D1515

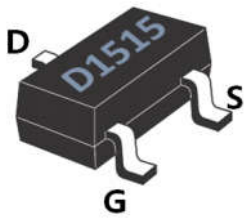
GL Silicon N-Channel Power MOSFET

V_{DSX}	150	V
I_{DSS}	200	mA
$R_{DS(ON)type}$	7.3	Ω

General Description

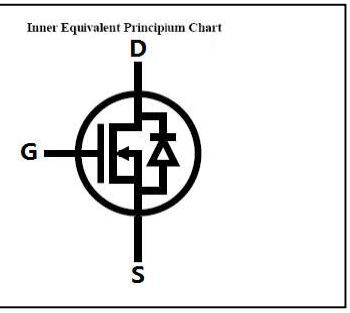
D1515 the silicon N-channel Depletion mode MOSFETS, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The package form is SOT-23, which accords with the RoHS and Halogen Free standard.

SOT-23



Features

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



Absolute (Tc=25℃ unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DSX}	Drain-to-Source Voltage	155	V
I_D	Continuous Drain Current	0.2	A
	Continuous Drain Current T_C =70 °C	0.16	A
I_{DM}[a1]	Pulsed Drain Current	0.8	A
V_{GS}	Gate-to-Source Voltage	±20	V
dv/dt [a2]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	1.2	W
TJ，Tstg	Operating Junction and Storage Temperature Range	150，–55 to 150	℃
T_L	Maximum Temperature for Soldering	300	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	250	℃/W
$R_{\theta JC}$	Junction-to-Case	105	℃/W

Electrical Characteristics (T_c=25℃ unless otherwise specified)

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSX}	Drain to Source Breakdown Voltage	V_{GS}=-15V,I_D=250μA	150	--	--	V
$I_{D(off)}$	Off-state Drain to Source Current	V_{DS}=150V,V_{GS}=-15V	--	--	0.1	μA
		V_{DS}=120V,V_{GS}=-15V,Ta=125°C	--	--	10	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+10V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-10V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_{DSS}	On-state drain current	V_{GS}=0V,V_{DS}=25V	200	--	--	mA
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=0V,I_D=200mA	--	9.5	15	Ω
		V_{GS}=10V,I_D=200mA	--	7.3	10	
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=3V,I_D=8.0μA	-8.0	-6.5	-5.0	V

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	V_{DS}=50V,I_D=0.01A	--	--	--	S
C_{iss}	Input Capacitance	V_{GS}=-15V,V_{DS}=25V f=1.0MHz	--	12	--	pF
C_{oss}	Output Capacitance		--	5.5	--	
C_{rss}	Reverse Transfer Capacitance		--	2.1	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D=0.2A,V_{DD}=75V V_{GS}=-10...0V R_G=20.0Ω	--	9.5	--	Ns
t_r	Rise Time		--	21	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	9.0	--	
t_f	Fall Time		--	25	--	
Q_g	Total Gate Charge	I_D=0.2A,V_{DD}=75V V_{GS}=-10V to 0V	--	1.5	--	nC
Q_{gs}	Gate to Source Charge		--	0.8	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	0.55	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)	Ta=25°C	--	--	0.2	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	0.8	A
V_{SD}	Diode Forward Voltage	I_F=200mA,V_{GS}=-15V	--	--	1.2	V
t_{rr}	Reverse Recovery Time	I_F=0.01A,T_j =25°C	--	260	--	ns
Q_{rr}	Reverse Recovery Charge	dI_F/dt=100A/us,V_R=75V	--	650	--	nC

Characteristics

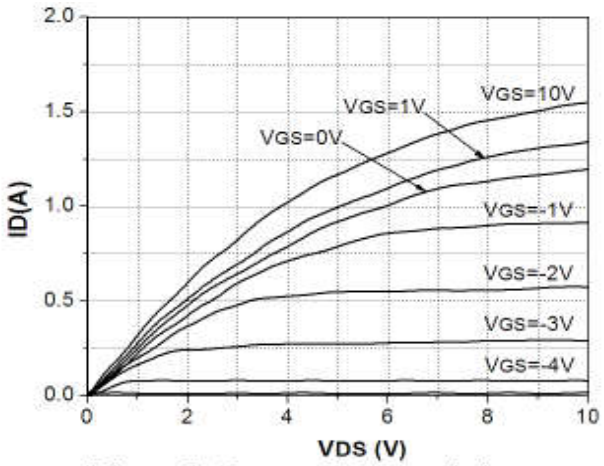


Figure 1. Output Characteristics

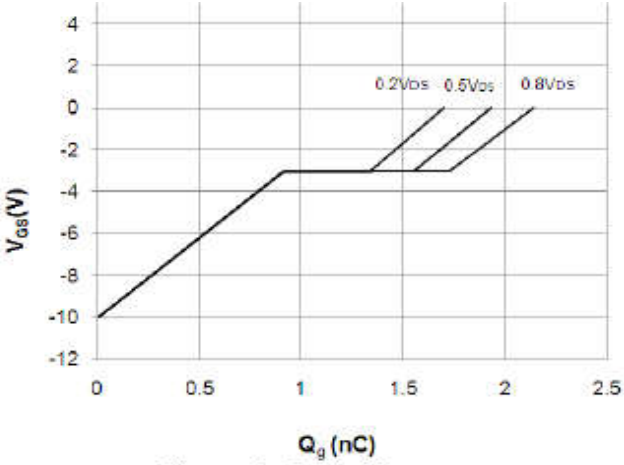


Figure 2. Gate Charge

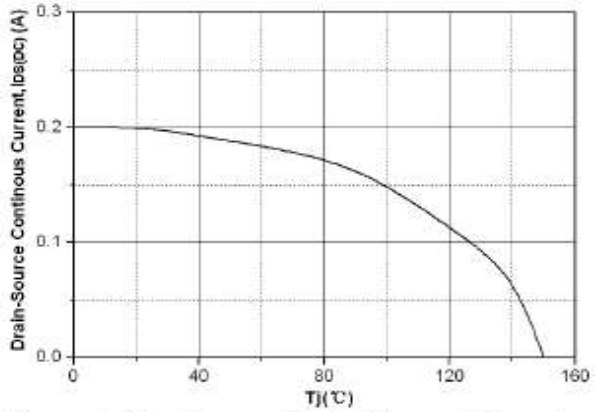


Figure 3. Continuous Drain Current Derating vs. Junction Temperature

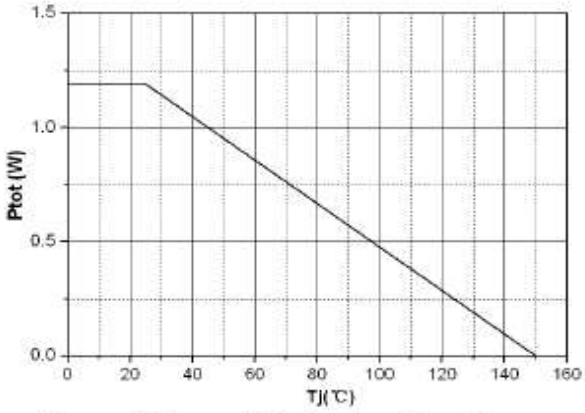


Figure 4. Power Dissipation Derating vs. Junction Temperature

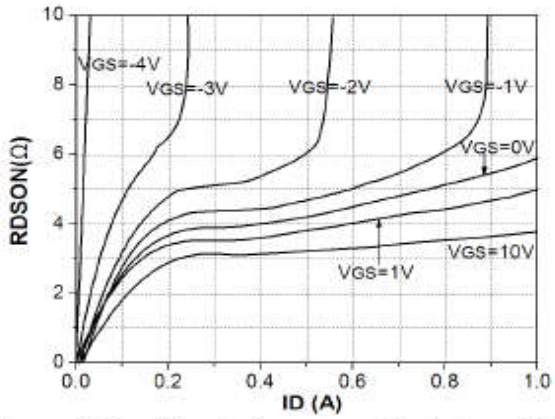


Figure 5. Typ.Drain Source on Resistance Tj = 25 °C

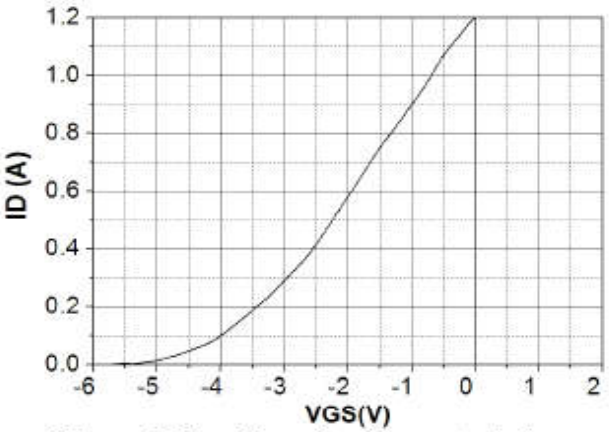


Figure 6. Typ. Transfer Characteristics

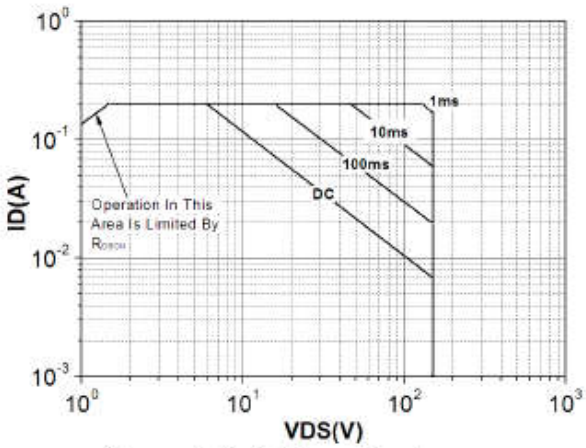


Figure 7. Safe Operation Area

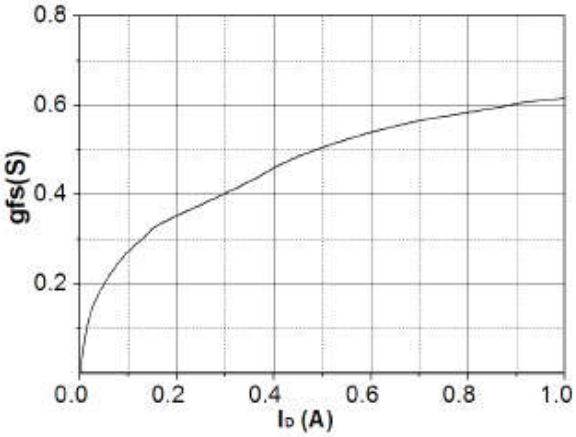


Figure 8. Typ. Forward Trans conductance

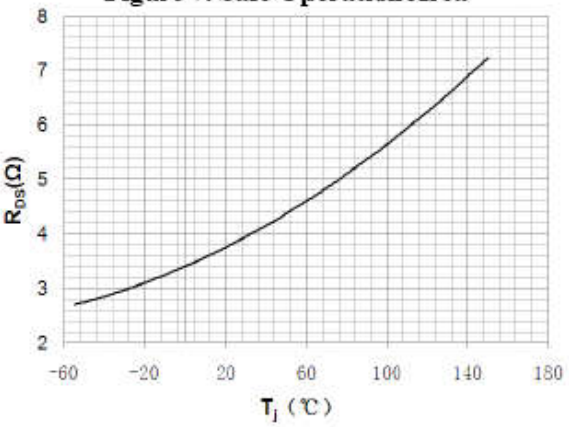


Figure 9. Drain Source on state Resistance

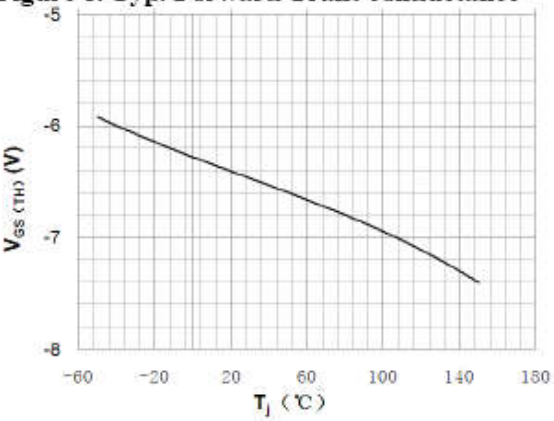


Figure 10 .Typ. Gate Threshold Voltage

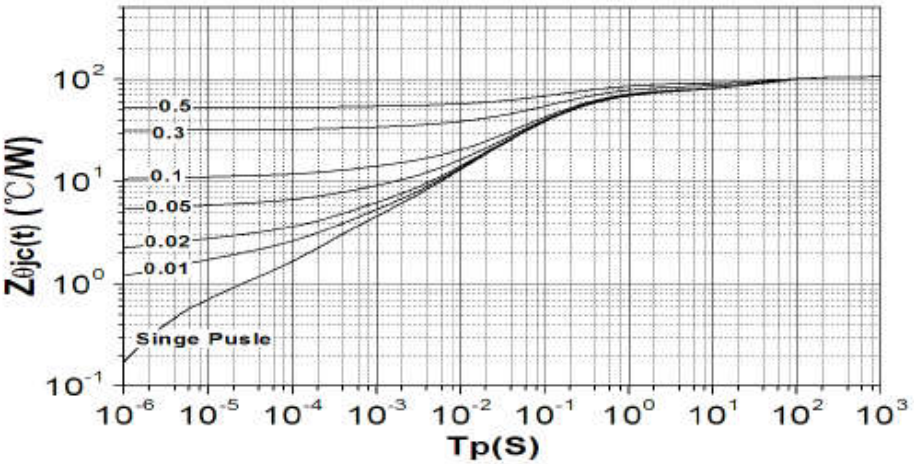


Figure 11. Transient Thermal Impedance
(Junction – Case Mounted on Specified Board)

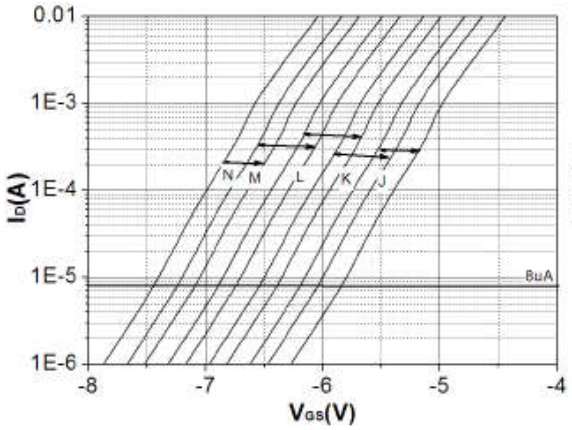


Figure 12. Threshold Voltage Bands

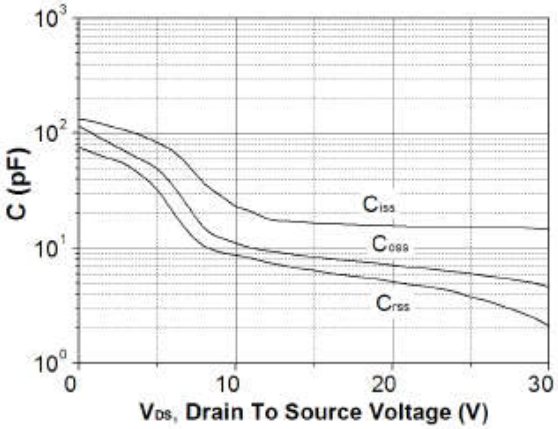


Figure 13. Typ. capacitances

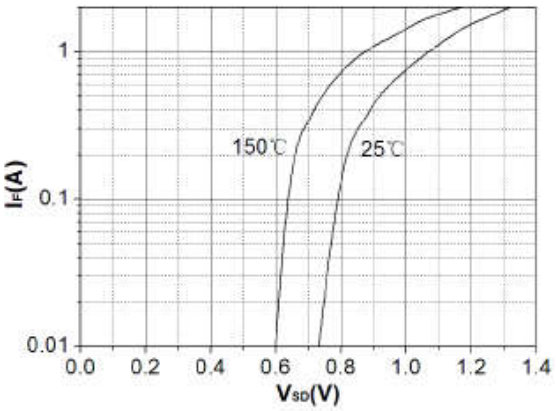


Figure 14. Forward Characteristics of reverse diode

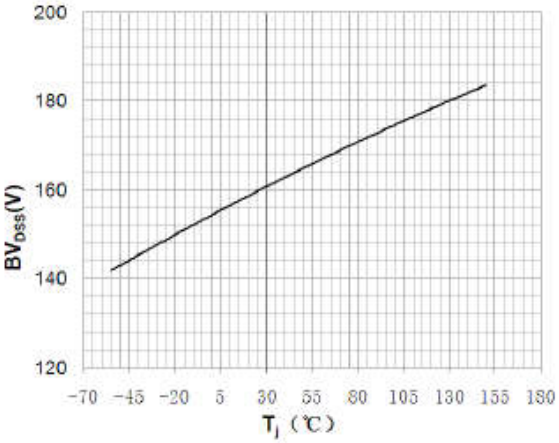


Figure 15. Drain Source Breakdown Voltage