GL40N120A47P

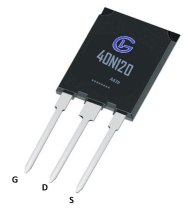
Silicon N-Channel Power MOSFET

$V_{DSS}(T_C=150℃)$	1200	V
I_D	40	A
$P_D(T_C=25℃)$	1040	W
$R_{DS(ON)TYPE}$	300	mΩ

General Description:

GL40N120A47P, the silicon N-channel Enhanced VDMOSFET is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency. The package form is TO-247PLUS, which accords with the RoHS standard.

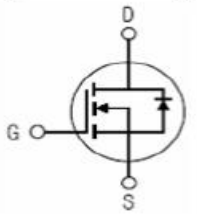
TO-247PLUS



Features:

- Fast Switching
- ESD Improved Capability
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Inner Equivalent Principium Chart



Applications:

- Power switch circuit of PC POWER

Absolute (Tc=25℃ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	1200	V
I_D	Continuous Drain Current	40	A
	Continuous Drain Current T_C=100 °C	28	A
I_{DM} [a1]	Pulsed Drain Current (Pulse Width Limited by T_{JM})	160	A
V_{GS}	Gate-to-Source Voltage	±30	V
E_{AS}	Single Pulse Avalanche Energy	4500	mJ
E_{Ar} [a1]	Avalanche Energy ,Repetitive	320	mJ
I_{AR} [a1]	Avalanche Current	40	A
dv/dt[a2]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	1040	W
	Derating Factor above 25°C	8.32	W/℃
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, −55 to 150	℃
T_L	Maximum Temperature for Soldering	300	℃

Caution Stresses greater than those in the "Absolute Maximum Ratings" may cause permanent damage to the device

Thermal Characteristics

GL40N120A47P

Silicon N-Channel Power MOSFET

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.121	℃/ W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	40	℃/ W

Electrical Characteristics (Tc= 25℃ unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	1200	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=1200V, V_{GS}=0V,T_a=25℃	--	--	10	μA
		V_{DS}=960V, V_{GS}=0V,T_a=125℃	--	--	1000	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+30V	--	--	200	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-30V	--	--	-200	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=10V,I_D=20A	--	300	400	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2.5	--	4.5	V
g_{fs}	Forward Trans conductance	V_{DS}=20V,I_D=20A	--	30	--	S
Pulse width<380μs; duty cycle<2%.						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=25V f=1.0MHz	--	16000	--	pF
C_{oss}	Output Capacitance		--	950	--	
C_{rss}	Reverse Transfer Capacitance		--	180	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D=20A,V_{DD}=600V V_{GS}=10V,R_g=10Ω	--	70	--	ns
t_r	Rise Time		--	52	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	90	--	
t_f	Fall Time		--	55	--	
Q_g	Total Gate Charge	I_D=20A,V_{DD}=600V V_{GS}=10V	--	310	--	nC
Q_{gs}	Gate to Source Charge		--	65	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	120	--	

Source-Drain Diode Characteristics				
Symbol	Parameter	Test Conditions	Rating	Units

			Min.	Typ.	Max.	
I_{SD}	Continuous Source Current (Body Diode)		--	--	40	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	160	A
V_{SD}	Diode Forward Voltage	I_S=40A,V_{GS}=0V	--	--	1.5	V
t_{rr}	Reverse Recovery Time	I_S=40A,T_j=25℃	--	410	--	ns
Q_{rr}	Reverse Recovery Charge	dI_F/dt=100A/μs, V_{GS}=0V	--	5.0	--	uC

a1: Repetitive rating; pulse width limited by maximum junction temperature

a2: I_{SD}=40A,di/dt≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃