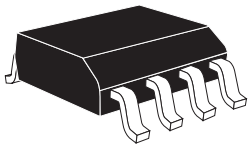
ZXMN2A02N8

20V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY
$V_{(BR)DSS}$ = 20V; $R_{DS(ON)}$ = 0.02Ω; I_D = 10.2A

DESCRIPTION

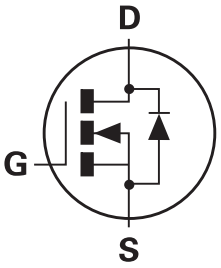
This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



SO8

FEATURES

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

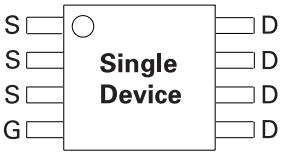


APPLICATIONS

- Disconnect switches
- Motor control

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN2A02N8TA	7″	12mm	500 units
ZXMN2A02N8TC	13″	12mm	2500 units



Top View

DEVICE MARKING

- ZXMN
  2A02

ZXMN2A02N8

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate Source Voltage	V_{GS}	±12	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	10.2 8.2 8.3	A
Pulsed Drain Current (c)	I_{DM}	50	A
Continuous Source Current (Body Diode) (b)	I_S	4.3	A
Pulsed Source Current (Body Diode) (c)	I_{SM}	50	A
Power Dissipation at T_A=25°C (a) Linear Derating Factor	P_D	1.56 12.5	W mW/°C
Power Dissipation at T_A=25°C (b) Linear Derating Factor	P_D	2.5 20	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)	$R_{\theta JA}$	80	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	50	°C/W

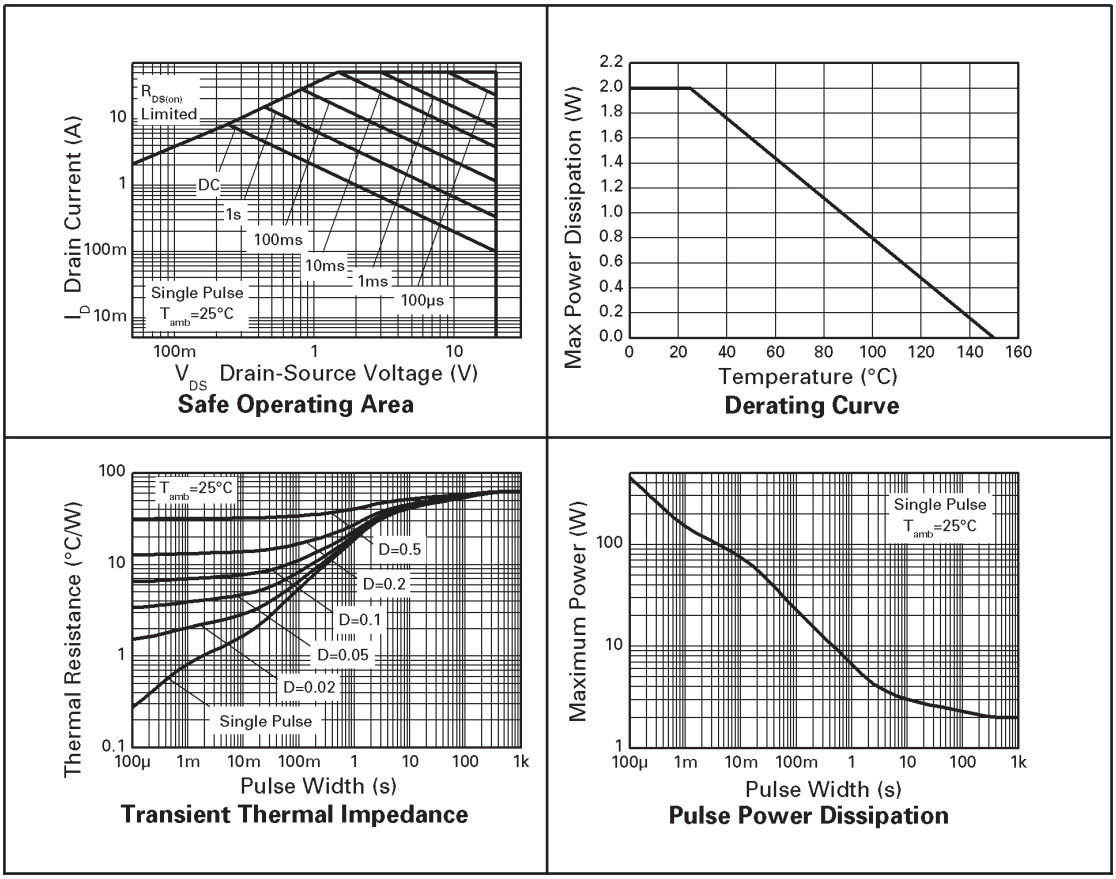
NOTES

(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≤10 secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300μs - pulse width limited by maximum junction temperature.

CHARACTERISTICS



ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	20			V	I_D=250μA, V_{GS}=0V
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	V_{DS}=20V, V_{GS}=0V
Gate-Body Leakage	I_{GSS}			100	nA	V_{GS}=±12V, V_{DS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.7			V	I_D=250μA, V_{DS}= V_{GS}
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.02 0.04	Ω Ω	V_{GS}=4.5V, I_D=11A V_{GS}=2.5V, I_D=8.4A
Forward Transconductance (1)(3)	g_{fs}		27		S	V_{DS}=10V,I_D=11A
DYNAMIC (3)						
Input Capacitance	C_{iss}		1900		pF	V_{DS}=10V, V_{GS}=0V, f=1MHz
Output Capacitance	C_{oss}		356		pF	
Reverse Transfer Capacitance	C_{rss}		218		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		7.9		ns	V_{DD} =10V, I_D=1A R_G≅6.0Ω, V_{GS}=4.5V
Rise Time	t_r		10		ns	
Turn-Off Delay Time	$t_{d(off)}$		33.3		ns	
Fall Time	t_f		13.6		ns	
Total Gate Charge	Q_g		18.9		nC	V_{DS}=10V,V_{GS}=4.5V, I_D=11A
Gate-Source Charge	Q_{gs}		5.2		nC	
Gate-Drain Charge	Q_{gd}		4.9		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}		0.85	0.95	V	T_J=25°C, I_S=11.5A, V_{GS}=0V
Reverse Recovery Time (3)	t_{rr}		16.3		ns	T_J=25°C, I_F=2.1A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q_{rr}		7.8		nC	

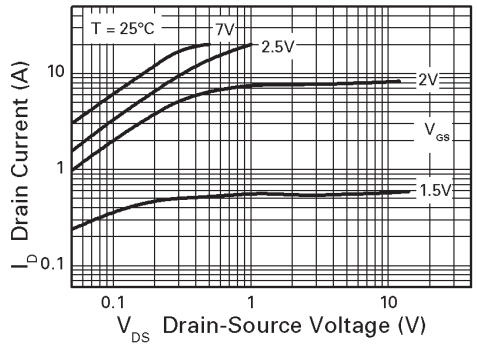
NOTES

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

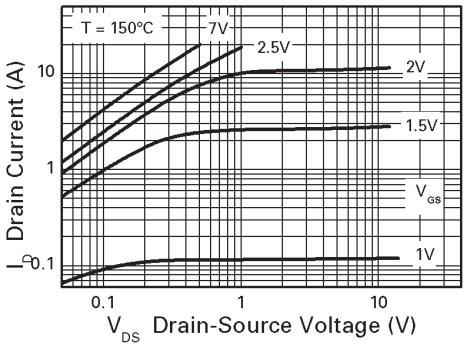
(2) Switching characteristics are independent of operating junction temperature.

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

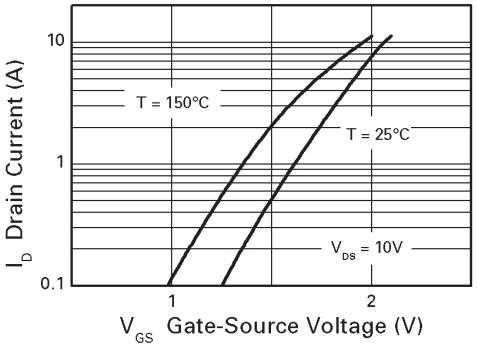
CHARACTERISTICS



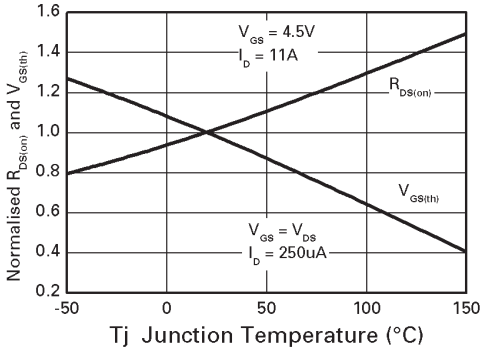
Output Characteristics



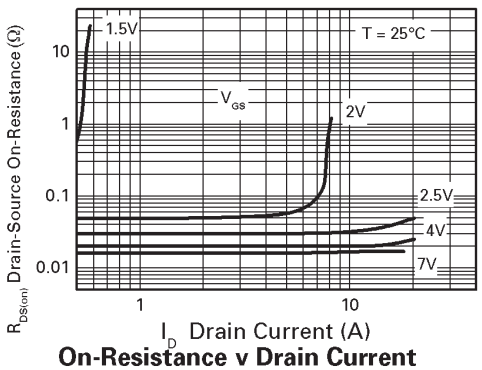
Output Characteristics



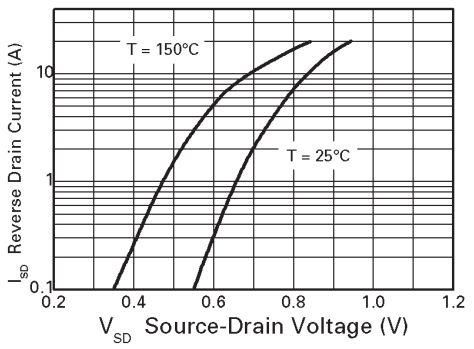
Typical Transfer Characteristics



Normalised Curves v Temperature

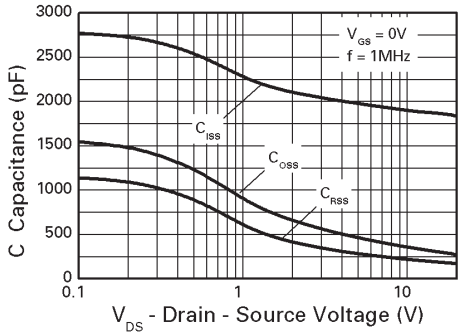


On-Resistance v Drain Current

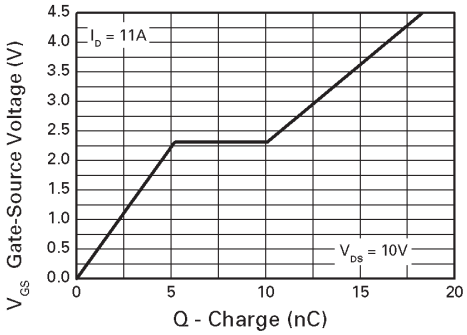


Source-Drain Diode Forward Voltage

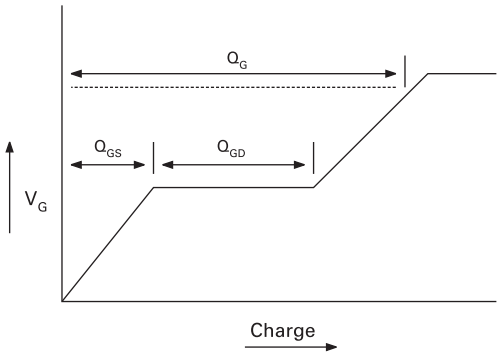
CHARACTERISTICS



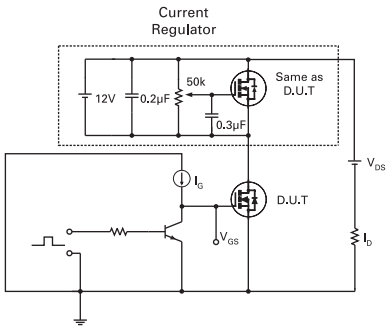
Capacitance v Drain-Source Voltage



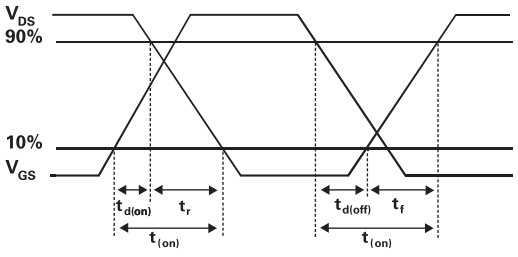
Gate-Source Voltage v Gate Charge



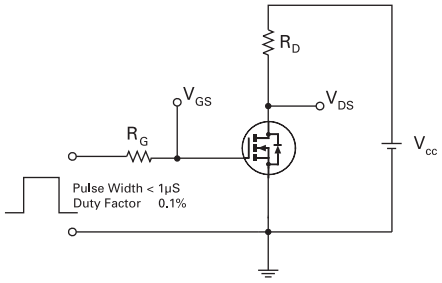
Basic Gate Charge Waveform



Gate Charge Test Circuit



Switching Time Waveforms



Switching Time Test Circuit

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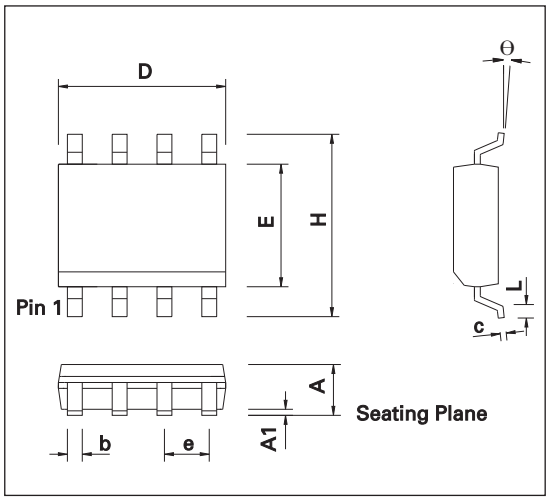
ZXMN2A02N8

PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES
APPROX IN MILLIMETERS

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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