

General Description:

GL17N80AN the silicon N-channel Enhanced VDMOSFETS, 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-3PN, which accords with the RoHS standard.

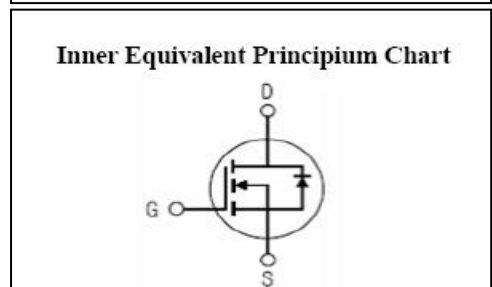
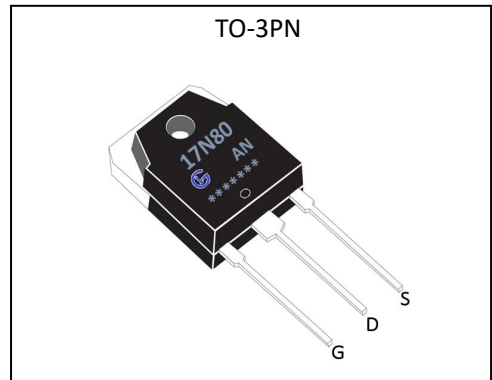
Features:

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications:

- Power switch circuit of adaptor and charger

V_{DSS}	800	V
I_D	17	A
P_D ($T_C=25^{\circ}C$)	400	W
$R_{DS(ON)TYP}$	0.62	Ω



Absolute ($T_C=25^{\circ}C$ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	800	V
I_D	Continuous Drain Current	17	A
	Continuous Drain Current $T_C=100^{\circ}C$	13	A
I_{DM}^{a1}	Pulsed Drain Current	68	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}^{a2}	Single Pulse Avalanche Energy	1400	mJ
E_{AR}^{a1}	Avalanche Energy ,Repetitive	120	mJ
I_{AR}^{a1}	Avalanche Current	7	A
dv/dt^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	400	W
	Derating Factor above $25^{\circ}C$	3.2	W/ $^{\circ}C$
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^{\circ}C$
T_L	Maximum Temperature for Soldering	300	$^{\circ}C$



GL17N80AN

GL Silicon N-Channel Power MOSFET

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	$V_{GS}=0V, I_D=250\mu A$	800	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=250\mu A$, Reference 25°C	--	0.8	--	V/°C
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=800V, V_{GS}=0V, T_a=25^\circ C$	--	--	10	μA
		$V_{DS}=640V, V_{GS}=0V, T_a=125^\circ C$	--	--	1000	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+30V$	--	--	1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-30V$	--	--	-1	μA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=8.5A$	--	0.62	0.75	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	--	4.5	V
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS}=15V, I_D=8.5A$	--	8.0	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V$ $f=1.0MHz$	--	2950	--	pF
C_{oss}	Output Capacitance		--	250	--	
C_{rss}	Reverse Transfer Capacitance		--	45	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=8.5A, V_{DD}=400V$ $V_{GS}=10V, R_G=9.1\Omega$	--	50	--	ns
t_r	Rise Time		--	90	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	33	--	
t_f	Fall Time		--	74	--	
Q_g	Total Gate Charge	$I_D=8.5A, V_{DD}=400V$ $V_{GS}=10V$	--	64	--	nC
Q_{gs}	Gate to Source Charge		--	16	--	
Q_{gd}	Gate to Drain ("Miller") Charge		--	28	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	17	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	68	A
V_{SD}	Diode Forward Voltage	$I_S = 17A, V_{GS} = 0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S = 17A, T_j = 25^\circ C$	--	450	--	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt = 100A/\mu s, V_{GS} = 0V$	--	1800	--	nC

Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	0.32	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient	55	$^\circ C/W$

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

^{a2}: $L = 10.0mH, I_D = 23A$, Start $T_j = 25^\circ C$

^{a3}: $I_{SD} = 17A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}$, Start $T_j = 25^\circ C$

Test Circuit and Waveform

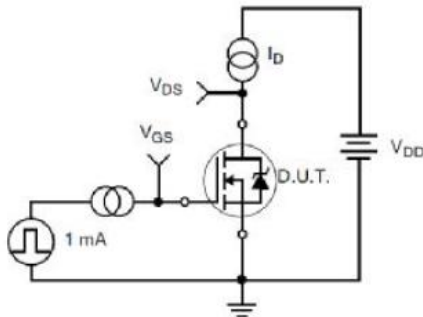


Figure 17. Gate Charge Test Circuit

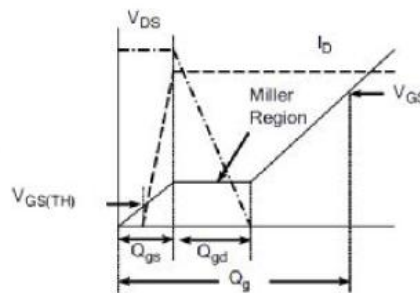


Figure 18. Gate Charge Waveform

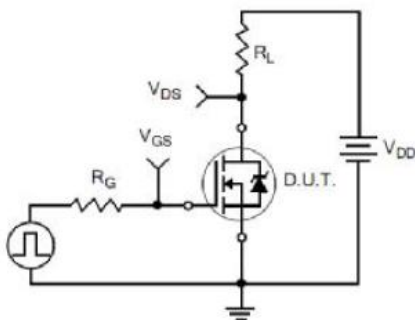


Figure 19. Resistive Switching Test Circuit

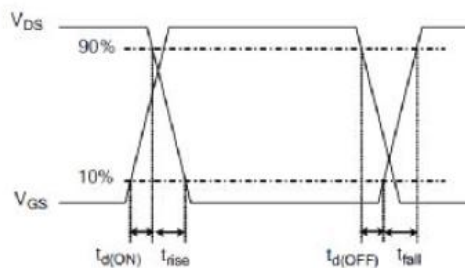


Figure 20. Resistive Switching Waveforms

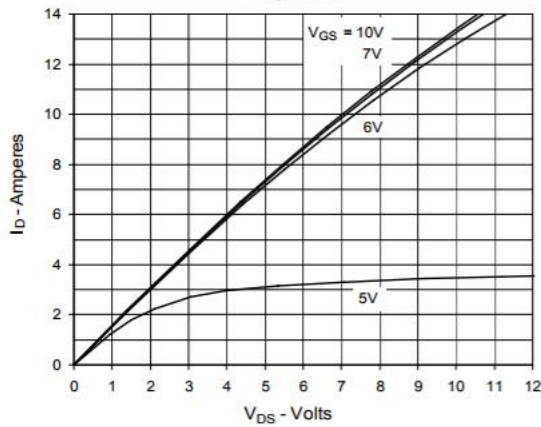


GL17N80AN

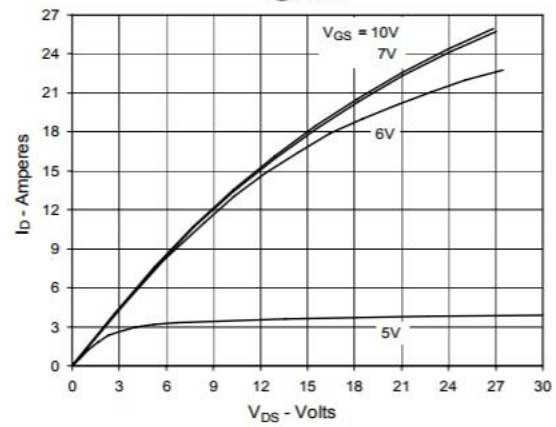
GL Silicon N-Channel Power MOSFET

Characteristics Curve

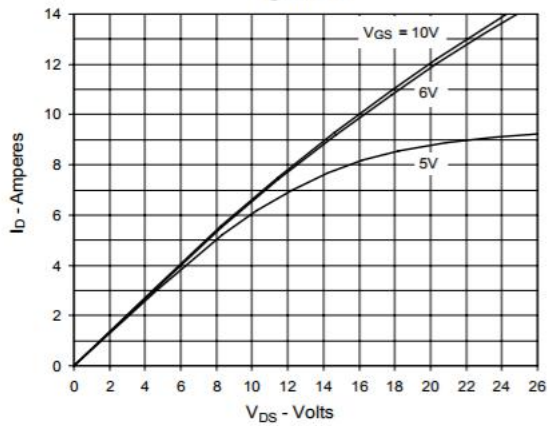
**Fig. 1. Output Characteristics
@ 25°C**



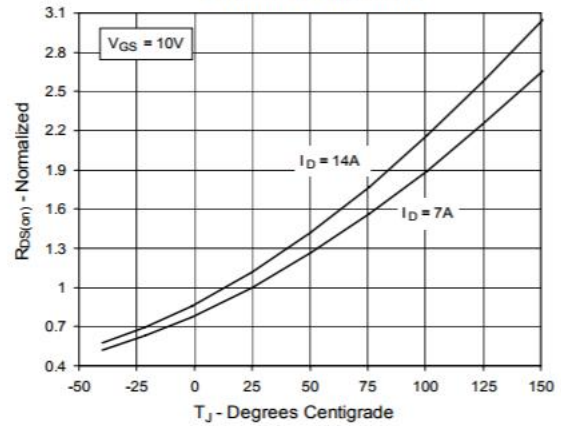
**Fig. 2. Extended Output Characteristics
@ 25°C**



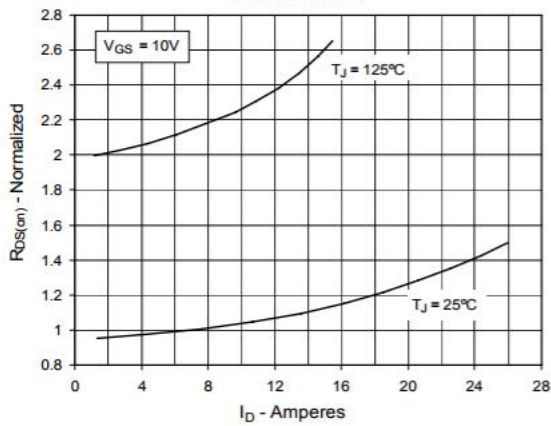
**Fig. 3. Output Characteristics
@ 125°C**



**Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 7A$ Value vs.
Junction Temperature**



**Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 7A$ Value vs.
Drain Current**



**Fig. 6. Maximum Drain Current vs.
Case Temperature**

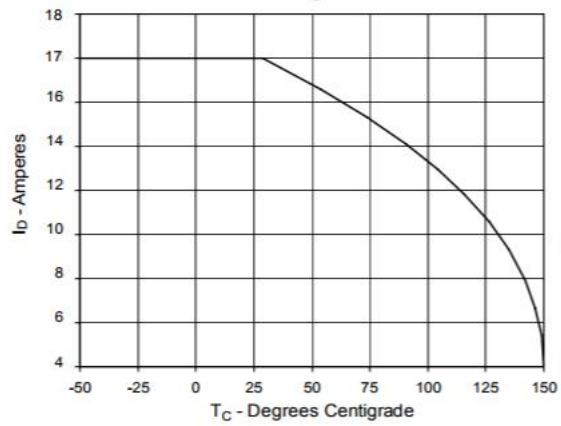


Fig. 7. Input Admittance

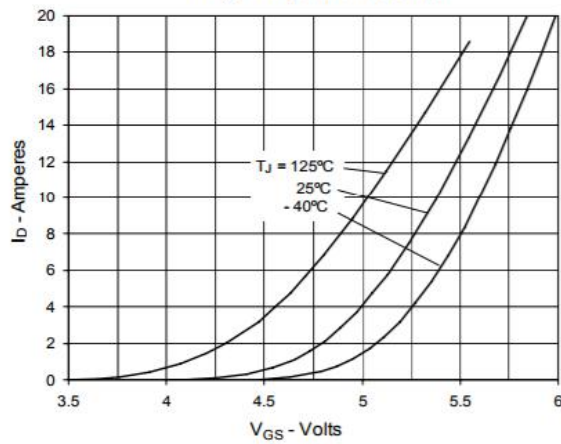


Fig. 8. Transconductance

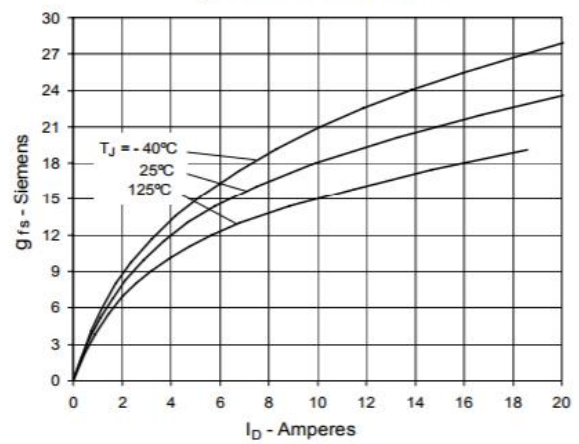


Fig. 9. Forward Voltage Drop of Intrinsic Diode

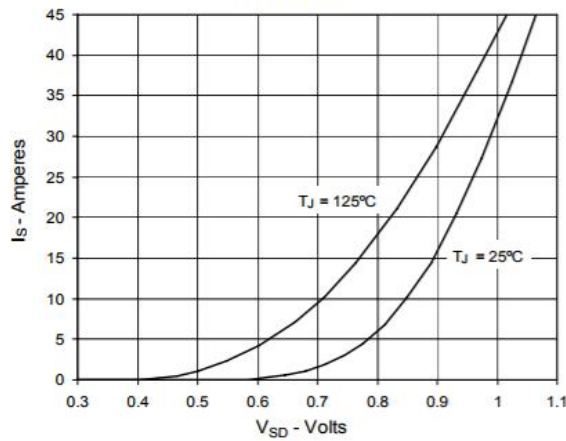


Fig. 10. Gate Charge

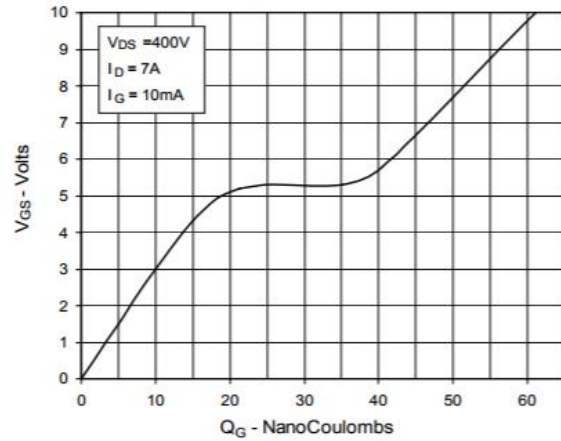


Fig. 11. Capacitance

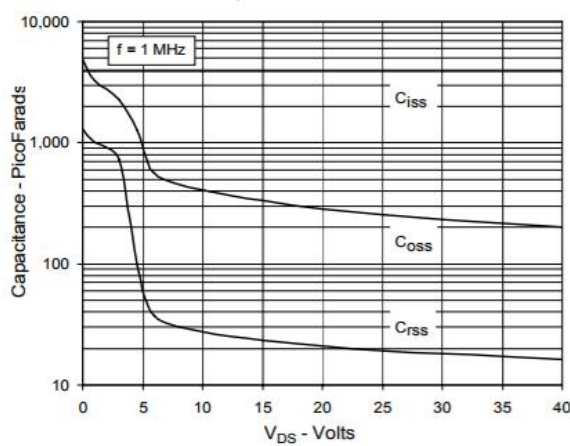


Fig. 13. Maximum Transient Thermal Resistance

