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USE DMP2022LSS

Lead-free

ZXM66P02N8

20V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D
-20V	0.025Ω	-8.0A

Features and Benefits

- High pulse current handling in linear mode
- Low on-resistance
- Fast switching speed
- Low gate drive
- Low profile SOIC package

Description and Applications

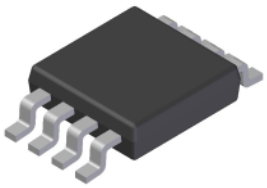
This high density MOSFET utilizes a unique structure that combines the benefits of a low on-resistance with fast switching speed. This makes it ideal for high efficiency, low voltage power management applications. Compared to trenchFET technology, this MOSFET structure has an intrinsically higher pulse current handling capability in linear mode.

- Inrush protection circuits
- DC-DC Converters
- Power management functions
- Disconnect switches
- Motor control

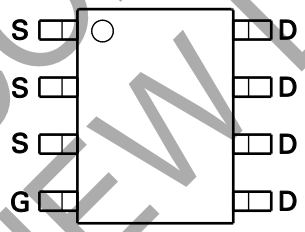
Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See diagram below
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.074 grams (approximate)

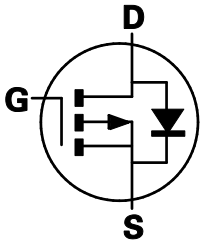
SO-8



Top View



Top View



Equivalent Circuit

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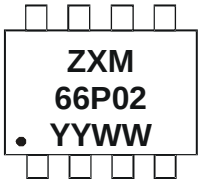
Ordering Information (Note 1)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXM66P02N8TA	See below	7	12	500

Notes: 1. For packaging details, go to our website.

Marking Information



ZXM = Product Type Marking Code, Line 1
66P02 = Product Type Marking Code, Line 2
YYWW = Date Code Marking
YY = Year (ex: 09 = 2009)
WW = Week (01-52)

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Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source voltage			V_{DSS}	-20	V
Gate-Source voltage			V_{GS}	±12	V
Continuous Drain current	V_{GS} = 4.5V	(Note 3)	I_D	-8.0	A
		T_A = 70°C (Note 3)		-6.5	
		(Note 2)		-6.4	
Pulsed Drain current		(Note 4)	I_{DM}	-28	A
Continuous Source current (Body diode)		(Note 3)	I_S	-4.15	A
Pulsed Source current (Body diode)		(Note 4)	I_{SM}	-28	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Power dissipation	(Note 2)	P_D	1.56	W
Linear derating factor			12.5	mW/°C
	(Note 3)		2.5	W
			20	mW/°C
Thermal Resistance, Junction to Ambient	(Note 2)	$R_{\theta JA}$	80	°C/W
	(Note 3)		50	
Operating and storage temperature range		T_J, T_{STG}	-55 to 150	°C

Notes: 2. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
3. Same as note (3), except the device is measured at t ≤ 10 sec.
4. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.05, pulse width 10µs – pulse width limited by maximum junction temperature.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	I_D = -250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	µA	V_{DS} = -16V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	-100	nA	V_{GS} = ±12V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	-0.7	—	—	V	I_D = -250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 5)	$R_{DS\ (ON)}$	—	—	0.025	Ω	V_{GS} = -4.5V, I_D = -3.2A
				0.045		V_{GS} = -2.5V, I_D = -2.7A
Forward Transconductance (Notes 5 & 6)	g_{fs}	—	13.3	—	S	V_{DS} = -10V, I_D = -3.2A
Diode Forward Voltage (Note 5)	V_{SD}	—	—	0.95	V	I_S = -3.2A, V_{GS} = 0V
Reverse recovery time (Note 6)	t_{rr}		23.1	—	ns	I_F = -3.2A, di/dt = 100A/µs
Reverse recovery charge (Note 6)	Q_{rr}	—	12.2	—	nC	
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	—	2068	—	pF	V_{DS} = -15V, V_{GS} = 0V F = 1MHz
Output Capacitance	C_{oss}	—	1038	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	506	—	pF	
Total Gate Charge (Note 7)	Q_g	—	43.3	—	nC	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.2A
Gate-Source Charge (Note 7)	Q_{gs}	—	3.5	—	nC	
Gate-Drain Charge (Note 7)	Q_{gd}	—	21.3	—	nC	
Turn-On Delay Time (Note 7)	$t_{D(on)}$	—	14.0	—	ns	V_{DD} = -10V, V_{GS} = -5V I_D = -3.2A, R_G = 6.0Ω
Turn-On Rise Time (Note 7)	t_r	—	44.3	—	ns	
Turn-Off Delay Time (Note 7)	$t_{D(off)}$	—	118.4	—	ns	
Turn-Off Fall Time (Note 7)	t_f	—	98.4	—	ns	

Notes: 5. Measured under pulsed conditions. Pulse width ≤ 300µs; duty cycle ≤ 2%
6. For design aid only, not subject to production testing.
7. Switching characteristics are independent of operating junction temperatures.

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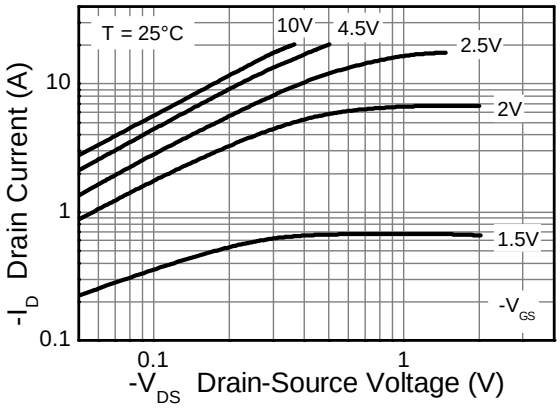
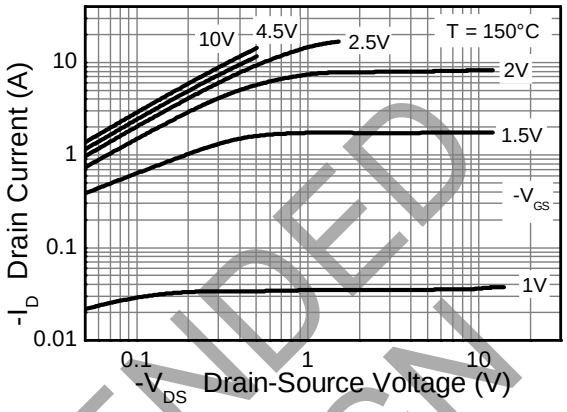
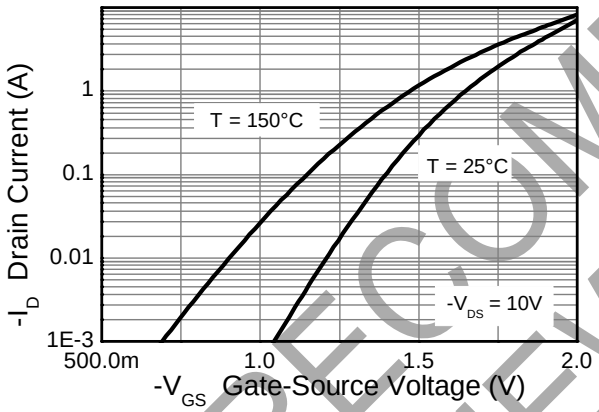
Typical Characteristics



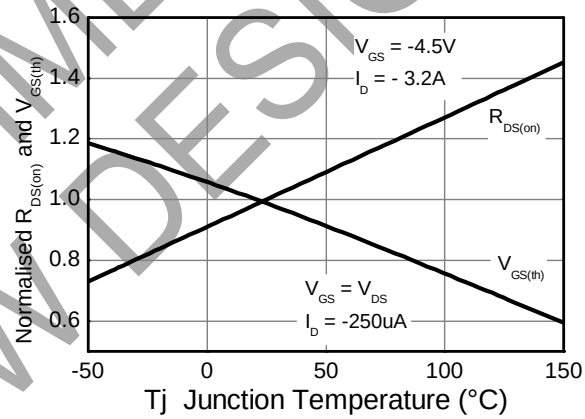
Output Characteristics



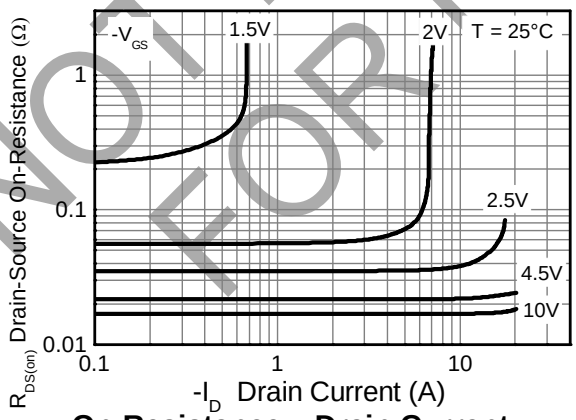
Output Characteristics



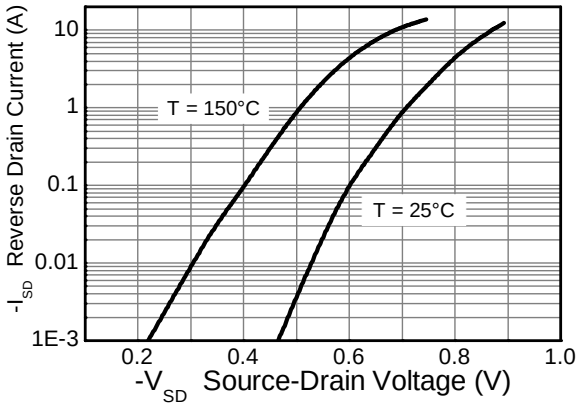
Typical Transfer Characteristics



Normalised Curves v Temperature



On-Resistance v Drain Current



Source-Drain Diode Forward Voltage

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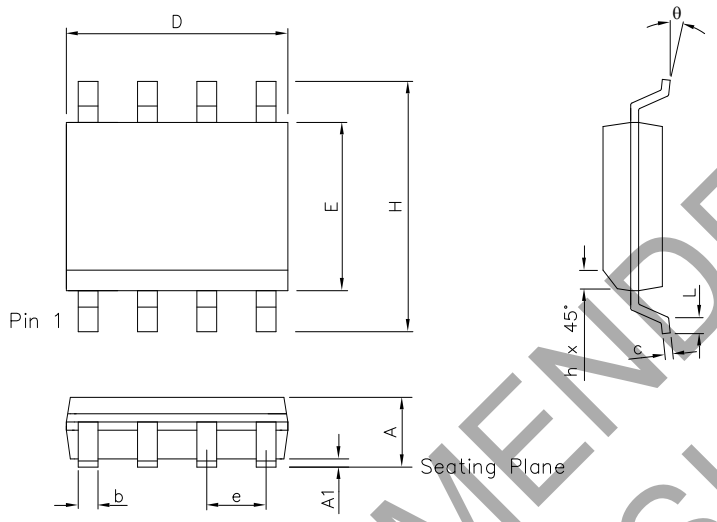
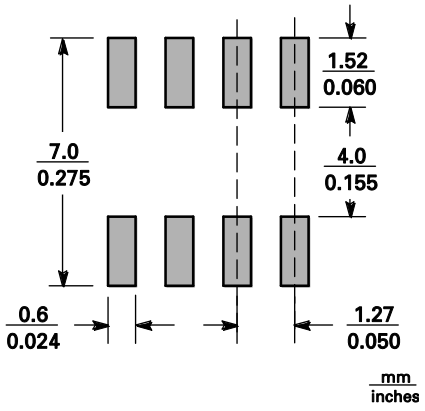
Package Outline Dimensions



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.053	0.069	1.35	1.75	e	0.050 BSC		1.27 BSC	
A1	0.004	0.010	0.10	0.25	b	0.013	0.020	0.33	0.51
D	0.189	0.197	4.80	5.00	c	0.008	0.010	0.19	0.25
H	0.228	0.244	5.80	6.20	θ	0°	8°	0°	8°
E	0.150	0.157	3.80	4.00	h	0.010	0.020	0.25	0.50
L	0.016	0.050	0.40	1.27	-	-	-	-	-

Suggested Pad Layout



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