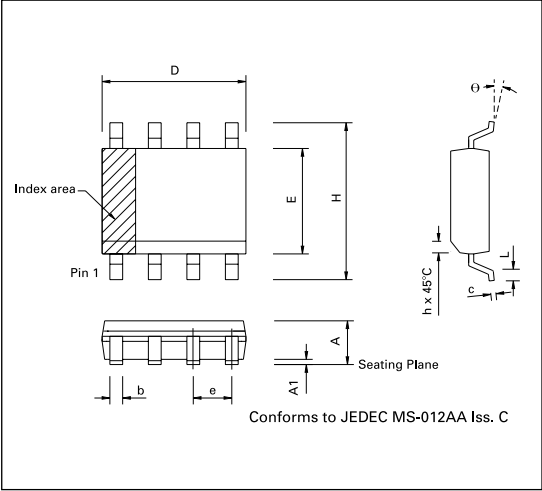
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CHARACTERISTICS



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PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES
APPROX IN MILLIMETRES

PACKAGE DIMENSIONS

DIM	INCHES		MILLIMETRES	
	MIN	MAX	MIN	MAX
A	0.053	0.069	1.35	1.75
A1	0.004	0.010	0.10	0.25
D	0.189	0.197	4.80	5.00
H	0.228	0.244	5.80	6.20
E	0.150	0.157	3.80	4.00
L	0.016	0.050	0.40	1.27
e	0.050 BSC		1.27 BSC	
b	0.013	0.020	0.33	0.51
c	0.008	0.010	0.19	0.25
Θ	0°	8°	0°	8°
h	0.010	0.020	0.25	0.50

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