

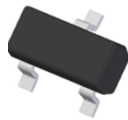
Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
20V	45mΩ @ V _{GS} = 4.5V	4.9A
	65mΩ @ V _{GS} = 2.5V	4.1A

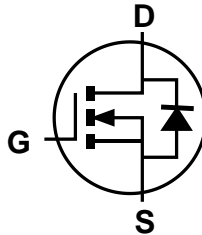
Description and Applications

This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

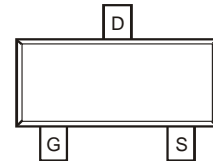
- LED lighting
- Charging applications in portable equipment
- DC-DC converters
- Motor controls



Top View



Internal Schematic




Top View

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The ZXMN2F30FHQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

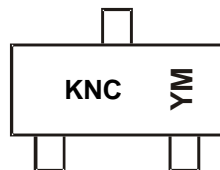
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish —Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Terminals Connections: See Diagram Below
- Weight: 0.009 grams (Approximate)

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
ZXMN2F30FHQTA	SOT23	3,000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



KNC = Product Type Marking Code
YM = Date Code Marking
Y or Y= Year (ex: M = 2025)
M = Month (ex: 9 = September)

Date Code Key

Year	2016	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	D	-	M	N	P	R	S	T	U	V	W	X
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units	
Drain-Source Voltage			V _{DSS}	20	V	
Gate-Source Voltage			V _{GSS}	±12	V	
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	T _A = +25°C	I _D	4.9	A	
		T _A = +70°C		4.0		
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	1.6	A	
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			I _{DM}	22.6	A	

Thermal Characteristics

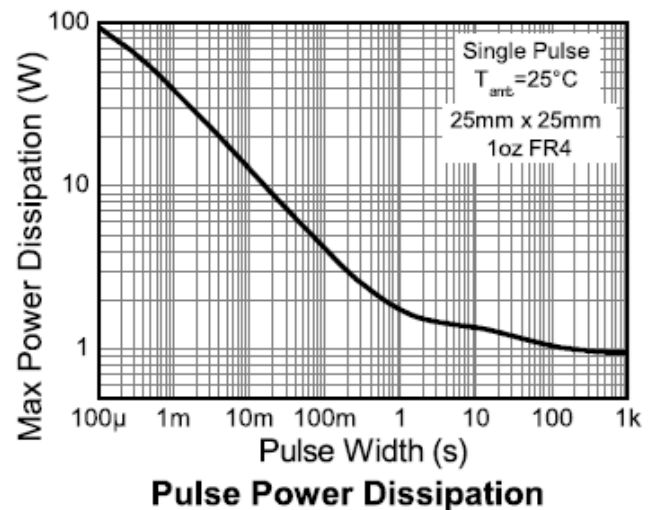
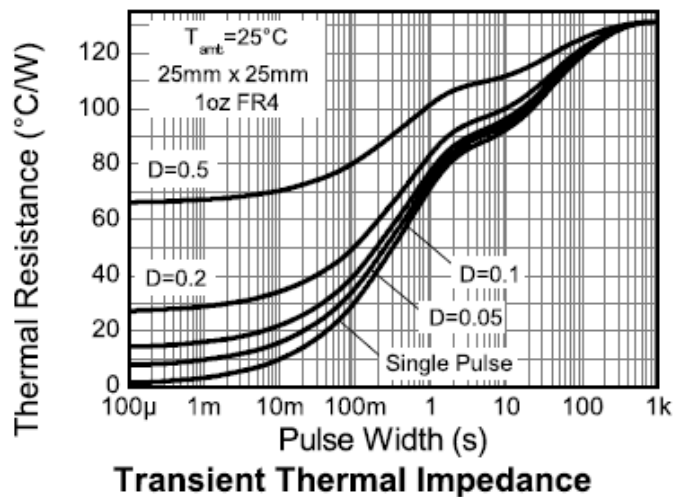
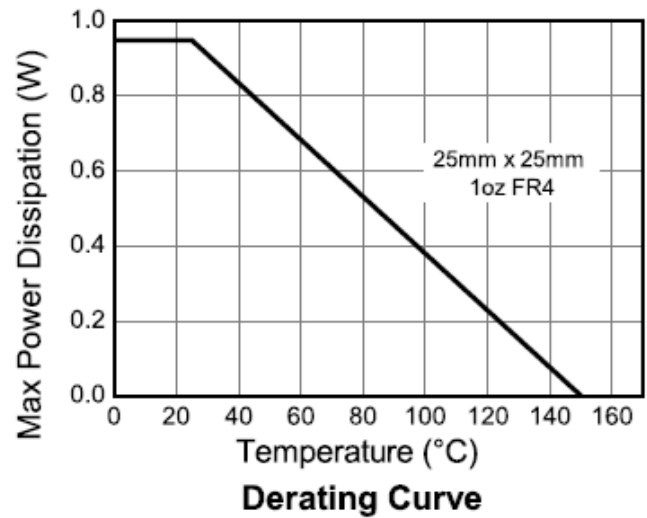
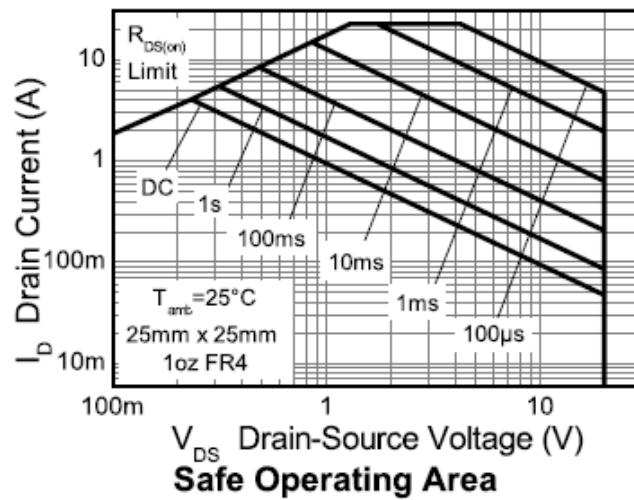
Characteristic			Symbol	Value	Units
Total Power Dissipation (Note 5)			P _D	0.96	W
Thermal Resistance, Junction to Ambient (Note 5)		Steady State	R _{θJA}	131	°C/W
Total Power Dissipation (Note 6)			P _D	1.4	W
Thermal Resistance, Junction to Ambient (Note 6)		Steady State	R _{θJA}	89	°C/W
Operating and Storage Temperature Range			T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	0.6	0.9	1.5	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	—	45	mΩ	V _{GS} = 4.5V, I _D = 2.5A
			—	65		V _{GS} = 2.5V, I _D = 2.0A
Diode Forward Voltage	V _{SD}	—	0.75	1.2	V	V _{GS} = 0V, I _S = 1.25A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	452	—	pF	V _{DS} = 10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	102	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	58	—	pF	
Total Gate Charge	Q _g	—	4.8	—	nC	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 3.5A
Gate-Source Charge	Q _{gs}	—	1	—	nC	
Gate-Drain Charge	Q _{gd}	—	1.2	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	2.9	—	ns	V _{DS} = 10V, V _{GS} = 4.5V, R _G = 6Ω, I _D = 1A
Turn-On Rise Time	t _R	—	5.6	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	19.4	—	ns	
Turn-Off Fall Time	t _F	—	10.2	—	ns	

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 - Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

Thermal Characteristics



Typical Characteristics

Fig1. $I_D - V_{DS}$

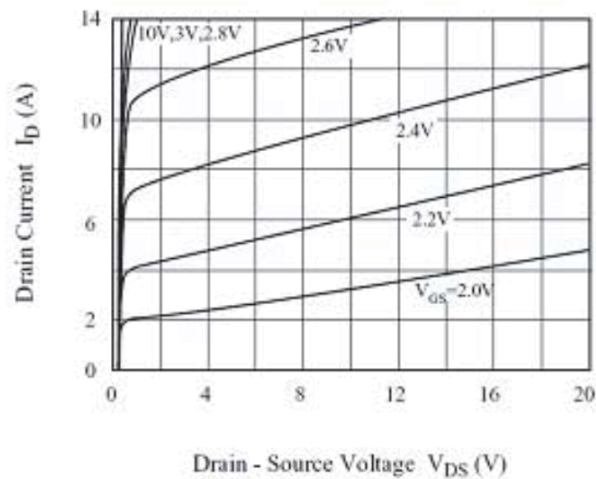


Fig2. $R_{DS(on)} - I_D$

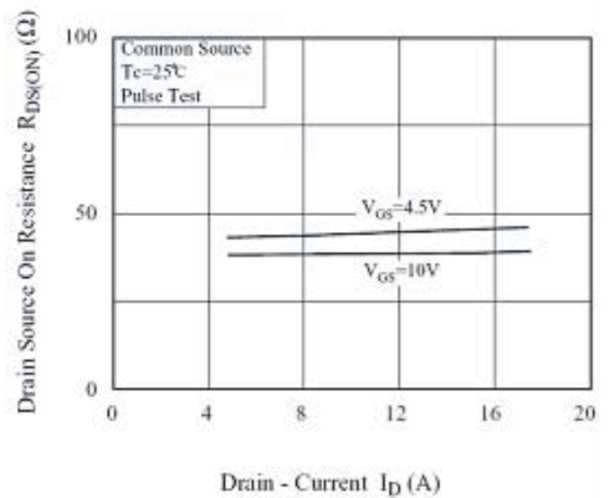


Fig3. $I_D - V_{GS}$

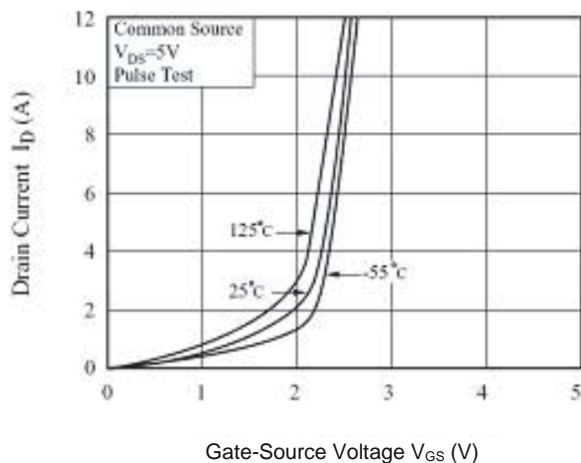


Fig4. $R_{DS(on)} - T_J$

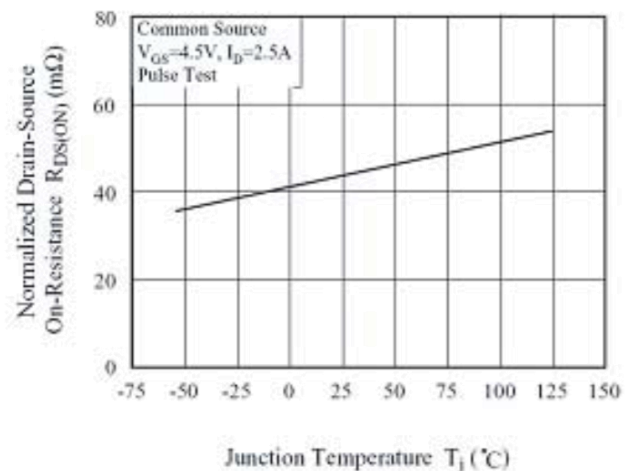


Fig5. $V_{th} - T_J$

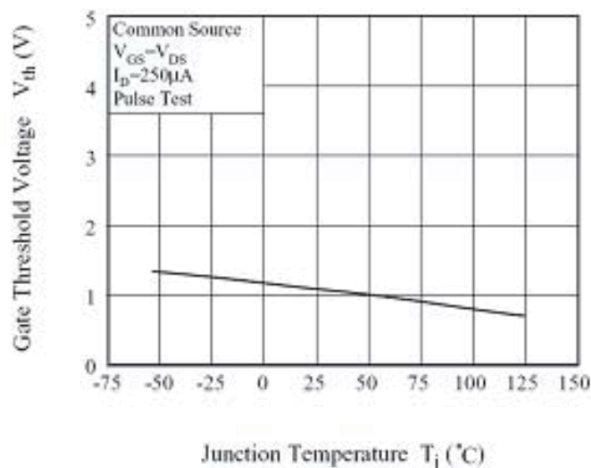
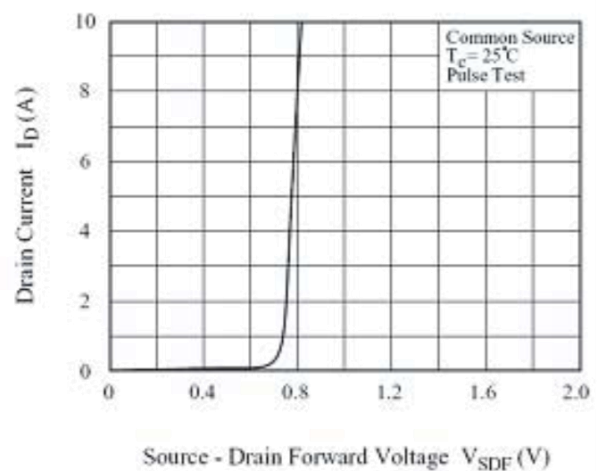


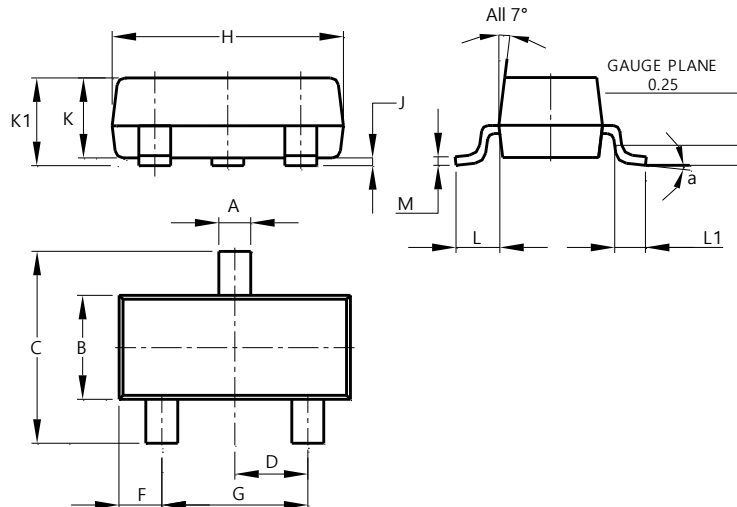
Fig6. $I_S - V_{SDF}$



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

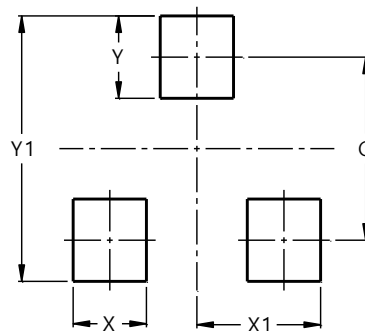


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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