



FML9N90 9Amps 900 Voltage N Channel MOSFET

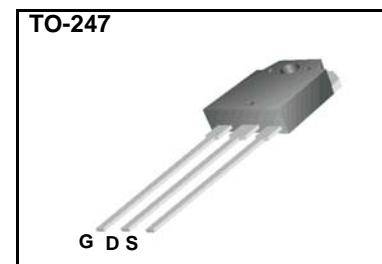
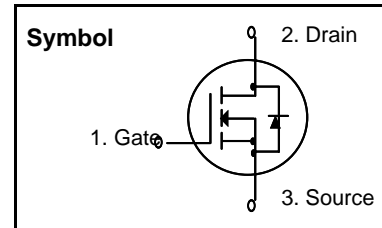
N-Channel MOSFET

Features

- $R_{DS(on)}$ (Max 1.4 Ω)@ $V_{GS}=10V$
- Gate Charge (Typical 47nC)
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150°C)

General Description

This Power MOSFET is produced using Wisdom's advanced planar stripe, DMOS technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies.



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain to Source Voltage	900	V
I_D	Continuous Drain Current(@ $T_C = 25^\circ C$)	9	A
	Continuous Drain Current(@ $T_C = 100^\circ C$)	5.7	A
I_{DM}	Drain Current Pulsed (Note 1)	36	A
V_{GS}	Gate to Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	900	mJ
E_{AR}	Repetitive Avalanche Energy (Note 1)	28	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	4.0	V/ns
P_D	Total Power Dissipation(@ $T_C = 25^\circ C$)	280	W
	Derating Factor above 25 °C	2.22	W/°C
T_{STG}, T_J	Operating Junction Temperature & Storage Temperature	- 55 ~ 150	°C
T_L	Maximum Lead Temperature for soldering purpose, 1/8 from Case for 5 seconds.	300	°C

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min.	Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	-	-	0.45	°C/W
$R_{\theta CS}$	Thermal Resistance, Case to Sink	-	0.24	-	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	-	40	°C/W



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Electrical Characteristics (T_C = 25 °C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	900	-	-	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature coefficient	I _D = 250uA, referenced to 25 °C	-	1.05	-	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} = 900V, V _{GS} = 0V	-	-	10	uA
		V _{DS} = 720V, T _C = 125 °C	-	-	100	uA
I _{GSS}	Gate-Source Leakage, Forward	V _{GS} = 30V, V _{DS} = 0V	-	-	100	nA
	Gate-source Leakage, Reverse	V _{GS} = -30V, V _{DS} = 0V	-	-	-100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	3.0	-	5.0	V
R _{DS(ON)}	Static Drain-Source On-state Resistance	V _{GS} = 10 V, I _D = 4.5A	-	1.10	1.4	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 25V, f = 1MHz	-	2200	-	pF
C _{oss}	Output Capacitance		-	190	-	
C _{rss}	Reverse Transfer Capacitance		-	16	-	
Dynamic Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = 450V, I _D = 9.0A, R _G = 25Ω (Note 4, 5)	-	55	-	ns
t _r	Rise Time		-	130	-	
t _{d(off)}	Turn-off Delay Time		-	110	-	
t _f	Fall Time		-	82	-	
Q _g	Total Gate Charge	V _{DS} = 720V, V _{GS} = 10V, I _D = 9.0A (Note 4, 5)	-	47	-	nC
Q _{gs}	Gate-Source Charge		-	15	-	
Q _{gd}	Gate-Drain Charge(Miller Charge)		-	20	-	

Source-Drain Diode Ratings and Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
I _S	Continuous Source Current	Integral Reverse p-n Junction Diode in the MOSFET	-	-	9	A
I _{SM}	Pulsed Source Current		-	-	36	
V _{SD}	Diode Forward Voltage	I _S = 9.0A, V _{GS} = 0V	-	-	1.4	V
t _{rr}	Reverse Recovery Time	I _S = 9.0A, V _{GS} = 0V, di _F /dt = 100A/us	-	550	-	ns
Q _{rr}	Reverse Recovery Charge		-	6.5	-	uC

※ NOTES

1. Repeativity rating : pulse width limited by junction temperature
2. L = 21mH, I_{AS} = 9.0A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. I_{SD} ≤ 9.0A, di/dt ≤ 200A/us, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C
4. Pulse Test : Pulse Width ≤ 300us, Duty Cycle ≤ 2%
5. Essentially independent of operating temperature.