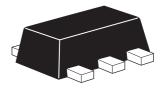


ZXMN6A07Z 60V SOT89 N-channel enhancement mode mosfet

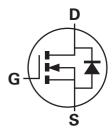
Summary

V _{(BR)DSS}	$R_{DS(on)}\left(\Omega\right)$	I _D (A)
60	0.250 @ V _{GS} = 10V	2.5
	0.350 @ V _{GS} = 4.5V	2.1



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
- SOT89 package

Applications

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

D G

Top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN6A07ZTA	7	12	1,000

Device marking

7N6

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°C ^(b)	I _D	2.5	А
@ V _{GS} = 10V; T _{amb} =70°C ^(b)		2.0	
@ V _{GS} = 10V; T _{amb} =25°C ^(a)		1.9	
Pulsed drain current ^(c)	I _{DM}	6.8	Α
Continuous source current (body diode)(b)	I _S	3.3	А
Pulsed source current (body diode)(c)	I _{SM}	6.8	А
Power dissipation at T _{amb} =25°C ^(a)	P_{D}	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T _{amb} =25°C ^(b)	P_{D}	2.6	W
Linear derating factor		21	mW/°C

Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient	$R_{\Theta JA}$	83.3	°C/W
Junction to ambient	$R_{\Theta JA}$	47.4	°C/W

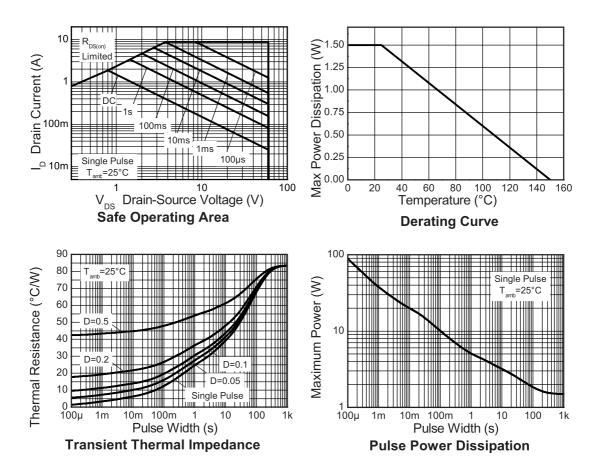
NOTES:

⁽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 10 sec.

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

Thermal characteristics



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

Parameter	Symbol	Min.	Тур.	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	μΑ	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 = 250 μ A, V_{DS} = V_{GS}
Static drain-source on-state resistance (*)	R _{DS(on)}			0.250 0.350	Ω Ω	V _{GS} = 10V, I _D = 1.8A V _{GS} = 4.5V, I _D = 1.3A
Forward transconductance(*)(‡)	9 _{fs}		2.3		S	V _{DS} = 15V, I _D = 1.8A
Dynamic ^(‡)		I	I			
Input capacitance	C _{iss}		166		pF	V _{DS} = 40V, V _{GS} =0V
Output capacitance	C _{oss}		19.5		pF	f=1MHz
Reverse transfer capacitance	C _{rss}		8.7		рF	
Switching (†) (‡)	•	l	l	•		
Turn-on-delay time	t _{d(on)}		1.8		ns	V _{DD} = 30V, V _{GS} = 10V
Rise time	t _r		1.4		ns	I _D = 1.8A
Turn-off delay time	t _{d(off)}		4.9		ns	$R_{G} \approx 6.0\Omega$
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
Gate-source charge	Q _{gs}		0.67		nC	I _D = 1.8A
Gate drain charge	Q _{gd}		0.82		nC	
Source-drain diode						
Diode forward voltage ^(*)	V_{SD}		0.80	0.95	>	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,
Reverse recovery charge ^(‡)	Q _{rr}		21.3		nC	di/dt=100A/μs

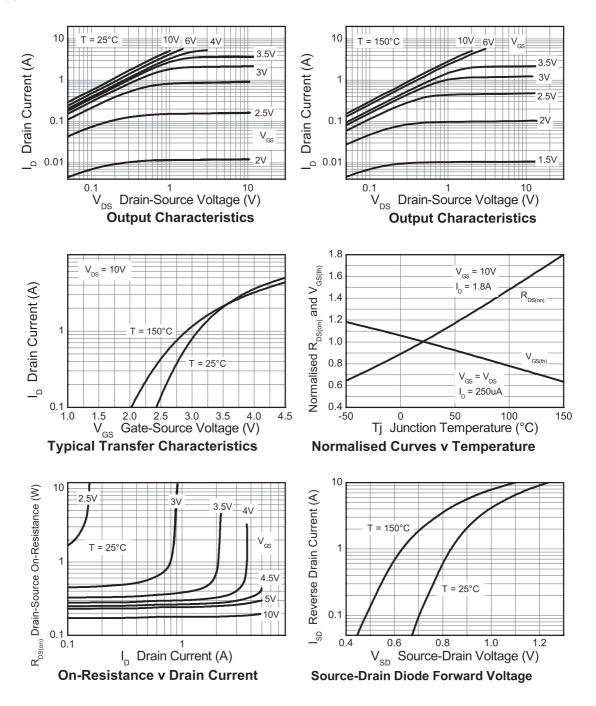
NOTES:

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

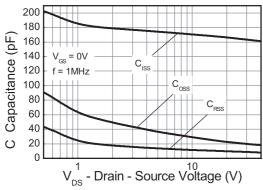
^(†) Switching characteristics are independent of operating junction temperature.

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

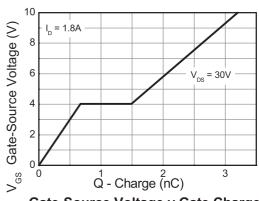
Typical characteristics



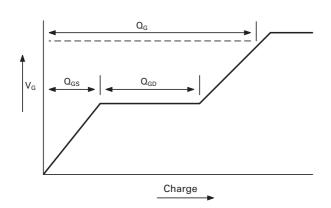
Typical characteristics



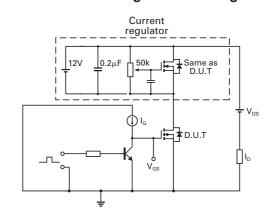
Capacitance v Drain Source Voltage



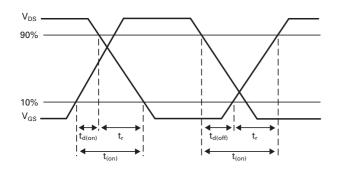
Gate-Source Voltage v Gate Charge



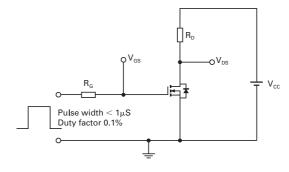
Basic gate charge waveform



Gate charge test circuit



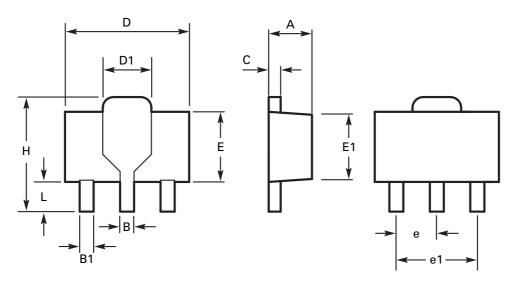
Switching time waveforms



Switching time test circuit

ZXMN6A07Z

Package outline - SOT89



DIM	Millin	neters	Inc	hes	DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
Α	1.40	1.60	0.550	0.630	Е	2.29	2.60	0.090	0.102
В	0.44	0.56	0.017	0.022	E1	2.13	2.29	0.084	0.090
B1	0.36	0.48	0.014	0.019	е	1.50 BSC		0.059 BSC	
С	0.35	0.44	0.014	0.017	e1	3.00 BSC		0.118 BSC	
D	4.40	4.60	0.173	0.181	Н	3.94	4.25	0.155	0.167
D1	1.62	1.83	0.064	0.072	L	0.89	1.20	0.035	0.047

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

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