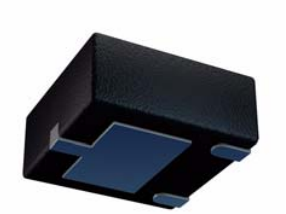
ZXMN2F34MA
20V N-channel enhancement mode MOSFET in DFN322

Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ (Ω)	I_D (A)
20	0.060 @ V_{GS}= 4.5V	8.5
	0.120 @ V_{GS}= 2.5V	

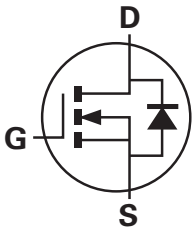


Description

This new generation Trench MOSFET from Zetex features low on-resistance achievable with low (2.5V) gate drive. The 2mm x 2mm DFN package provides superior thermal performance versus alternative leaded devices

Features

- Low on-resistance
- Superior thermal performance (versus to SOT23)
- 2.5V gate drive capability
- DFN 2x2 package

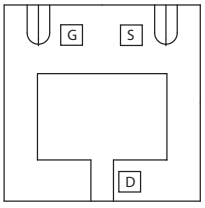


Applications

- Buck/Boost DC-DC Converters
- Motor Control
- LED Lighting

Ordering information

DEVICE	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN2F34MATA	7	8	3,000



Device marking

1M4

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain source voltage	V_{DSS}	20	V
Gate source voltage	V_{GS}	±12	V
Continous Drain Current @ V_{GS}=4.5; T_A=25°C(b) @ V_{GS}=4.5; T_A=70°C(b) @ V_{GS}=4.5; T_A=25°C(a) @ V_{GS}=4.5; T_A=25°C(d)	I_D	5.1 4.1 4.0 8.5	A A A A
Pulsed drain current(c)	I_{DM}	19	A
Continuous source current (body diode)(b)	I_S	3.1	A
Pulsed source current (body diode)(c)	I_{SM}	19	A
Power dissipation at T_A =25°C(a) Linear derating factor	P_D	1.35 10.8	W mW/°C
Power dissipation at T_A =25°C(b) Linear derating factor	P_D	2.2 17.8	W mW/°C
Power dissipation at T_A =25°C(d) Linear derating factor	P_D	6.6 52.9	W mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to 150	°C

Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient(a)	$R_{\Theta JA}$	92.5	°C/W
Junction to ambient(b)	$R_{\Theta JA}$	56	°C/W
Junction to lead(d)	$R_{\Theta JL}$	18.9	°C/W

NOTES:

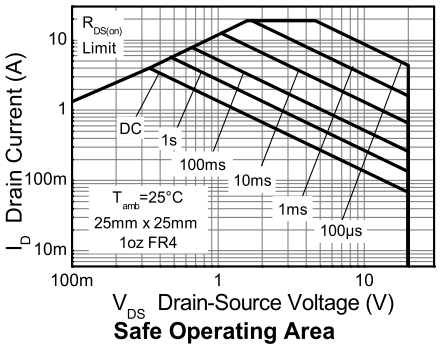
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on FR4 PCB measured at t≤ 5 sec.

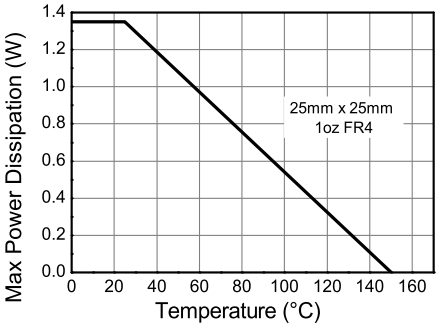
(c) Repetitive rating - 25mm x 25mm FR4 PCB, D=0.02, pulse width 300μs - pulse width limited by maximum junction temperature.

(d) Thermal resistance from junction to solder-point (at end of drain lead).

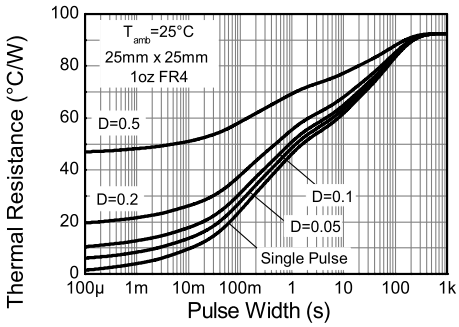
Thermal characteristics



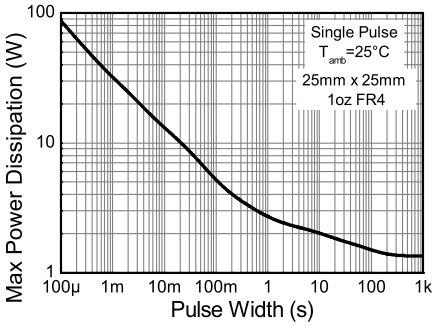
Safe Operating Area



Derating Curve



Transient Thermal Impedance



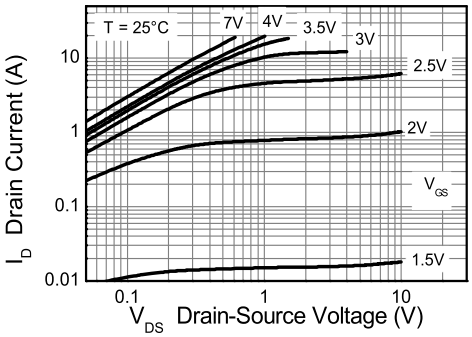
Pulse Power Dissipation

Electrical characteristics (at T_{amb} = 25°C unless otherwise stated)

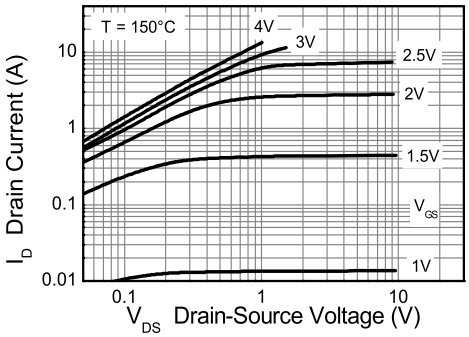
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Static						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	20			V	I_D= 250μA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}			1	μA	V_{DS}= 20V, V_{GS}=0V
Gate-Body leakage	I_{GSS}			100	nA	V_{GS}=±12V, V_{DS}=0V
Gate-Source threshold voltage	$V_{GS(th)}$	0.5	0.8	1.5	V	I_D= 250μA, V_{DS}=V_{GS}
Static Drain-Source on-state resistance (*)	$R_{DS(on)}$			0.060 0.120	Ω Ω	V_{GS}= 4.5V, I_D= 2.5A V_{GS}= 2.5V, I_D= 1.0A
Forward transconductance(*)(†)	g_{fs}		7.5		S	V_{DS}= 10V, I_D= 2.5A
Dynamic (†)						
Input capacitance	C_{iss}		277		pF	V_{DS}= 10V, V_{GS}=0V f=1MHz
Output capacitance	C_{oss}		65		pF	
Reverse transfer capacitance	C_{rss}		35		pF	
Switching (‡)(†)						
Turn-on-delay time	$t_{d(on)}$		2.65		ns	V_{DD}= 10V, V_{GS}= 4.5V I_D= 1A $R_G \approx 6.0\Omega$
Rise time	t_r		4.2		ns	
Turn-off delay time	$t_{d(off)}$		9.9		ns	
Fall time	t_f		5.1		ns	
Total gate charge	Q_g		2.8		nC	V_{DS}= 10V, V_{GS}= 4.5V I_D= 2.5A
Gate-Source charge	Q_{gs}		0.61		nC	
Gate Drain charge	Q_{gd}		0.63		nC	
Source-drain diode						
Diode forward voltage(*)	V_{SD}		0.73	1.2	V	I_S= 1.25A, V_{GS}=0V
Reverse recovery time(†)	t_{rr}		6.5		ns	T_j=25°C, I_F=1.65A di/dt=100A/μs
Reverse recovery charge(†)	Q_{rr}		1.4		nC	

NOTES:
(*) Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤2%.
(†) For design aid only, not subject to production testing.
(‡) Switching characteristics are independent of operating junction temperature.

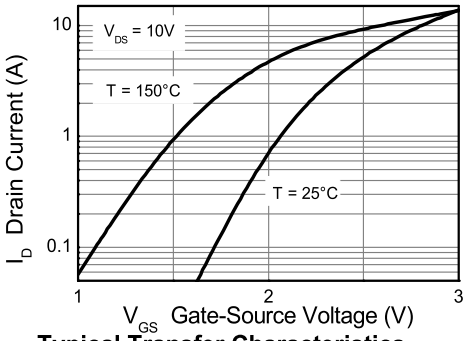
Typical characteristics



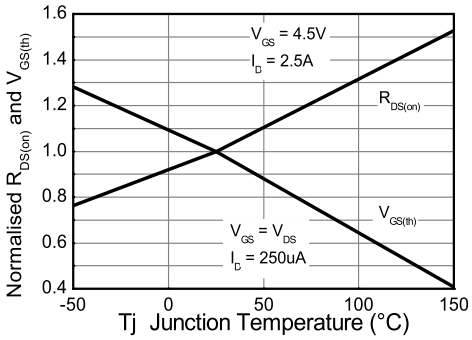
Output Characteristics



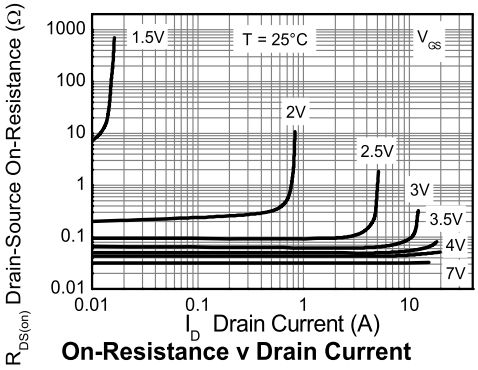
Output Characteristics



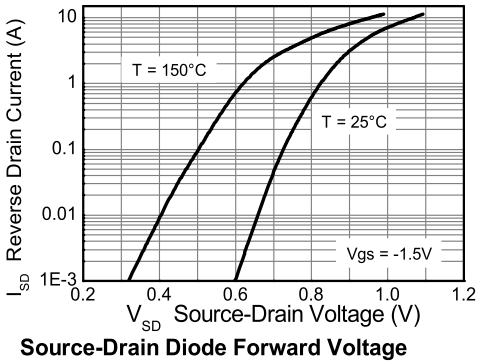
Typical Transfer Characteristics



Normalised Curves v Temperature

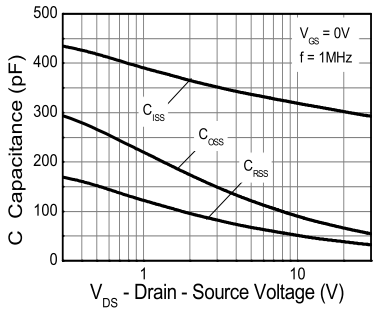


On-Resistance v Drain Current

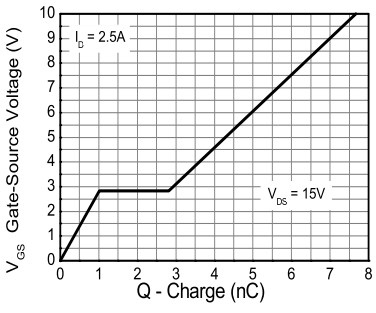


Source-Drain Diode Forward Voltage

Typical characteristics

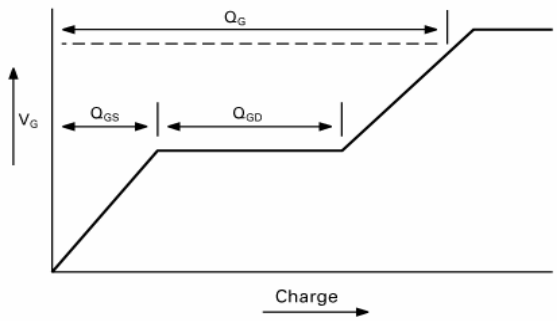


Capacitance v Drain-Source Voltage

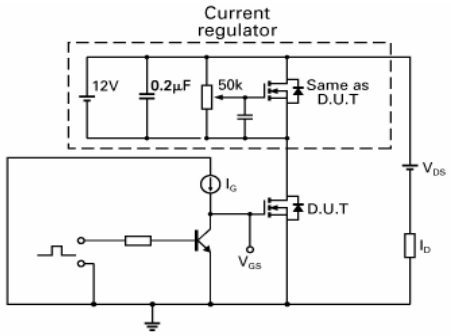


Gate-Source Voltage v Gate Charge

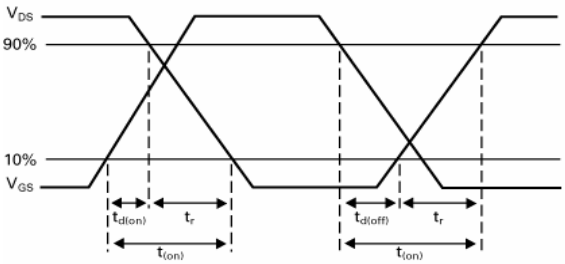
Test circuits



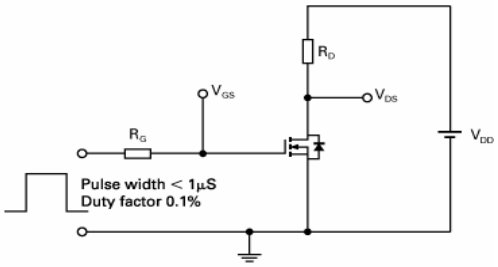
Basic gate charge waveform



Gate charge test circuit

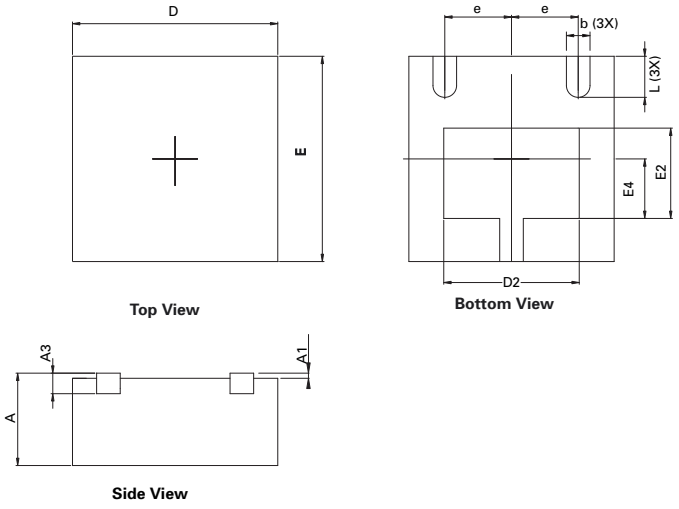


Switching time waveforms



Switching time test circuit

Package outline - DFN322



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.80	1.00	0.0315	0.0393	D2	1.22	1.42	0.0480	0.0559
A1		0.05		0.002	e	0.65 BSC.		0.02559 BSC	
A3	0.153	0.253	0.0060	0.0099	E	1.900	2.100	0.0748	0.0826
b	0.180	0.300	0.0071	0.0118	E2	0.780	0.990	0.0307	0.0389
D	1.900	2.100	0.0748	0.0826	E4	0.480	0.680	0.0189	0.0267
					L	0.300	0.500	0.0118	0.0196

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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