

30V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

V_{(BR)DSS} = -30V; R_{DS(ON)} = 0.040Ω; 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.

FEATURES

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

APPLICATIONS

- Disconnect switches
- Motor control

ORDERING INFORMATION

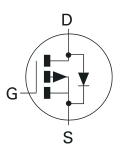
DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMP3A16N8TA	7″	12mm	500 units
ZXMP3A16N8TC	13″	12mm	2500 units

DEVICE MARKING

 ZXMP 3A16

HI

SO8



PINOUT



Top View



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°C (b) V _{GS} =-10V; T _A =70°C (b) V _{GS} =-10V; T _A =25°C (a)	I _D	-6.7 -5.4 -5.6	A
Pulsed Drain Current (c)	I _{DM}	-26	А
Continuous Source Current (Body Diode) (b)	I _S	-3.2	A
Pulsed Source Current (Body Diode) (c)	I _{SM}	-26	А
Power Dissipation at T _A =25°C (a) Linear Derating Factor	P _D	1.9 15.2	W mW/°C
Power Dissipation at T _A =25°C (b) Linear Derating Factor	P _D	2.8 22.4	W mW/°C
Operating and Storage Temperature Range	T _j :T _{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	65	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	45	°C/W

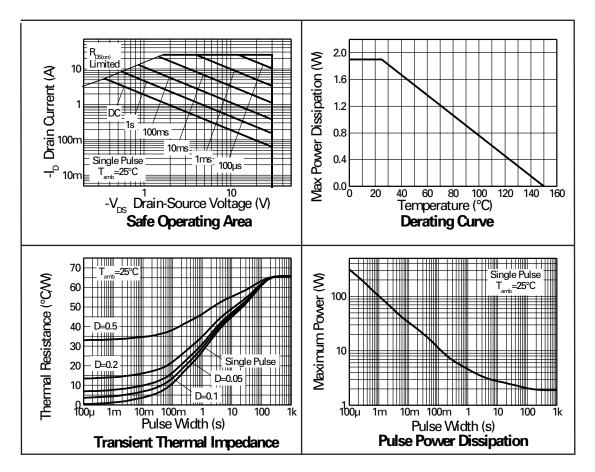
NOTES

(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≤5 secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, D = 0.05, pulse width 10µs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.





CHARACTERISTICS



		1				
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	$V_{GS}=\pm 20V, V_{DS}=0V$
Gate-Source Threshold Voltage	V _{GS(th)}	-1.0			V	$I_D = -250 \mu A, V_{DS} = V_{GS}$
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.040 0.070	$\Omega \Omega$	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}		1022		рF	
Output Capacitance	Coss		267		pF	V _{DS} =-15 V, V _{GS} =0V, f=1MHz
Reverse Transfer Capacitance	C _{rss}		229		pF	
SWITCHING(2) (3)		•				·
Turn-On Delay Time	t _{d(on)}		3.8		ns	
Rise Time	t _r		6.5		ns	V _{DD} =-15V, I _D =-1A
Turn-Off Delay Time	t _{d(off)}		37.1		ns	R _G =6.0Ω, V _{GS} =-10V
Fall Time	t _f		21.4		ns	
Gate Charge	Qg		17.2		nC	V _{DS} =-15V,V _{GS} =-5V, I _D =-4.2A
Total Gate Charge	Qg		29.6		nC	
Gate-Source Charge	Q _{gs}		2.8		nC	V _{DS} =-15V,V _{GS} =-10V, I _D =-4.2A
Gate-Drain Charge	Q _{gd}		8.6		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}		21.7		ns	$T_{J}=25^{\circ}C, I_{F}=-2A,$
Reverse Recovery Charge (3)	Q _{rr}		16.1		nC	di/dt= 100A/µs

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

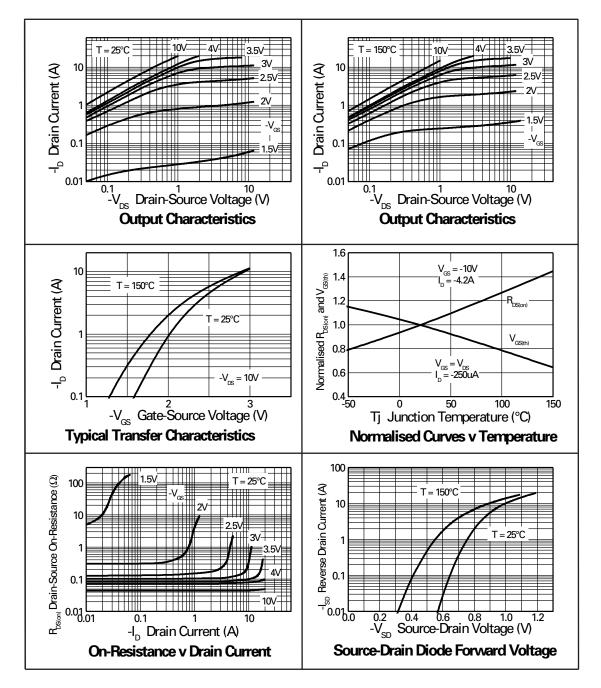
NOTES

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

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

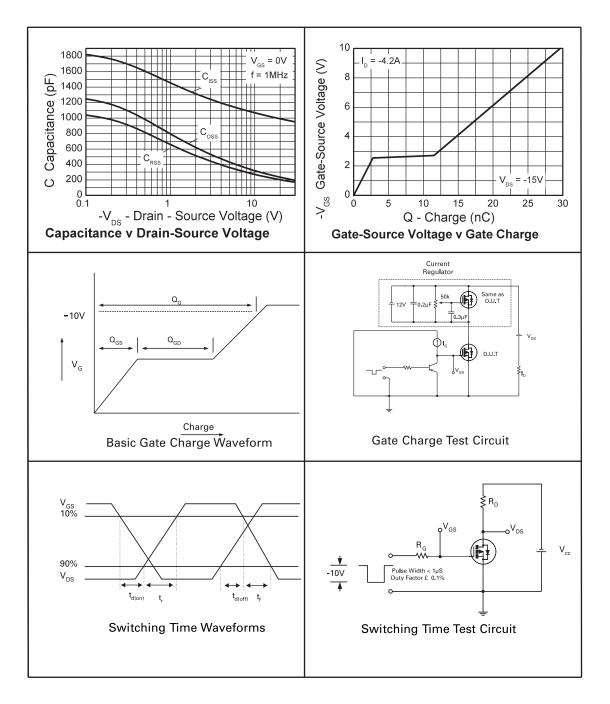
(3) For design aid only, not subject to production testing.





CHARACTERISTICS

EMICONDUCTORS





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"Active"Product status recommended for new designs

"Last time buy (LTB)"Device will be discontinued and last time buy period and delivery is in effect

"Not recommended for new designs"Device is still in production to support existing designs and production

"Obsolete"Production has been discontinued

Datasheet status key:

"Draft version"This term denotes a very early datasheet version and contains highly provisional

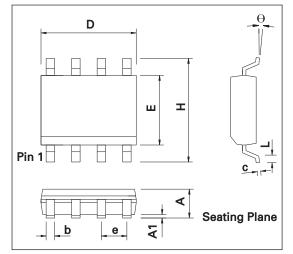
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PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES APPROX IN MILLIMETERS

PACKAGE DIMENSIONS

DIM	Millin	neters	Inc	hes	DIM -	Millin	neters	Inches	
Dilvi	Min	Мах	Min	Мах		Min	Мах	Min	Max
А	1.35	1.75	0.053	0.069	е	1.27	BSC	0.050	BSC
A1	0.10	0.25	0.004	0.010	b	0.33	0.51	0.013	0.020
D	4.80	5.00	0.189	0.197	с	0.19	0.25	0.008	0.010
Н	5.80	6.20	0.228	0.244	θ	0°	8°	0°	8°
E	3.80	4.00	0.150	0.157	h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050	-	-	-	-	-

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