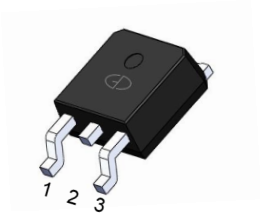
N-Channel 100V (D-S) Power MOSFET

Features

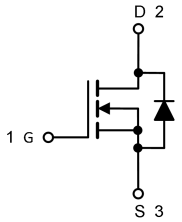
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant



TO-252 (D-PAK)

Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings (T_J=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	100	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V *(Note 1)*	T_C=25°C	I_D	30	A
Drain Current, Pulsed *(Note 2)*		I_{DM}	90	A
Power Dissipation *(Note 3)*	T_C=25°C	P_D	71	W
Single Pulse Avalanche Energy @ L=0.5mH		E_{AS}	57	mJ
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Calculated continuous current based on maximum allowable junction temperature.
Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Resistance

Parameter	Symbol	Max	Unit
Junction-to-case *(Note 3)*	$R_{\theta JC}$	1.76	°C/W
Junction-to-ambient *(Note 4)*	$R_{\theta JA}$	62	

Note 3: The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
Note 4: The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C.

Electrical Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	1.4	--	2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V,VDS=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	--	13.8	20	mΩ
		V_{GS}=4.5V, I_D=7A	--	17.4	26	
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=5A	--	16.1	--	nC
Gate-Source Charge	Q_{gs}		--	2.5	--	
Gate-Drain Charge	Q_{gd}		--	4.1	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=50V, I_D=5A, R_{GEN}=10Ω	--	16.5	--	ns
Turn-on Rise Time	t_r		--	3.5	--	
Turn-off Delay Time	$t_{d(off)}$		--	75.5	--	
Turn-off Fall Time	t_f		--	45.8	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=100kHz	--	1000	--	pF
Output Capacitance	C_{oss}		--	185	--	
Reverse Transfer Capacitance	C_{rss}		--	10	--	

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Source Current (Body Diode)	I_S	T_C=25°C	--	--	30	A
Pulsed Source Current (Body Diode)	I_{SM}		--	--	90	
Diode Forward Voltage *(Note 4)*	V_{SD}	I_S=20A, V_{GS}=0V	--	--	1.3	V
Reverse Recovery Time	T_{rr}	I_F =5A, di/dt = 100 A/μs	--	50	--	ns
Reverse Recovery Charge	Q_{rr}		--	62	--	nC

Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.1 - Typical Output Characteristics

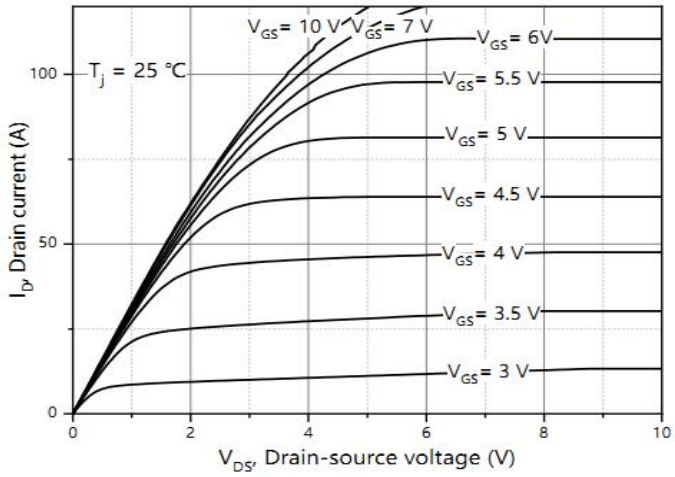


Fig.2 - Transfer Characteristics

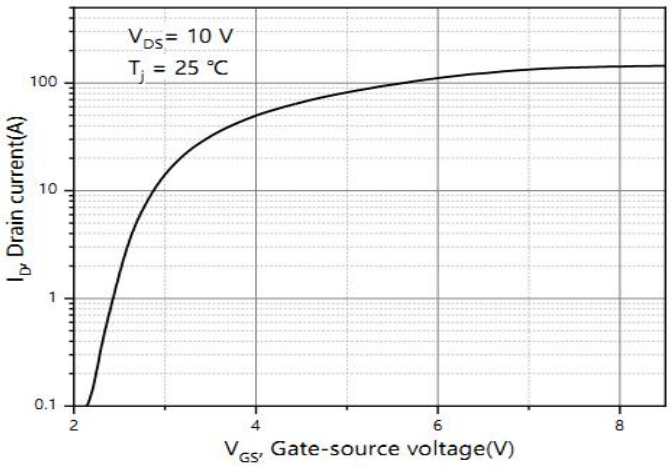


Fig.3 - Drain-source On-state Resistance

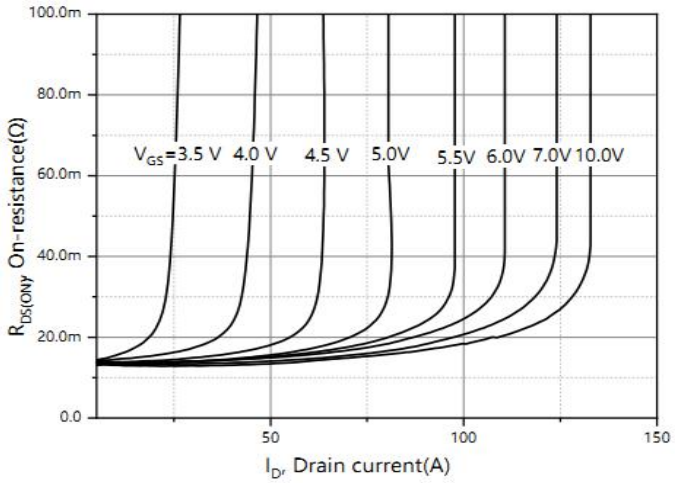


Fig.4 - Body Diode Characteristics

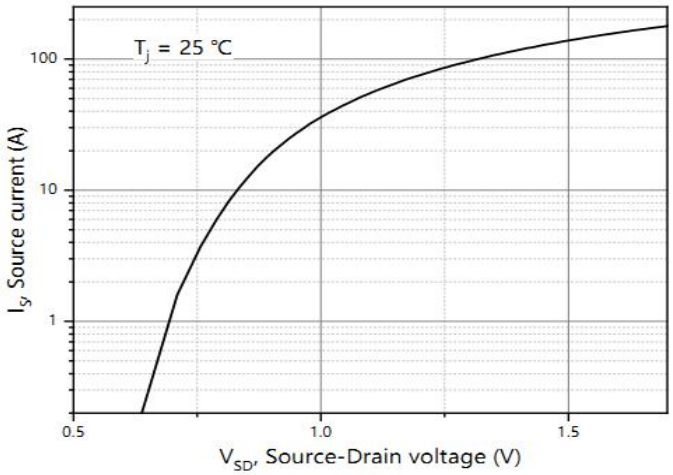


Fig.5 - Gate Charge

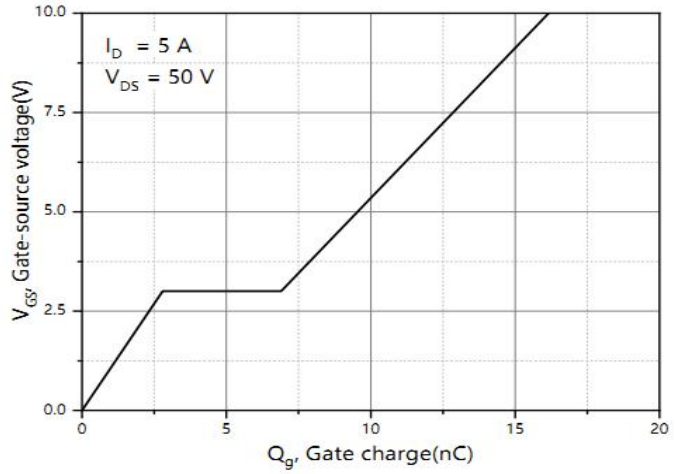
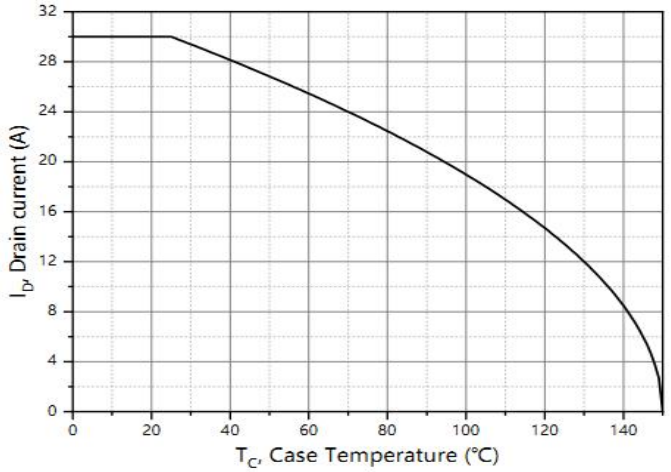


Fig.6 - Drain Current vs. Case Temperature



Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.7 - Drain-to-Source Breakdown Voltage vs. Junction Temperature

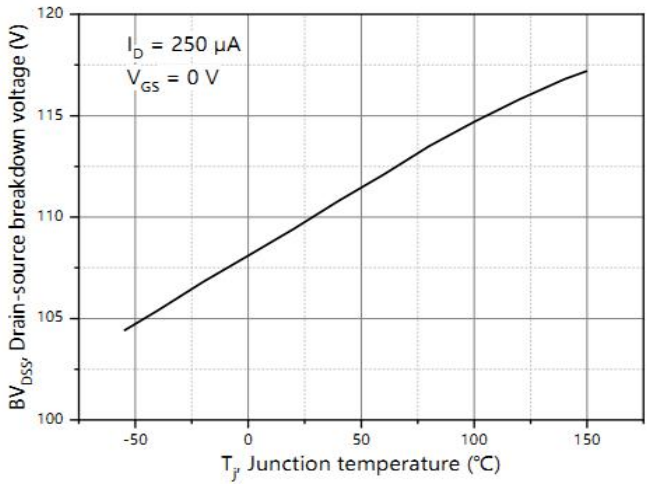


Fig.8 - Normalized On-Resistance vs. Junction Temperature

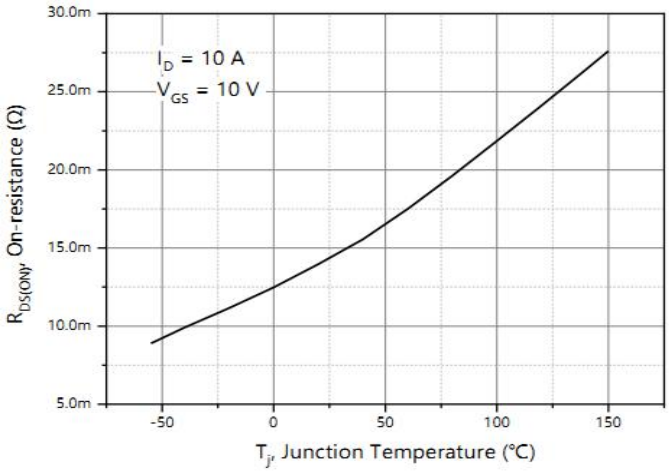
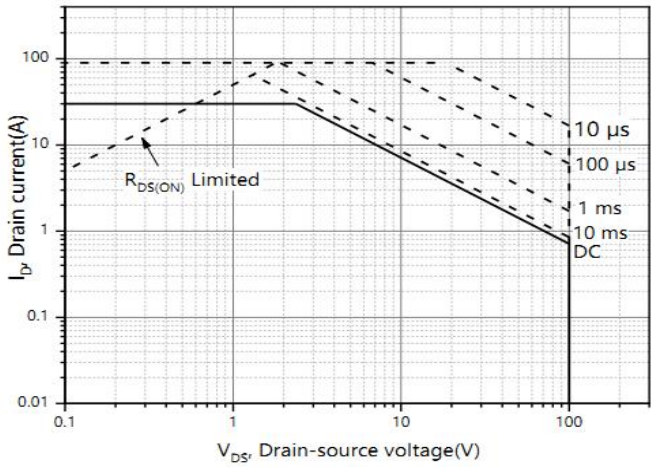
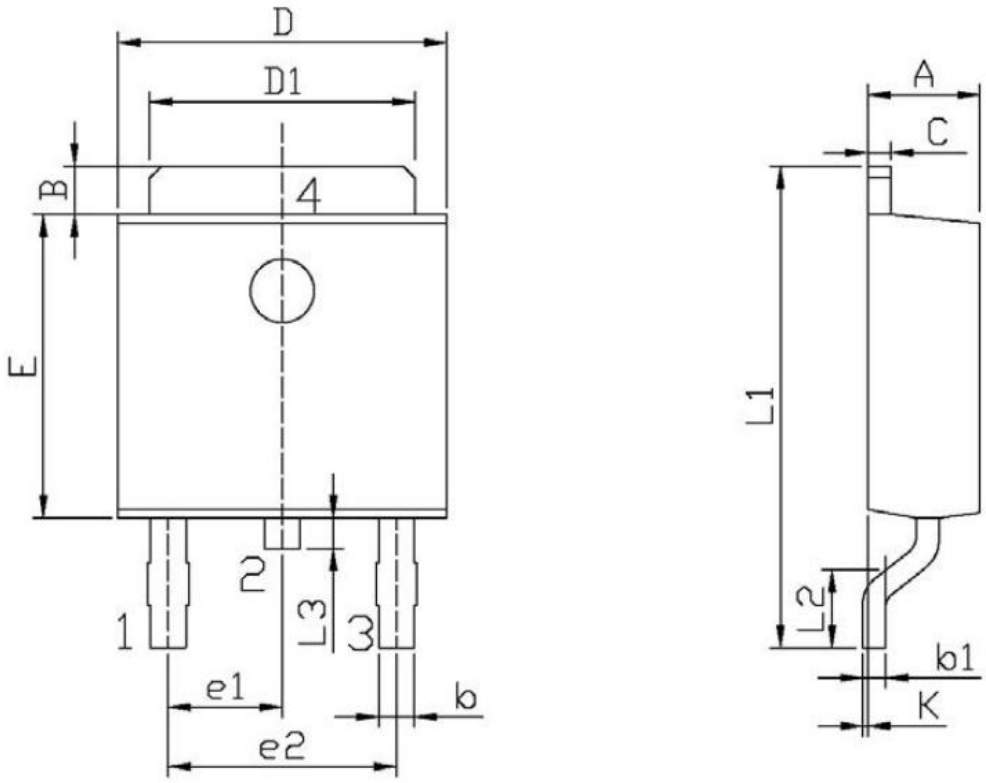


Fig.9 - Safe Operating Area



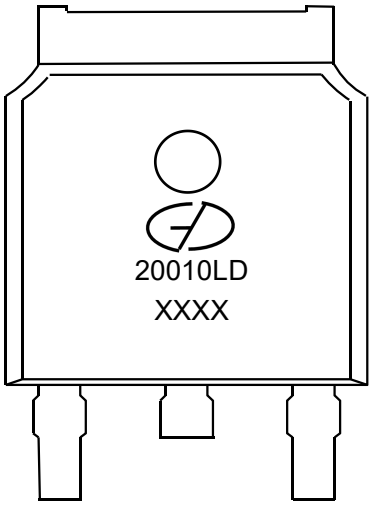
Package Outline Dimensions (Unit: millimeters)

TO-252(D-PAK)



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

Marking Outline



Part Name: GMN20010LD

1. Logo Mark:
2. P/N Mark: 20010LD
3. Date Code: XXXX

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