



Wisdom Semiconductor

PROVISIONAL

VFET™

WFW28N60

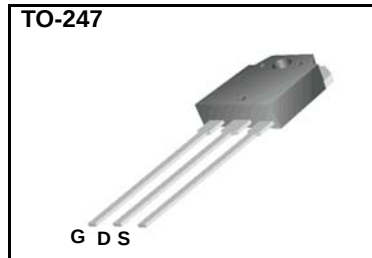
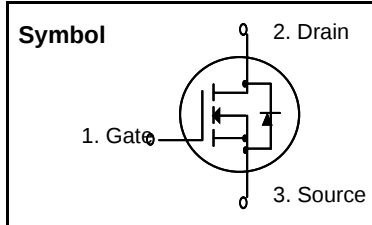
N-Channel MOSFET

Features

- $R_{DS(on)}$ (Max 0.22 Ω) @ $V_{GS}=10V$
- Gate Charge (Typical 120nC)
- 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	600	V
I_D	Continuous Drain Current(@ $T_C = 25^\circ C$)	28.0	A
	Continuous Drain Current(@ $T_C = 100^\circ C$)	17.0	A
I_{DM}	Drain Current Pulsed (Note 1)	112.0	A
V_{GS}	Gate to Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	1922	mJ
E_{AR}	Repetitive Avalanche Energy (Note 1)	34.7	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	4.5	V/ns
P_D	Total Power Dissipation(@ $T_C = 25^\circ C$)	347	W
	Derating Factor above 25 °C	2.86	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	-	-	0.36	°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	600	-	-	V
Δ BV _{DSS} / Δ T _J	Breakdown Voltage Temperature coefficient	I _D = 250uA, referenced to 25 °C	-	0.6	-	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} = 600V, V _{GS} = 0V	-	-	10	uA
		V _{DS} = 480V, 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	2.0	-	4.0	V
R _{DS(ON)}	Static Drain-Source On-state Resistance	V _{GS} =10 V, I _D = 14.0A	-	0.18	0.22	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =25V, f = 1MHz	-	4200	-	pF
C _{oss}	Output Capacitance		-	550	-	
C _{rss}	Reverse Transfer Capacitance		-	55	-	
Dynamic Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =300V, I _D =28.0A, R _G =25Ω (Note 4, 5)	-	120	-	ns
t _r	Rise Time		-	300	-	
t _{d(off)}	Turn-off Delay Time		-	220	-	
t _f	Fall Time		-	200	-	
Q _g	Total Gate Charge	V _{DS} =480V, V _{GS} =10V, I _D =28.0A (Note 4, 5)	-	120	-	nC
Q _{gs}	Gate-Source Charge		-	25	-	
Q _{gd}	Gate-Drain Charge(Miller Charge)		-	50	-	

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	-	-	28.0	A
I _{SM}	Pulsed Source Current		-	-	112.0	
V _{SD}	Diode Forward Voltage	I _S = 28.0A, V _{GS} = 0V	-	-	1.4	V
t _{rr}	Reverse Recovery Time	I _S = 28.0A, V _{GS} = 0V, dI _F /dt = 100A/us	-	500	-	ns
Q _{rr}	Reverse Recovery Charge		-	600	-	nC

※ NOTES

1. Repeatability rating : pulse width limited by junction temperature
2. L = 4.5mH, I_{AS} = 28.0A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25 °C
3. I_{SD} ≤ 28.0A, 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.