



GL47J60ANH

GL Silicon N-Channel Super-Junction Power MOSFET

General Description

GL47J60ANH the silicon N-channel Enhanced VDMOSFETS, is obtained by the self-aligned Super-Junction 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-3P(N), which accords with the RoHS standard.

Features

- Proprietary New Super-Junction Technology
- $R_{DS(ON).typ.}=0.08\Omega$
- Low Gate Charge Minimize Switching Loss
- 100% Single Pulse avalanche energy Test

Applications

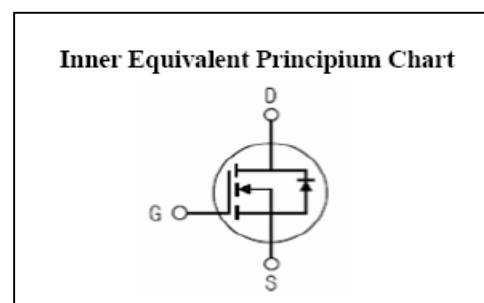
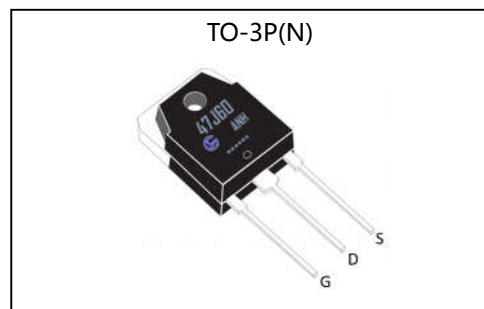
- Adaptor
- Charger
- SMPS Standby Power
- Switching Voltage Regulators

Absolute (T_c=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-to-Source Voltage	600	V
I _D	Continuous Drain Current	47	A
I _{DM}	Pulsed Drain Current	140	A
V _{GS}	Gate-to-Source Voltage	±30	V
E _{AS}	Single Pulse Avalanche Energy	1100	mJ
P _D	Power Dissipation	400	W
	Derating Factor above 25°C	3.23	W/°C
T _J , T _{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	°C
T _L	Maximum Temperature for Soldering	300	°C

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

V _{DSS} (T _C =150°C)	600	V
I _D	47	A
P _D (T _C =25°C)	400	W
R _{DS(ON)}	80	mΩ





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Electrical Characteristics (Tc= 25°C 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	600	--	--	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =600V, V _{GS} =0V, T _a =25°C	--	--	1	μA
		V _{DS} =480V, V _{GS} =0V, T _a =125°C	--	--	100	
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +30V	--	--	10	μA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -30V	--	--	-10	μA

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	--	80	95	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	--	4.0	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =47A	--	40	--	S
Pulse width tp≤380μs, δ≤2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} =50V f=1.0MHz	--	4300	--	pF
C _{oss}	Output Capacitance		--	30	--	
C _{rss}	Reverse Transfer Capacitance		--	400	--	
Q _g	Total Gate Charge	I _D =47A, V _{DD} =480V V _{GS} =0 to 10V	--	115	--	nc
Q _{gs}	Gate to Source Charge		--	19	--	nc
Q _{gd}	Gate to Drain ("Miller")Charge		--	40	--	nc

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =300V, I _D =47A, V _{GS} =10V R _g =25Ω	--	96	--	nS
t _r	Rise Time		--	216	--	
t _{d(OFF)}	Turn-Off Delay Time		--	352	--	
t _f	Fall Time		--	100	--	



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Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	47	A
I_{SM}	Maximum Pulsed Current(Body Diode)		--	--	140	A
V_{SD}	Diode Forward Voltage	$I_S=47A, V_{GS}=0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$V_R=480V, I_F=I_S,$	--	150	--	ns
Q_{rr}	Reverse Recovery Charge	$diF/dt=100A/us, V_{GS}=0V$	--	13	--	uC
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Junction-to-Case	0.31	°C/W
$R_{\theta JA}$	Junction-to-Ambient	55	°C/W

$T_J = +25^{\circ}C$ to $+150^{\circ}C$

Pulse width $\leq 380\mu s$; duty cycle $\leq 2\%$.

Characteristics Curve

Figure 1. Output Characteristics

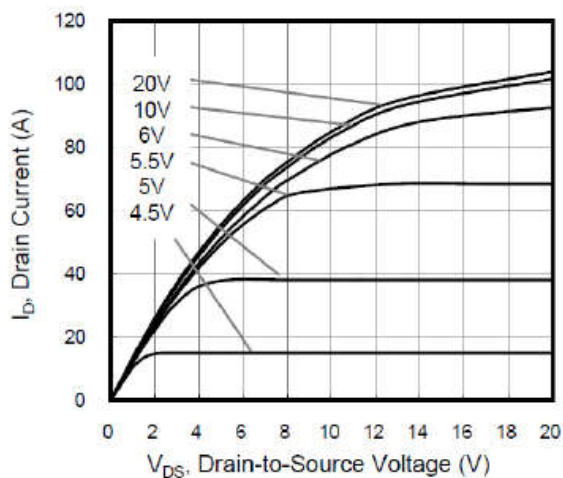


Figure 2. Transfer Characteristics

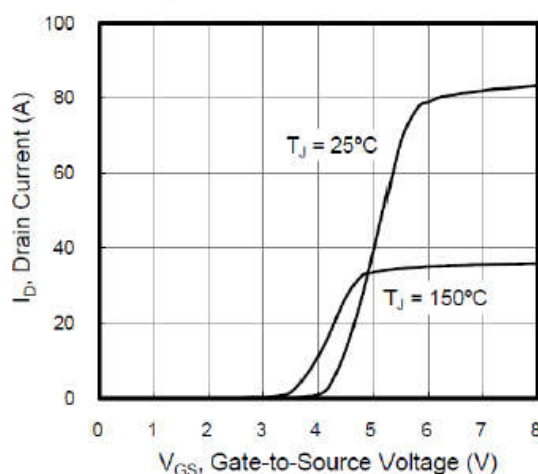


Figure 3. On-Resistance vs. Drain Current

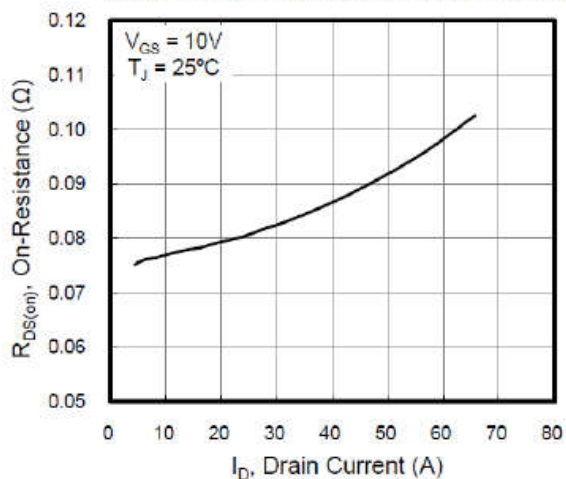


Figure 4. Capacitance

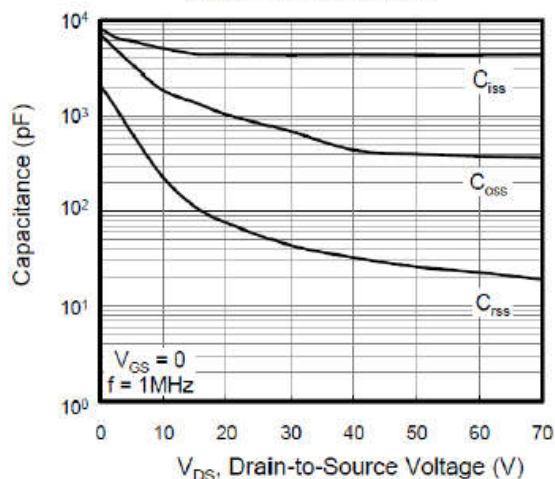


Figure 5. Gate Charge

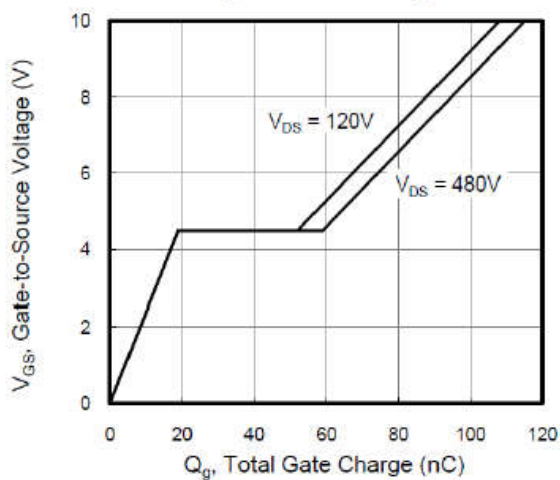
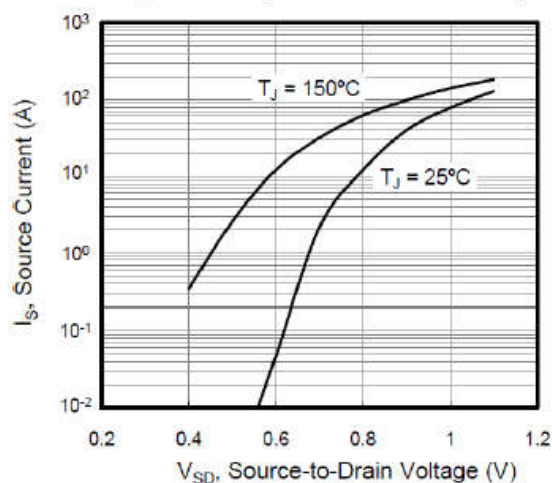


Figure 6. Body Diode Forward Voltage



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Figure 7. On-Resistance vs. Temperature

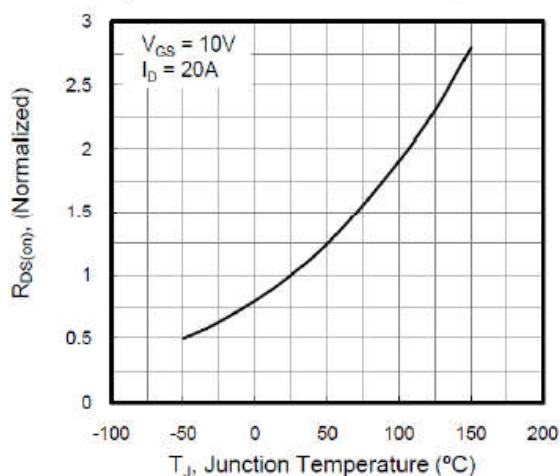


Figure 8. Threshold Voltage vs. Temperature

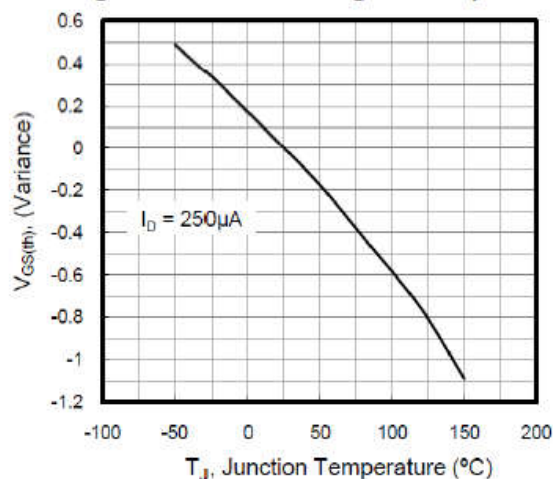


Figure 9. Transient Thermal Impedance

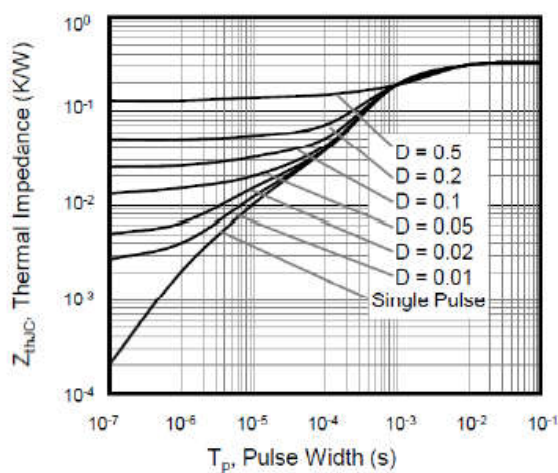


Figure 10. Safe Operating Area

