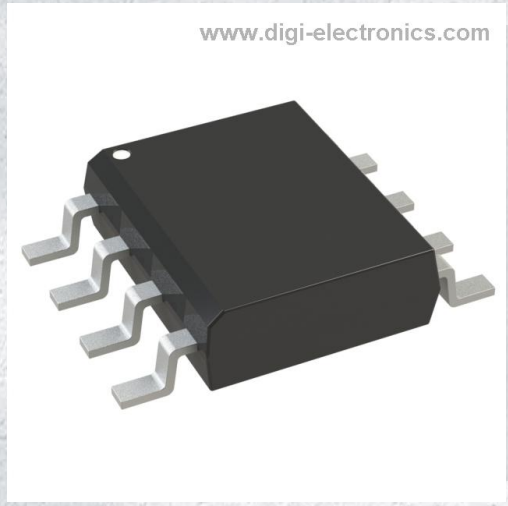
ZXMP3A16N8TA Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	ZXMP3A16N8TA-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	ZXMP3A16N8TA
Description	MOSFET P-CH 30V 5.6A 8SO
Detailed Description	P-Channel 30 V 5.6A (Ta) 1.9W (Ta) Surface Mount 8-SO

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
ZXMP3A16N8TA	Diodes Incorporated
Series:	Product Status:
-	Active
FET Type:	Technology:
P-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
30 V	5.6A (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
4.5V, 10V	40mOhm @ 4.2A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
1V @ 250µA	29.6 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	1022 pF @ 15 V
FET Feature:	Power Dissipation (Max):
-	1.9W (Ta)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Supplier Device Package:	Package / Case:
8-SO	8-SOIC (0.154", 3.90mm Width)
Base Product Number:	
ZXMP3A16	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

ZXMP3A16N8

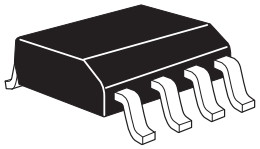
30V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

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

DESCRIPTION

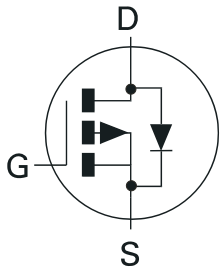
This new generation of trench MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



SO8

FEATURES

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



APPLICATIONS

- Disconnect switches
- Motor control

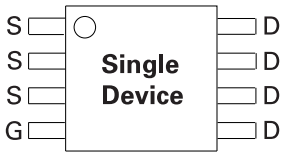
ORDERING INFORMATION

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°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	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°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

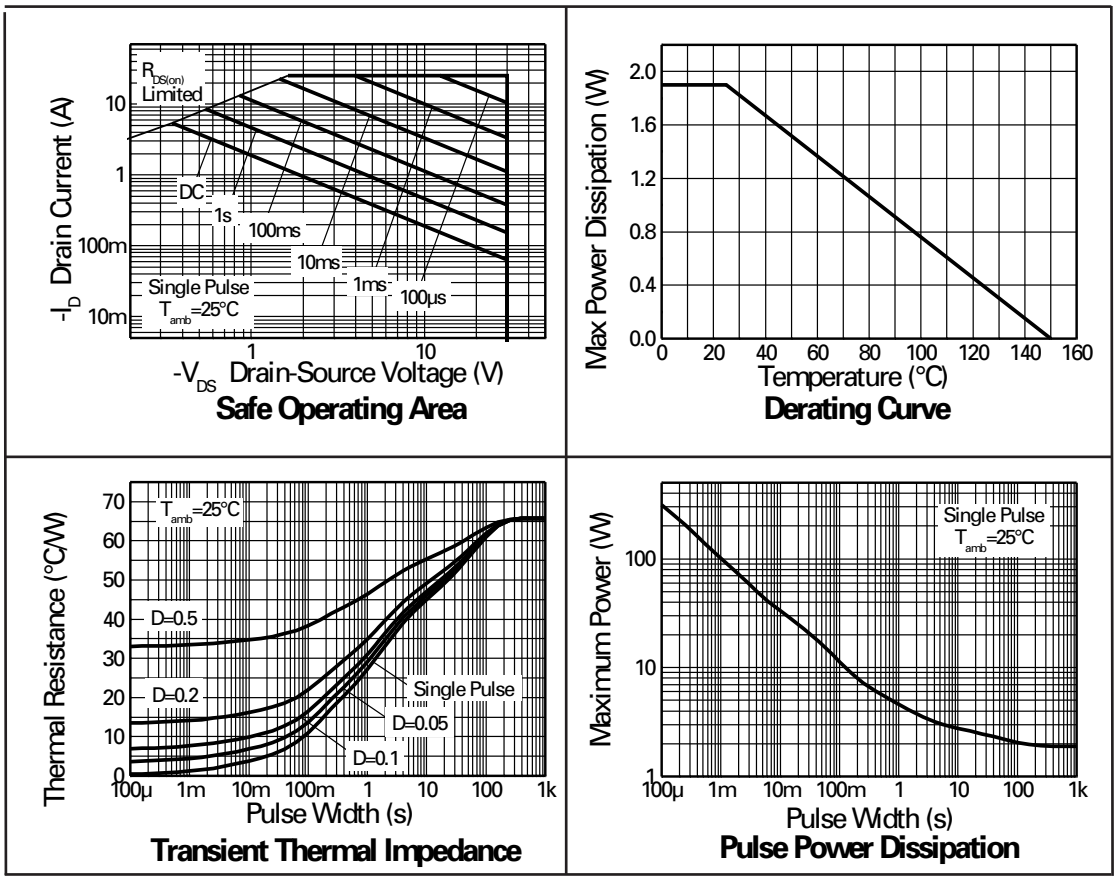
NOTES

(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



ZXMP3A16N8

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°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}		1022		pF	V_{DS}=-15 V, V_{GS}=0V, f=1MHz
Output Capacitance	C_{oss}		267		pF	
Reverse Transfer Capacitance	C_{rss}		229		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		3.8		ns	V_{DD} =-15V, I_D=-1A R_G=6.0Ω, V_{GS}=-10V
Rise Time	t_r		6.5		ns	
Turn-Off Delay Time	$t_{d(off)}$		37.1		ns	
Fall Time	t_f		21.4		ns	
Gate Charge	Q_g		17.2		nC	V_{DS}=-15V,V_{GS}=-5V, I_D=-4.2A
Total Gate Charge	Q_g		29.6		nC	V_{DS}=-15V,V_{GS}=-10V, I_D=-4.2A
Gate-Source Charge	Q_{gs}		2.8		nC	
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°C, I_F=-2A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q_{rr}		16.1		nC	

NOTES

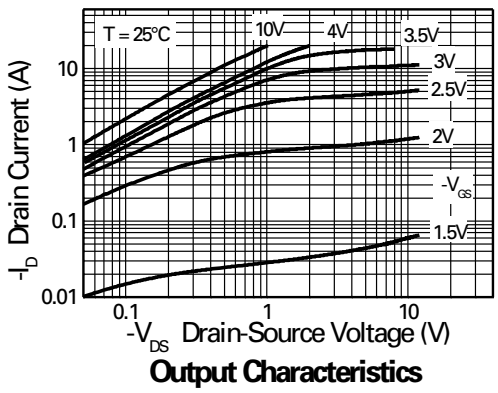
(1) Measured under pulsed conditions. Width ≤300μs. Duty cycle ≤ 2% .

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

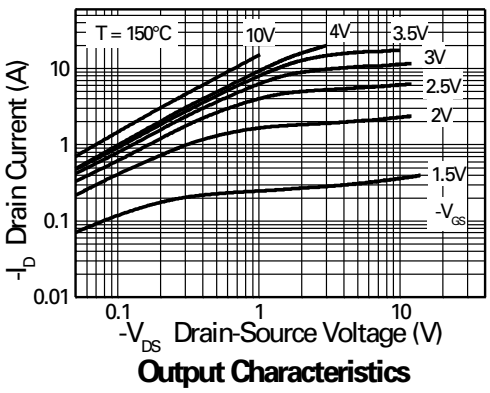
(3) For design aid only, not subject to production testing.

ZXMP3A16N8

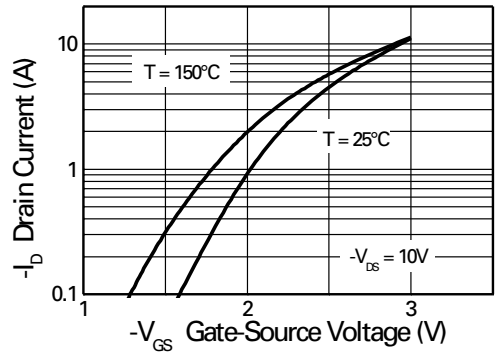
CHARACTERISTICS



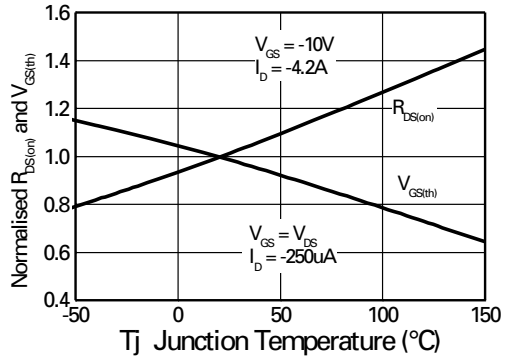
Output Characteristics



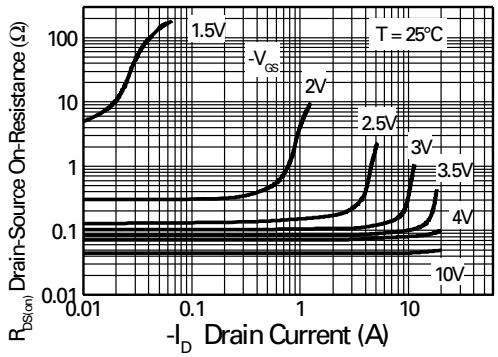
Output Characteristics



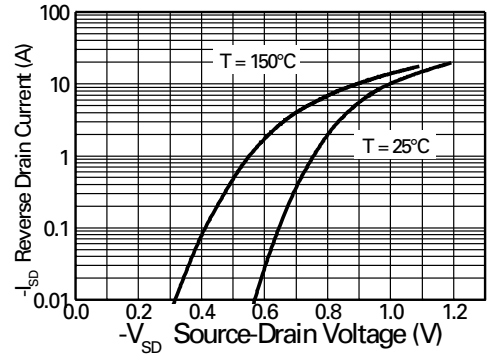
Typical Transfer Characteristics



Normalised Curves v Temperature

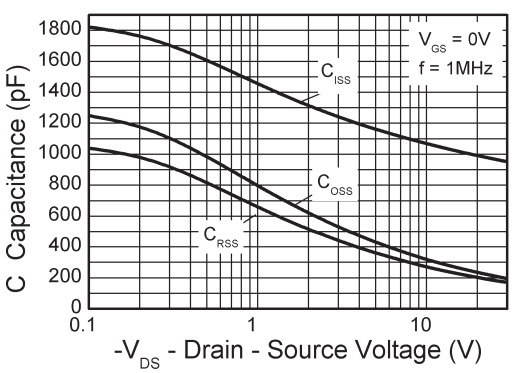


On-Resistance v Drain Current

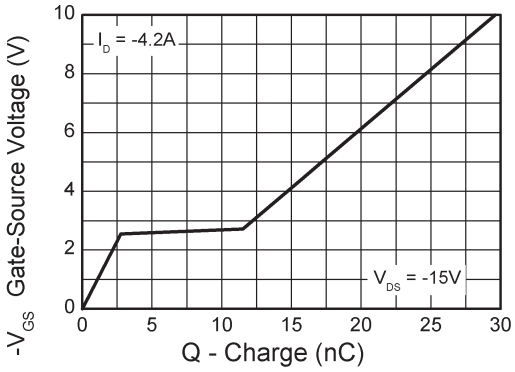


Source-Drain Diode Forward Voltage

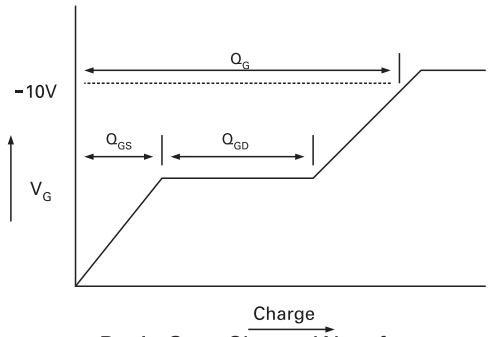
ZXMP3A16N8



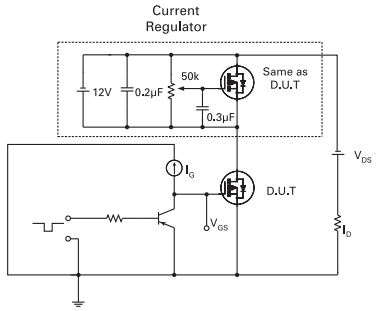
Capacitance v Drain-Source Voltage



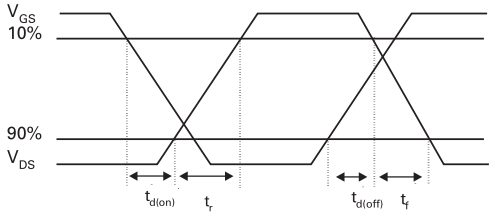
Gate-Source Voltage v Gate Charge



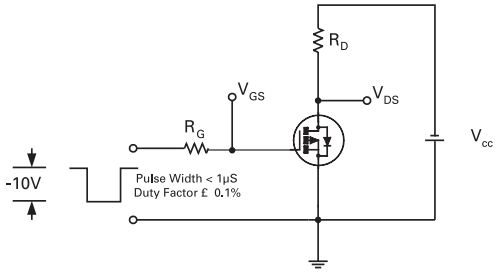
Basic Gate Charge Waveform



Gate Charge Test Circuit



Switching Time Waveforms



Switching Time Test Circuit

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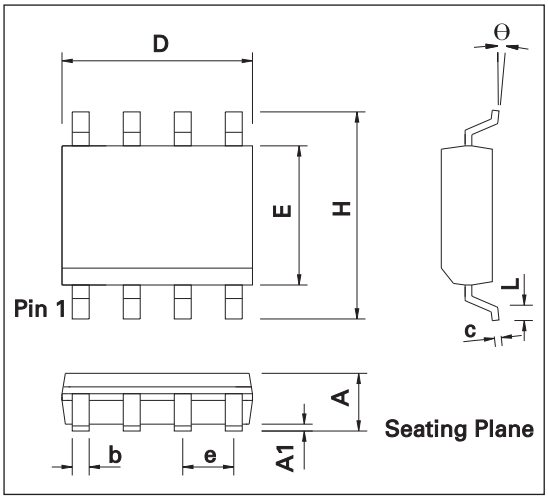
"Last time buy (LTB)"Device will be discontinued and last time buy period and delivery is in effect
"Not recommended for new designs"Device is still in production to support existing designs and production
"Obsolete"Production has been discontinued
Datasheet status key:
"Draft version"This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.
"Provisional version"This term denotes a pre-release datasheet. It provides a clear indication of anticipated performance. However, changes to the test conditions and specifications may occur, at any time and without notice.
"Issue"This term denotes an issued datasheet containing finalized specifications. However, changes to specifications may occur, at any time and without notice.

ZXMP3A16N8

PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES
APPROX IN MILLIMETERS

PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.35	1.75	0.053	0.069	e	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	c	0.19	0.25	0.008	0.010
H	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	-	-	-	-	-

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-Park Balanstraße 59 D-81541 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 europe.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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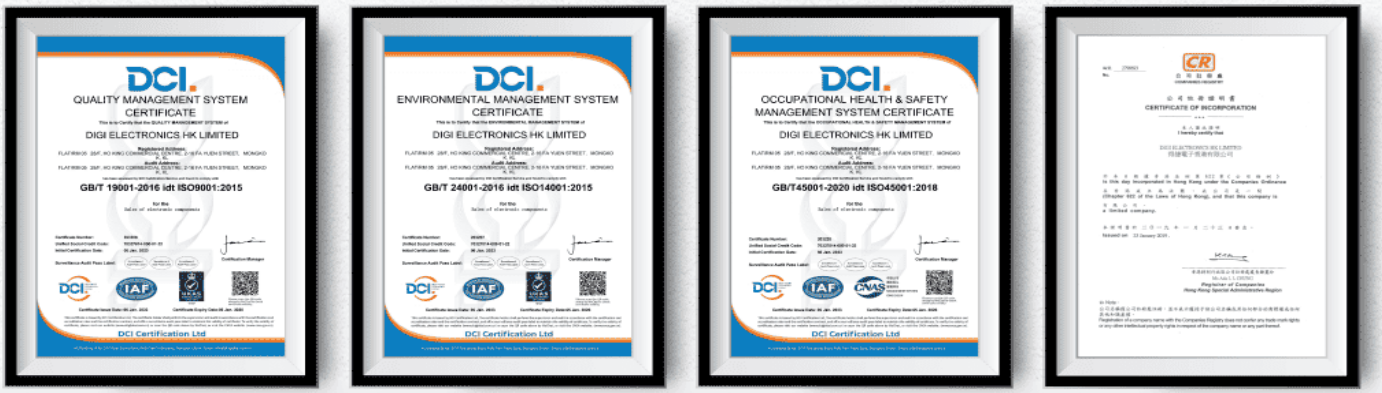

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