

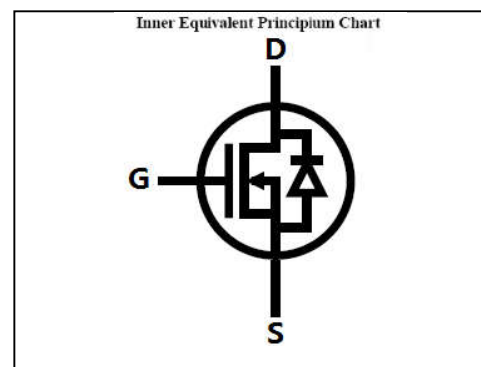
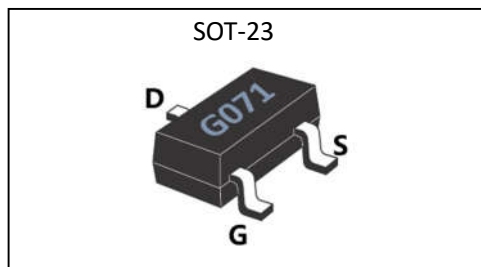
General Description:

G071 the silicon N-channel Depletion mode MOSFETS, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The package form is SOT-23, which accords with the RoHS and Halogen Free standard.

Features:

- N-Channel
- ESD improved Capability
- Depletion Mode
- dv/dt rated
- Pb-free lead plating;ROHS compliant
- Halogen Free

V_{DSX}	70	V
$I_{DSS \text{ MIN}}$	200	mA
$R_{DS(ON)max}$	25	Ω



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

Symbol	Parameter	Rating	Units
V_{DSX}	Drain-to-Source Voltage	70	V
I_D	Continuous Drain Current	150	mA
	Continuous Drain Current $T_c = 70^\circ\text{C}$	100	mA
I_{Dma1}	Pulsed Drain Current	600	mA
V_{GS}	Gate-to-Source Voltage	± 30	V
d_v/d_t^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	0.5	W
	Derating Factor above 25°C	0.004	W/ $^\circ\text{C}$
$V_{ESD(G-S)}$	Gate source ESD (HBM-C= 100pF, R=1.5k Ω)	400	V
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	300	$^\circ\text{C}$

**G071****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_{DSX}	Drain to Source Breakdown Voltage	$V_{GS} = -30V, I_D = 1mA$	70	--	--	V
$I_{D(off)}$	Off-state Drain to Source Current	$V_{DS} = 70V, V_{GS} = -30V$	--	--	1	mA
		$V_{DS} = 56V, V_{GS} = -30V, T_a = 125^\circ C$	--	--	1	mA
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS} = +20V$	--	--	1	mA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS} = -20V$	--	--	-1	mA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_{DSS}	On-state drain current	$V_{GS} = 0V, V_{DS} = 25V$	150	--	--	mA
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS} = 0V, I_D = 100mA$	--	--	25	Ω
		$V_{GS} = 10V, I_D = 100mA$	--	--	20	
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = 20V, I_D = 8.0\mu A$	-13	-17	-21	V

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS} = 20V, I_D = 0.1A$	0.01	0.13	--	S
C_{iss}	Input Capacitance	$V_{GS} = -5V, V_{DS} = 25V, f = 1.0MHz$	--	65		pF
C_{oss}	Output Capacitance		--	5		
C_{rss}	Reverse Transfer Capacitance		--	1.1		

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = 0.01A, V_{DD} = 35V$ $V_{GS} = -25 \sim -30V$ $R_G = 6.0\Omega$	--	9.9	--	ns
t_r	Rise Time		--	55.8	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	56.4	--	
t_f	Fall Time		--	136	--	
Q_g	Total Gate Charge	$I_D = 0.1A, V_{DD} = 35V,$ $V_{GS} = -25V \text{ to } -30V$	--	1.5		nC
Q_{gs}	Gate to Source Charge		--	0.6		
Q_{gd}	Gate to Drain ("Miller") Charge		--	0.4		

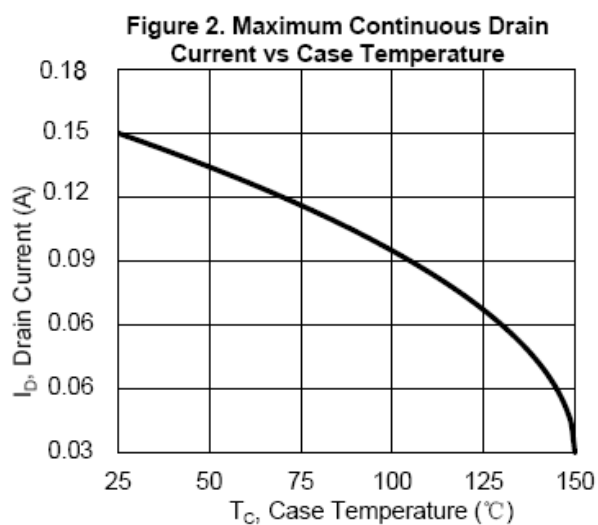
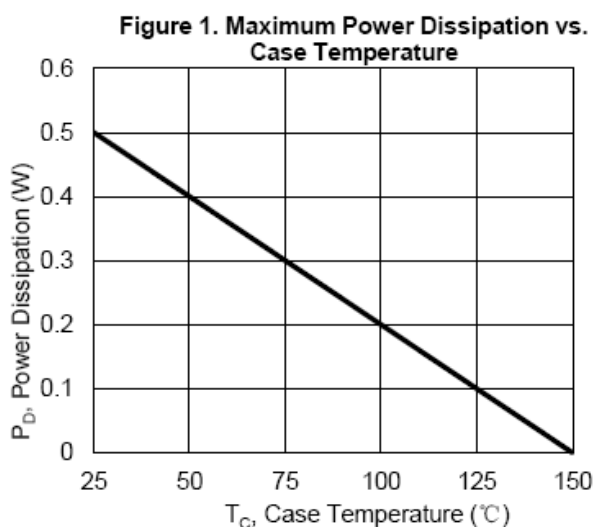
GL Silicon N-Channel Power MOSFET

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)	$T_a=25^{\circ}\text{C}$	--	--	150	mA
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	600	A
V_{SD}	Diode Forward Voltage	$I_F=100\text{mA}, V_{GS}=-5\text{V}$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_F=100\text{mA}, T_j = 25^{\circ}\text{C}$	--	245	--	ns
Q_{rr}	Reverse Recovery Charge		--	638	--	nC
		$I_F/dt=100\text{A/us}, V_R=300\text{V}$				

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	250	$^{\circ}\text{C/W}$

Gate-source Zener diode						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{GSO}	Gate-source breakdown voltage	$I_{GS}=\pm 1\text{mA}(\text{Open Drain})$	30			V

The built-in back-to-back Zener diodes have specifically been designed to enhance not only the device' s ESD capability, but also to make them safely absorb possible voltage transients that may occasionally be applied from gate to source. In this respect the Zener voltage is appropriate to achieve an efficient and cost-effective intervention to protect the device' s integrity. These integrated Zener diodes thus avoid the usage of external components.



Typical applications:

In the QC2.0/3.0 and Type-C charger circuits, using the depletion mode MOSFET can make the PWM IC power supply circuit more simplified, as shown below:

In Figure .5, the transistor Q3 is used to provide power, and the zener diode ZD is used to clamp voltage, the power supply circuit of IC is composed of several components.

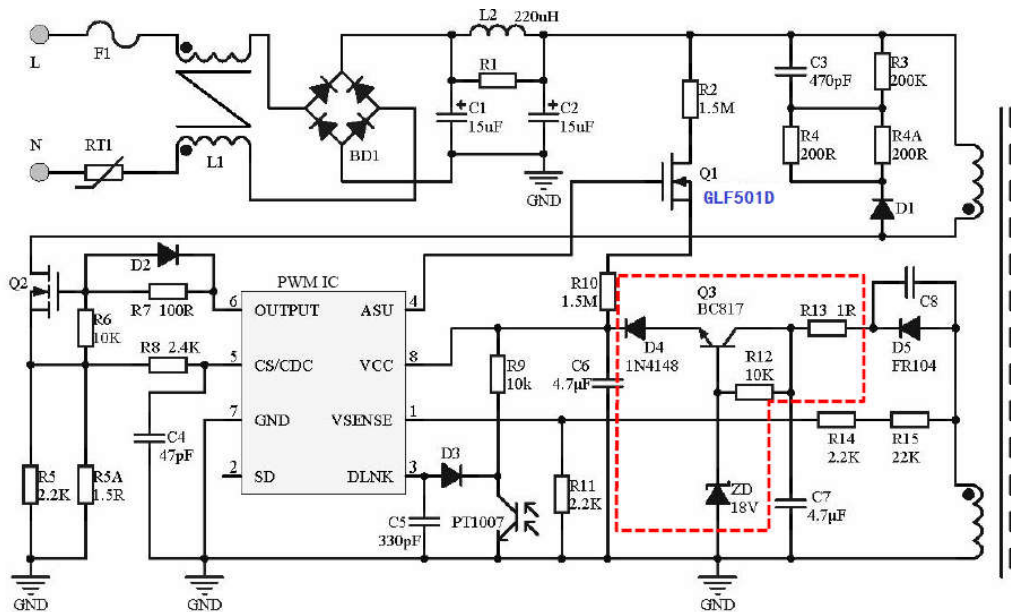


Figure. 3

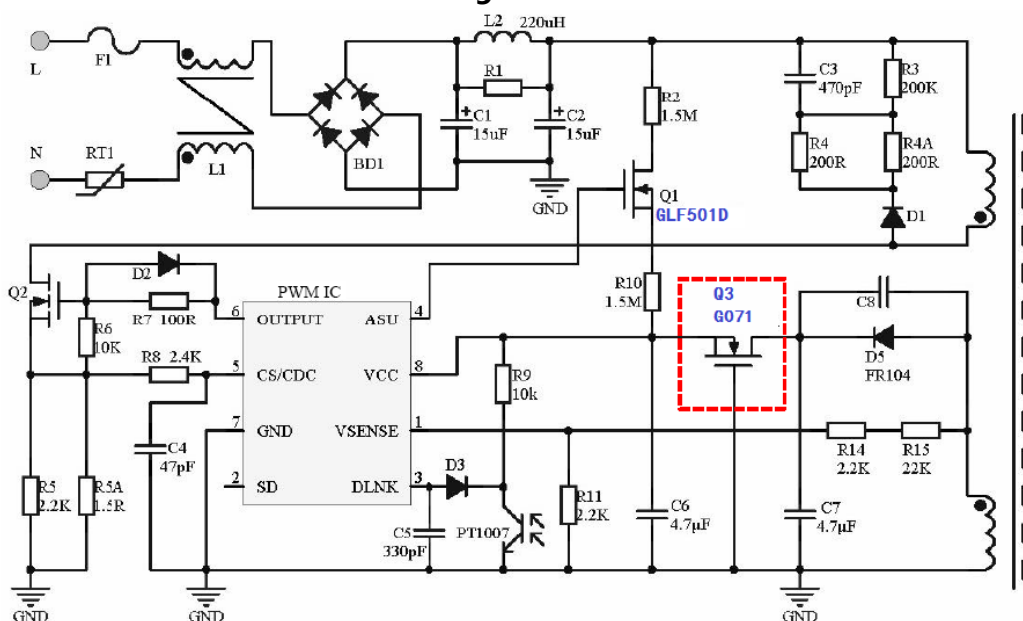


Figure.4