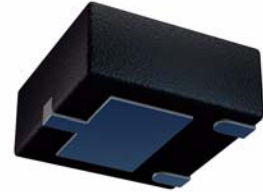


# ZXMN2F34MA

## 20V N-channel enhancement mode MOSFET in DFN322

### Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
20	0.060 @ $V_{GS} = 4.5V$	5.1
	0.120 @ $V_{GS} = 2.5V$	3.6

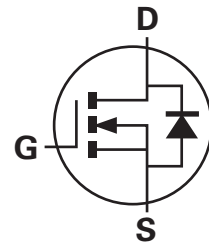


### Description

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

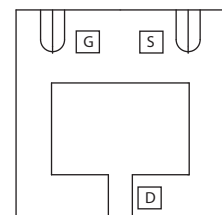


### Applications

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

### Ordering information

DEVICE	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN2F34MATA	7	8	3000



### Device marking

1M4

# ZXMN2F34MA

## Absolute maximum ratings

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

## Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	92.5	°C/W
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	56	°C/W
Junction to lead <sup>(d)</sup>	$R_{\theta JL}$	19	°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.

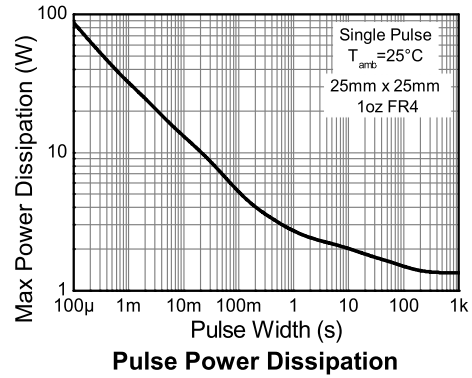
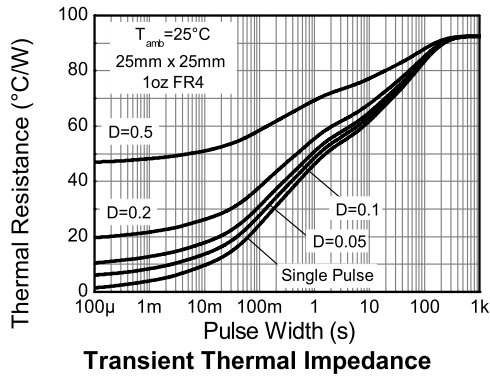
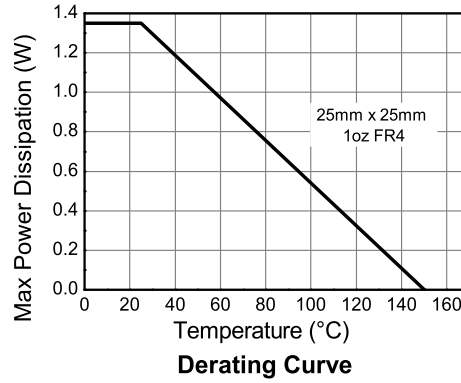
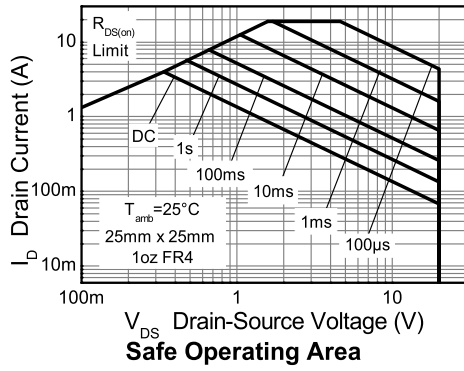
(b) For a device surface mounted on FR4 PCB measured at  $t \leq 5$  sec.

(c) Repetitive rating - 25mm x 25mm FR4 PCB,  $D=0.02$ , pulse width 300 $\mu\text{s}$  - pulse width limited by maximum junction temperature.

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

# ZXMN2F34MA

## Thermal characteristics



# ZXMN2F34MA

## Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

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

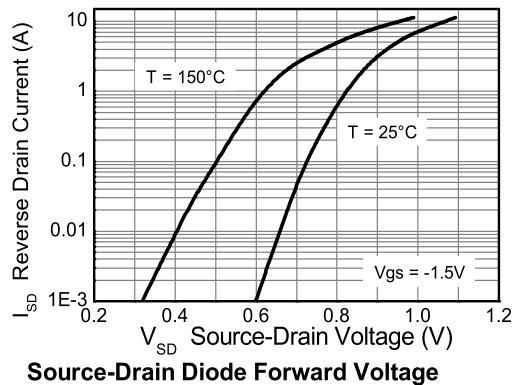
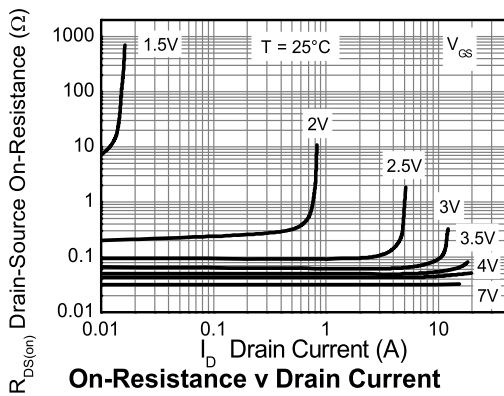
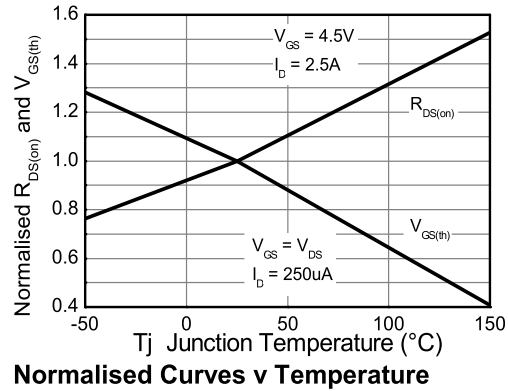
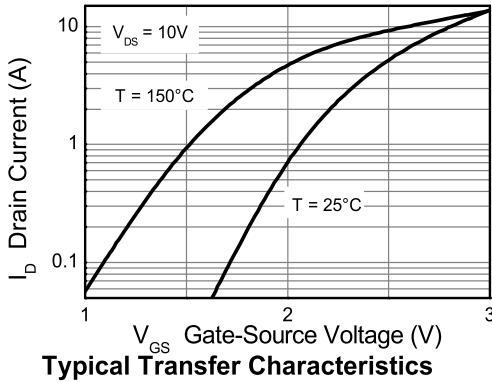
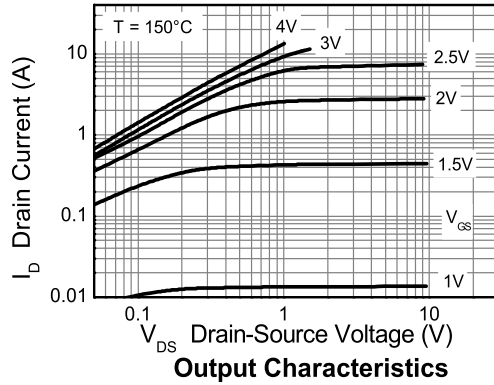
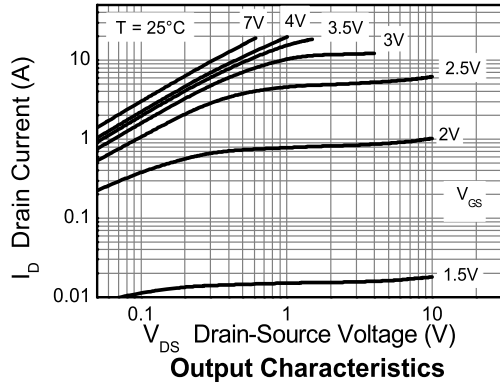
### NOTES:

(\*) Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

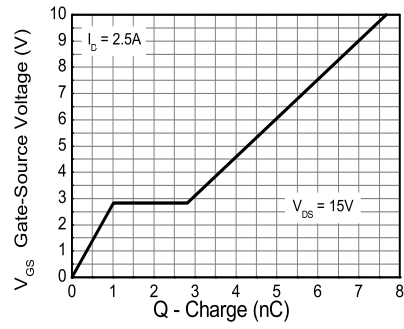
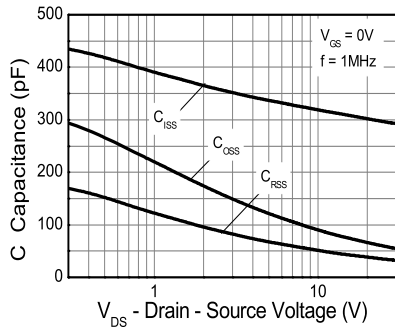
(†) For design aid only, not subject to production testing.

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

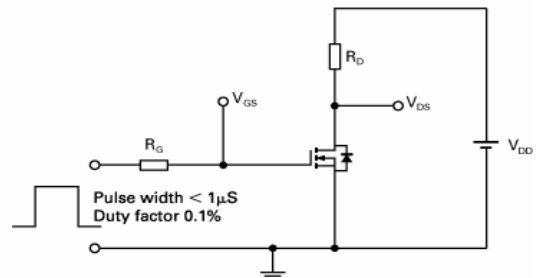
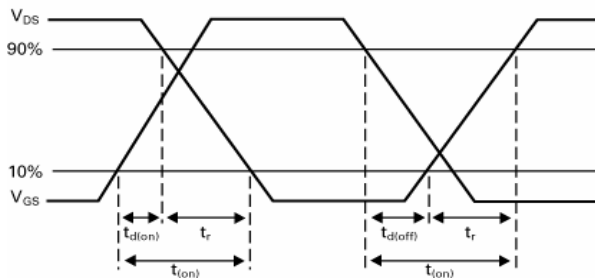
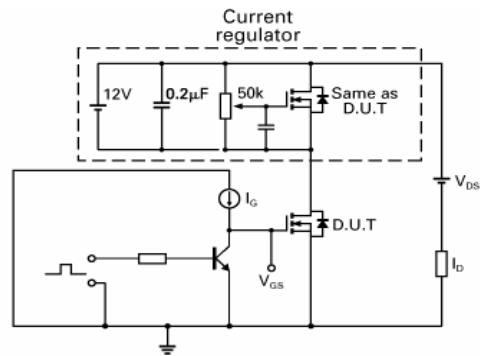
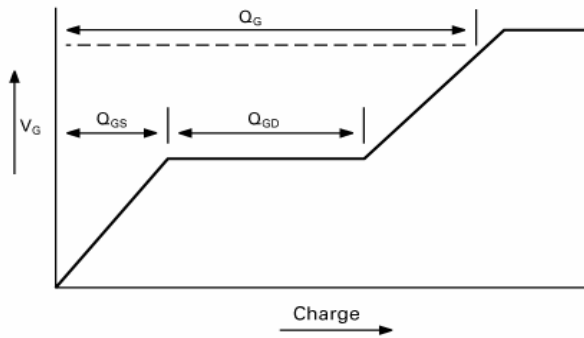
## Typical characteristics



## Typical characteristics

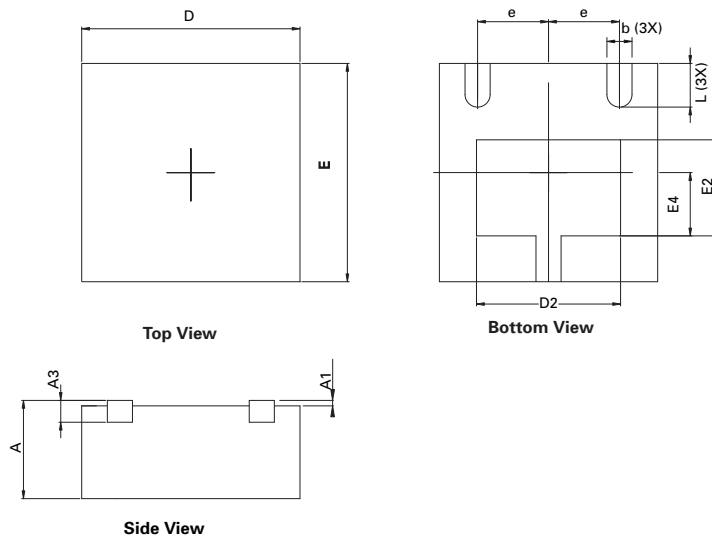


## Test circuits



# ZXMN2F34MA

## 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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