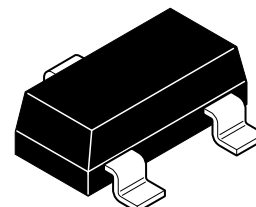


ZXMN6A07F

60V SOT23 N-channel enhancement mode mosfet

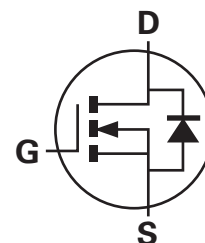
Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ (Ω)	I_D (A)
60	0.250 @ $V_{GS} = 10V$	1.4
	0.350 @ $V_{GS} = 4.5V$	1.2



Description

This new generation trench MOSFET from Zetex utilizes a unique structure combining the benefits of low on-state resistance with fast switching speed.

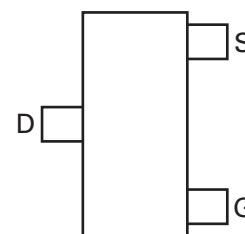


Features

- Low on-resistance
- Fast switching speed
- Low threshold
- SOT23 package

Applications

- DC-DC converters
- Power management functions
- Relay and solenoid driving
- Motor control



Top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN6A07FTA	7	8	3,000

Device marking

7N6

ZXMN6A07F

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DSS}	60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current @ $V_{GS} = 10V$; $T_{amb} = 25^{\circ}C^{(b)}$ @ $V_{GS} = 10V$; $T_{amb} = 70^{\circ}C^{(b)}$ @ $V_{GS} = 10V$; $T_{amb} = 25^{\circ}C^{(a)}$	I_D	1.4 1.1 1.2	A
Pulsed drain current ^(c)	I_{DM}	6.9	A
Continuous source current (body diode) ^(b)	I_S	1	A
Pulsed source current (body diode) ^(c)	I_{SM}	6.9	A
Power dissipation at $T_{amb} = 25^{\circ}C^{(a)}$	P_D	625	mW
Linear derating factor		5	mW/ $^{\circ}C$
Power dissipation at $T_{amb} = 25^{\circ}C^{(b)}$	P_D	806	mW
Linear derating factor		6.4	mW/ $^{\circ}C$
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	$^{\circ}C$

Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient	$R_{\theta JA}$	200	$^{\circ}C/W$
Junction to ambient	$R_{\theta JA}$	155	$^{\circ}C/W$

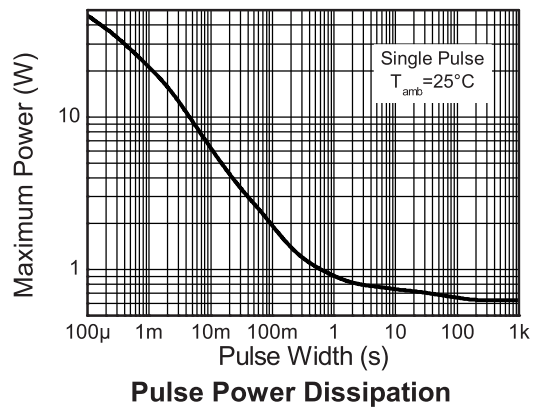
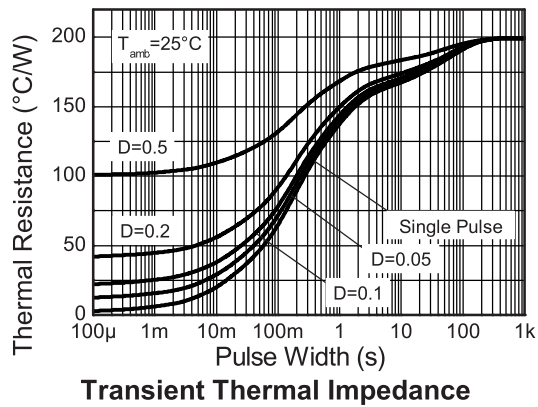
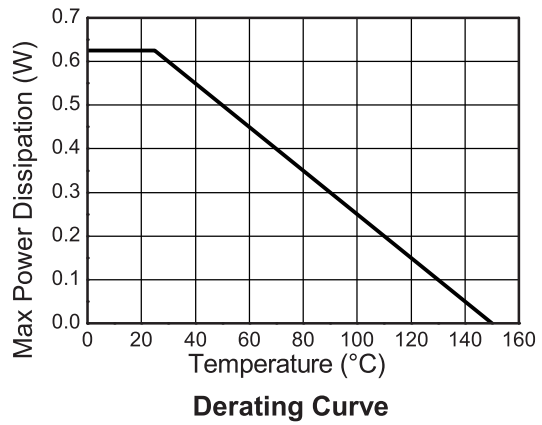
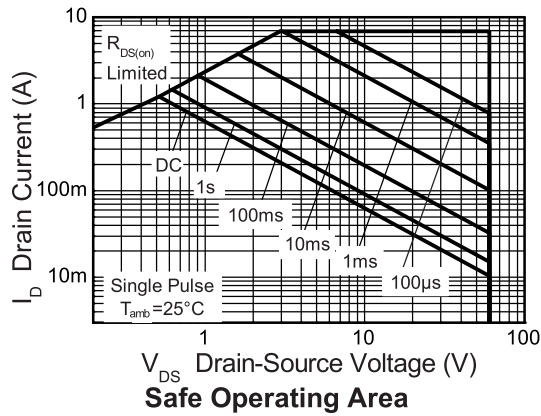
NOTES:

(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 μs - pulse width limited by maximum junction temperature.

Thermal characteristics



ZXMN6A07F

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Static						
Drain-source breakdown voltage	V _{(BR)DSS}	60			V	I _D = 250μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 60V, 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		3.0	V	I _D = 250μA, V _{DS} =V _{GS}
Static drain-source on-state resistance (*)	R _{DS(on)}			0.250	Ω	V _{GS} = 10V, I _D = 1.8A
				0.350	Ω	V _{GS} = 4.5V, I _D = 1.3A
Forward transconductance ^(*) (‡)	g _{fs}		2.3		S	V _{DS} = 15V, I _D = 1.8A
Dynamic(‡)						
Input capacitance	C _{iss}		166		pF	V _{DS} = 40V, V _{GS} =0V f=1MHz
Output capacitance	C _{oss}		19.5		pF	
Reverse transfer capacitance	C _{rss}		8.7		pF	
Switching (†) (‡)						
Turn-on-delay time	t _{d(on)}		1.8		ns	V _{DD} = 30V, V _{GS} = 10V I _D = 1.8A R _G ≈ 6.0Ω
Rise time	t _r		1.4		ns	
Turn-off delay time	t _{d(off)}		4.9		ns	
Fall time	t _f		2.0		ns	
Total gate charge	Q _g		1.65			V _{DS} = 30V, V _{GS} = 5V I _D = 1.8A
Total gate charge	Q _g		3.2		nC	V _{DS} = 30V, V _{GS} = 10V I _D = 1.8A
Gate-source charge	Q _{gs}		0.67		nC	
Gate drain charge	Q _{gd}		0.82		nC	
Source-drain diode						
Diode forward voltage ^(*)	V _{SD}		0.80	0.95	V	T _j =25°C, I _S = 0.45A, V _{GS} =0V
Reverse recovery time(‡)	t _{rr}		20.5		ns	T _j =25°C, I _F = 1.8A, di/dt=100A/μs
Reverse recovery charge(‡)	Q _{rr}		21.3		nC	

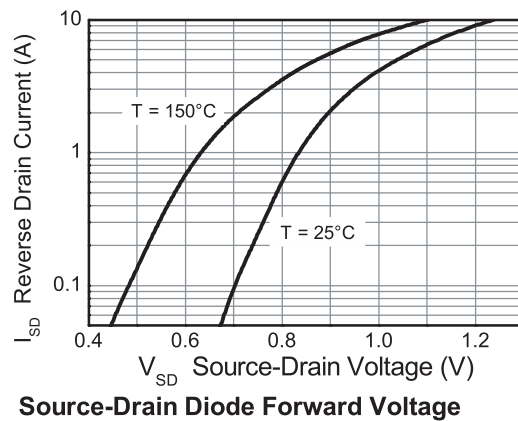
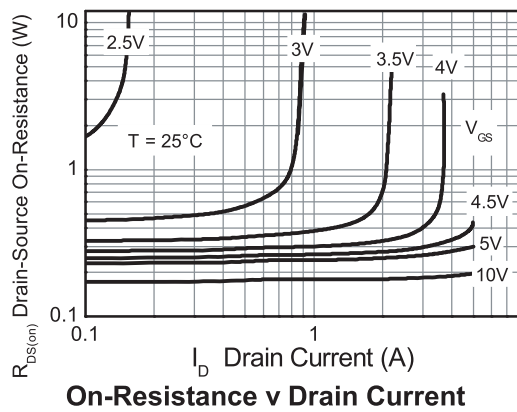
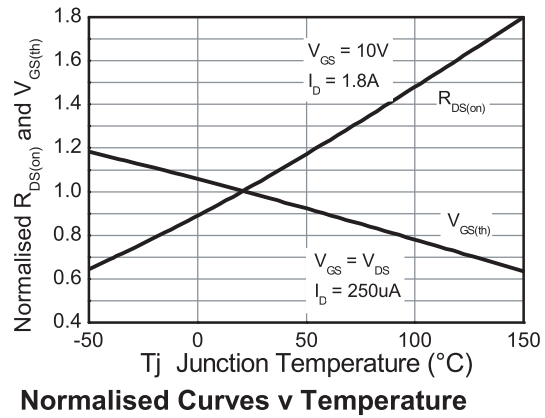
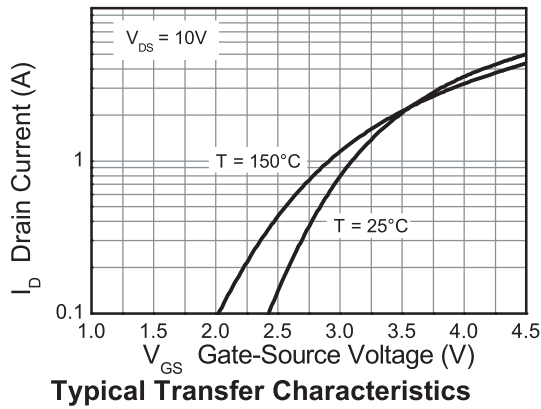
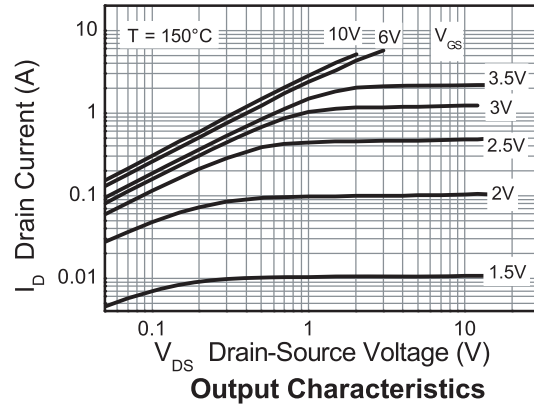
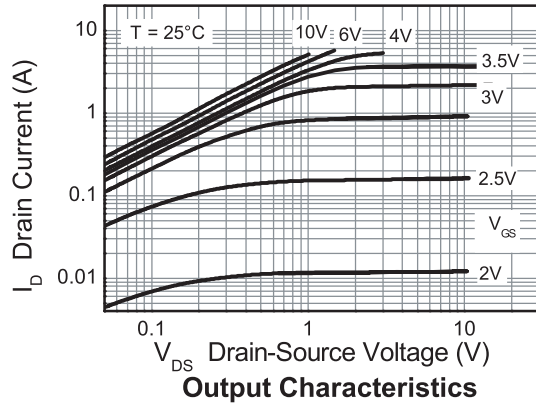
NOTES:

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

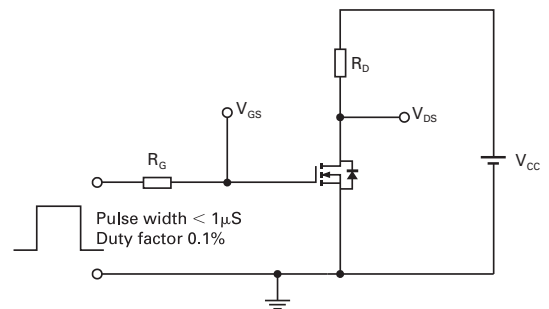
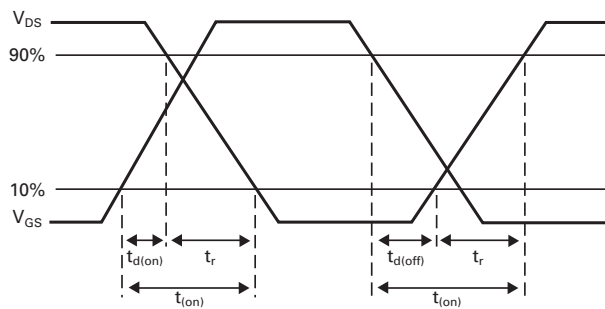
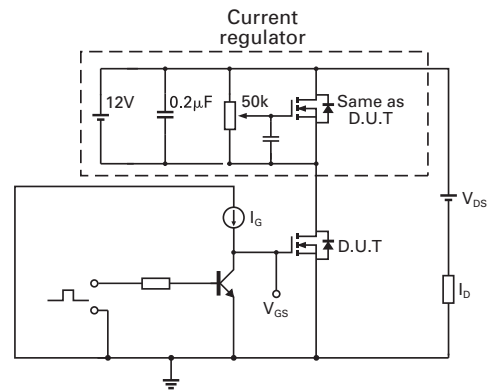
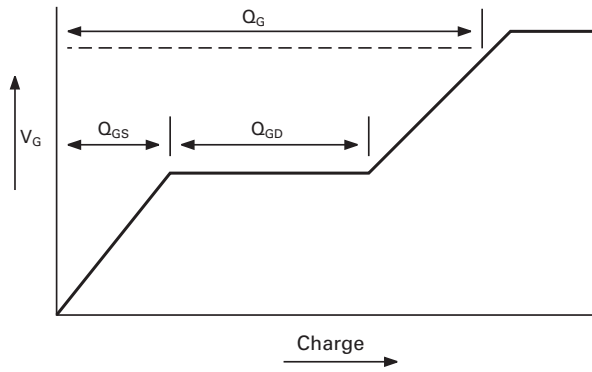
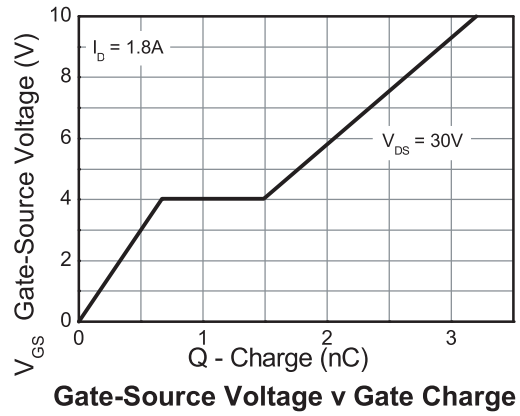
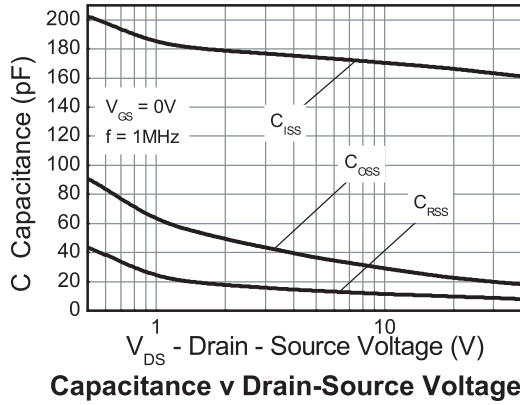
(†) Switching characteristics are independent of operating junction temperature.

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

Typical characteristics

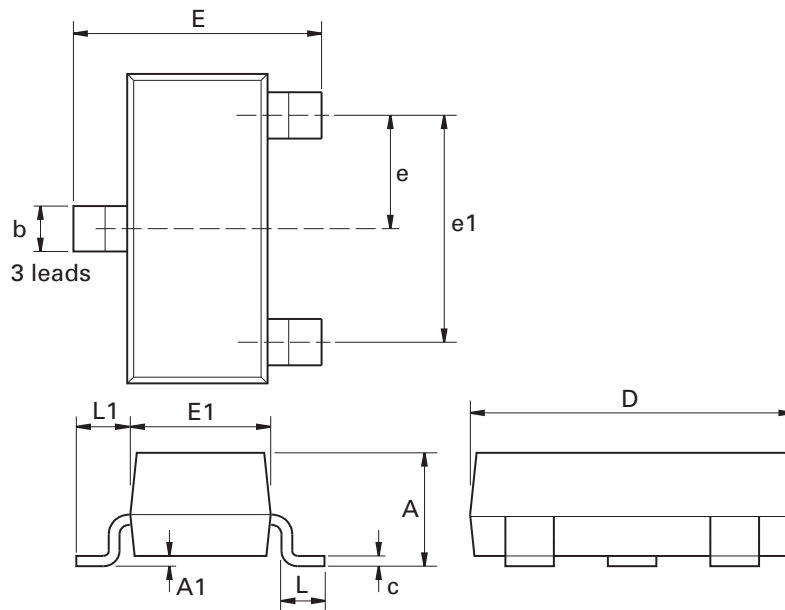


Typical characteristics



ZXMN6A07F

Package outline - SOT23



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
C	0.085	0.120	0.003	0.008	L	0.25	0.62	0.018	0.024
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.0375 NOM		-	-	-	-	-

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

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