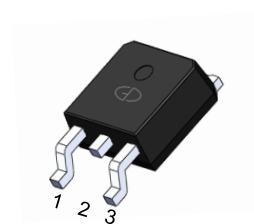


N-Channel 100V (D-S) Power MOSFET

Features

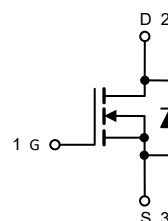
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{DS(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



TO-252 (D-PAK)

Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	100	V
Gate Source Voltage	V_{GS}	± 20	V
Drain Current, Continuous $V_{GS}=10\text{V}$ (Note 1)	I_D	10	A
Drain Current, Pulsed (Note 2)	I_{DM}	40	A
Power Dissipation (Note 3)	P_D	24	W
Single Pulse Avalanche Energy @ $L=22\text{mH}$	E_{AS}	77	mJ
Operating Junction/ Storage Temperature Range	T_J / T_{STG}	-55 to +150	$^\circ\text{C}$

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)	$R_{\theta JC}$	6.3	$^\circ\text{C/W}$

Note 3: The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

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	--	2.5	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A	--	90	110	mΩ
		V _{GS} =4.5V, I _D =3A		95	140	
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =5A	--	10	--	nC
Gate-Source Charge	Q _{gs}		--	2	--	
Gate-Drain Charge	Q _{gd}		--	2.2	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =30V, I _D =10A, R _{GEN} =3Ω	--	7.4	--	ns
Turn-on Rise Time	t _r		--	10	--	
Turn-off Delay Time	t _{d(off)}		--	22	--	
Turn-off Fall Time	t _f		--	2.8	--	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz	--	825	--	pF
Output Capacitance	C _{oss}		--	30	--	
Reverse Transfer Capacitance	C _{rss}		--	23	--	

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	--	--	10	A
Pulsed Source Current (Body Diode)	I _{SM}		--	--	40	
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V	--	--	1.2	V
Reverse Recovery Time	T _{rr}	I _F =10A, di/dt = 100 A/μs	--	20	--	ns
Reverse Recovery Charge	Q _{rr}		--	20	--	nC

Typical Characteristics Curves ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 - Typical Output Characteristics

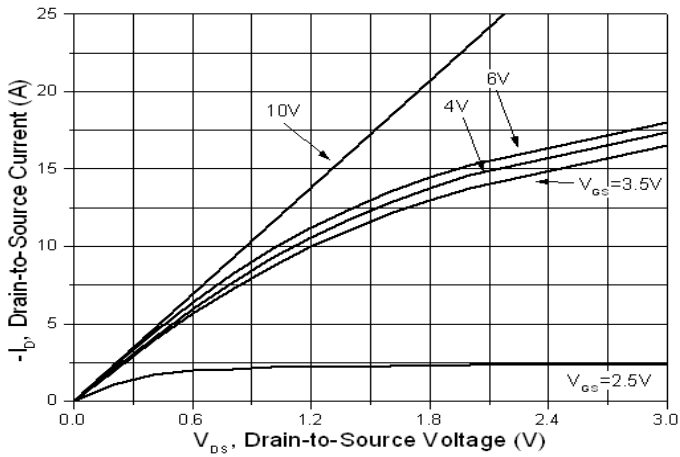


Fig.2 - Transfer Characteristics

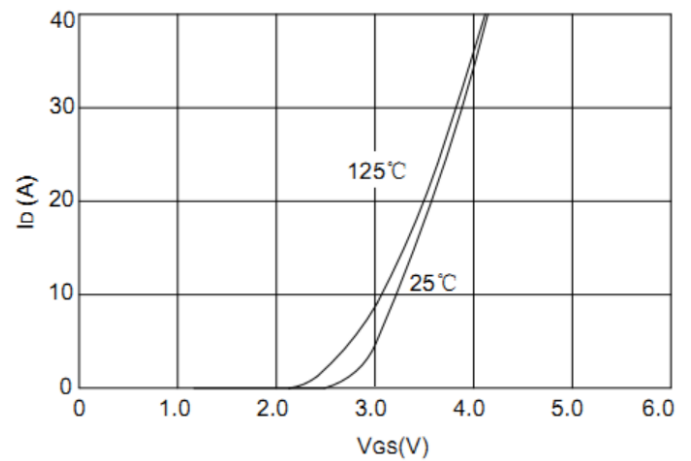


Fig.3 - Gate to Source Cut-off Voltage

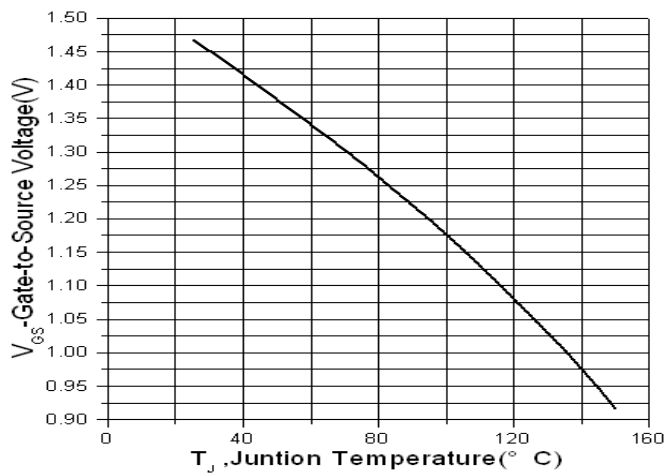


Fig.4 - Body Diode Characteristics

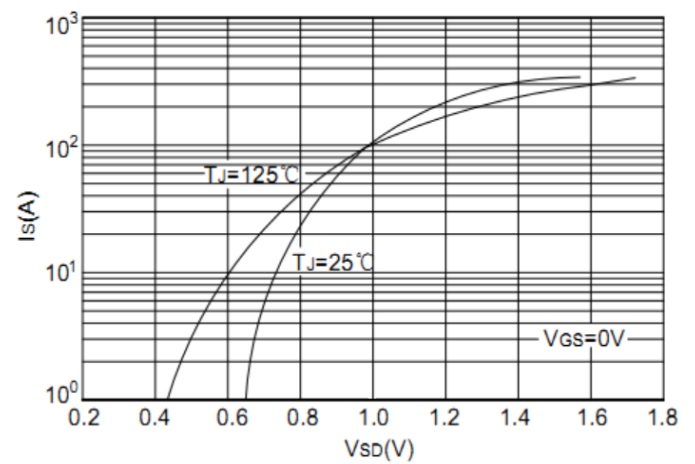


Fig.5 - Gate Charge

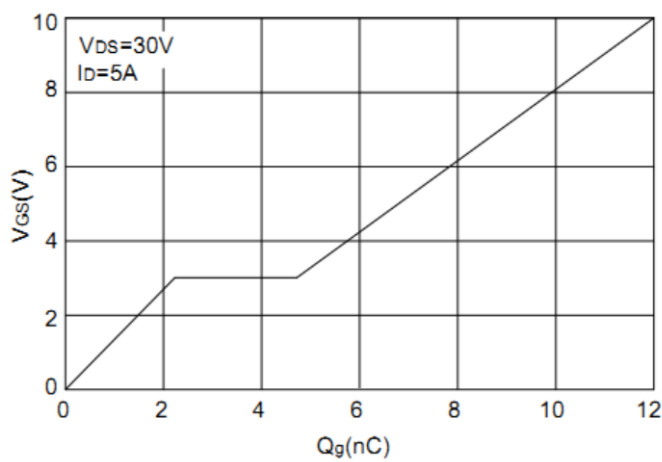
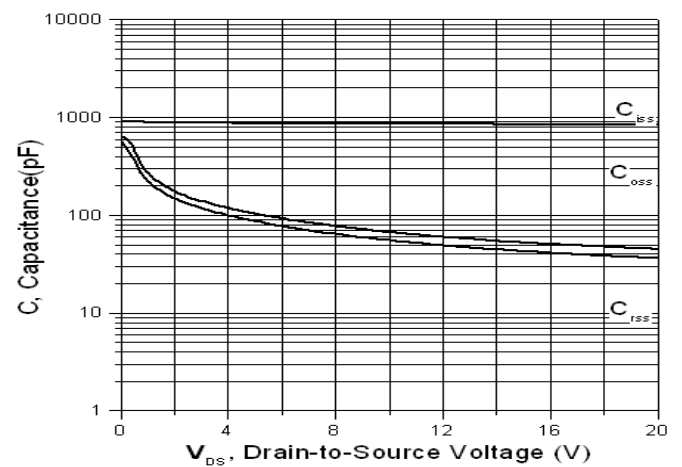


Fig.6 - Capacitance



Typical Characteristics Curves ($T_J = 25^\circ\text{C}$ unless otherwise noted)

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

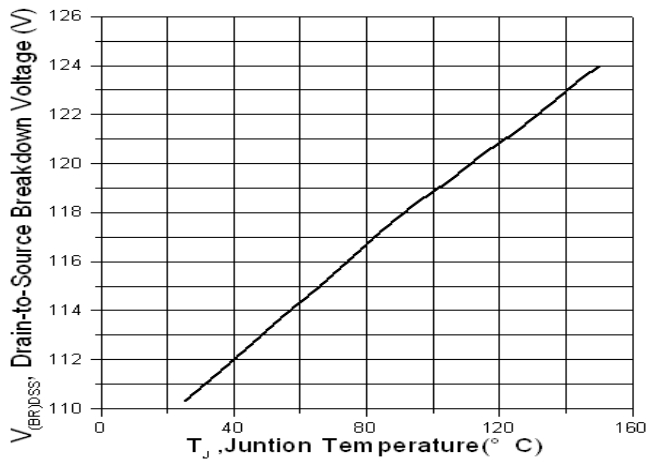


Fig.8 - Normalized On-Resistance vs. Junction Temperature

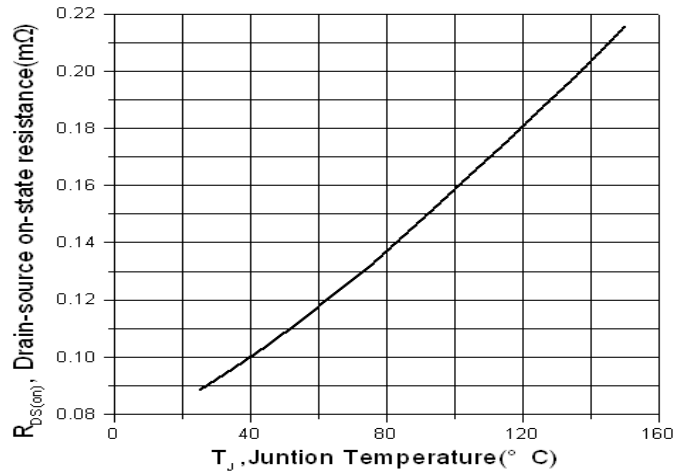


Fig.9 - Safe Operating Area

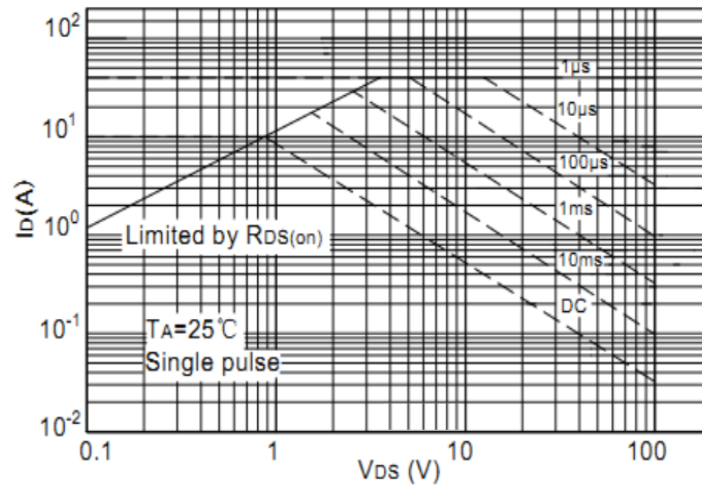
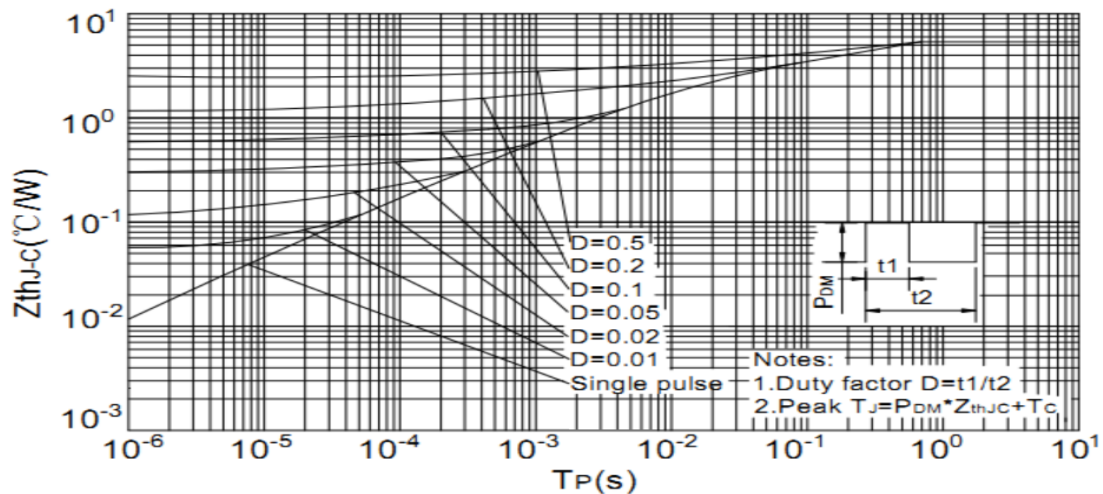
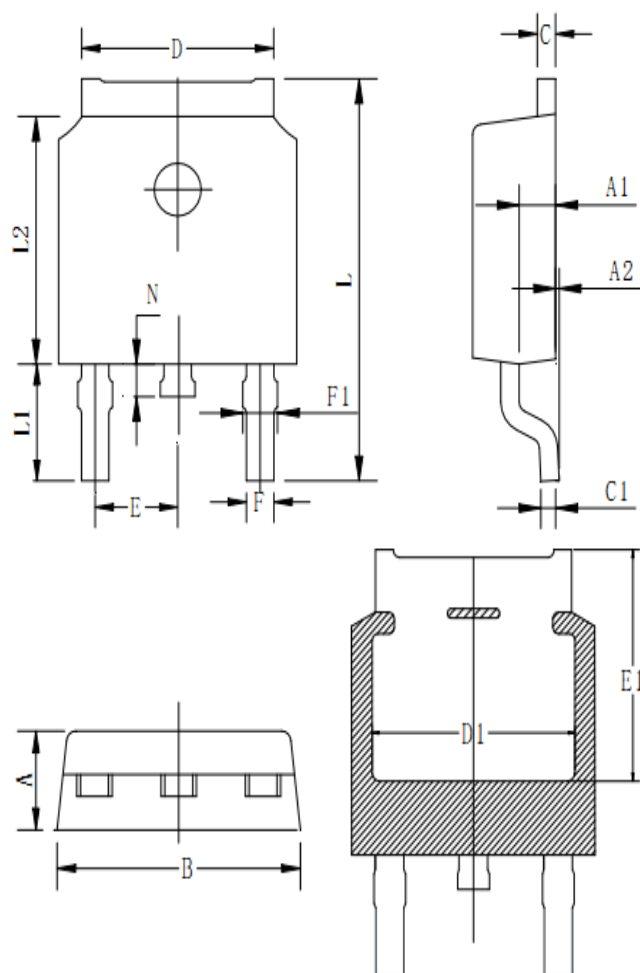


Fig.10- Normalized Maximum Transient Thermal Impedance



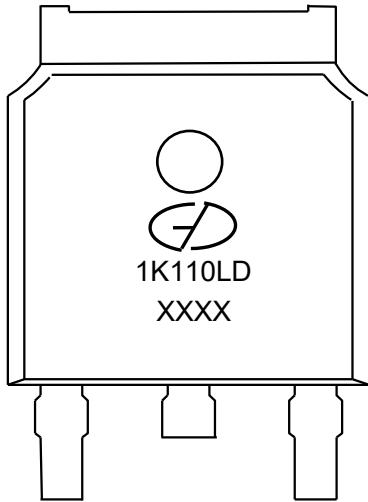
Package Outline Dimensions (Unit: millimeters)

TO-252(D-PAK)



Symbol	Min	Typ	Max
A	2.20	2.30	2.40
A1	0.91	1.01	1.11
A2			0.25
B	6.50	6.60	6.70
C	0.40	0.50	0.60
C1	0.40	0.50	0.60
D	5.15	5.30	5.45
D1	5.10	5.25	5.40
E	2.20	2.29	2.40
E1	4.95	5.15	5.35
F	0.66	0.76	0.86
F1	0.70	0.82	0.95
L	9.70	9.90	10.10
L1	2.67	2.87	3.07
L2	6.00	6.10	6.20
N	0.60	0.80	1.00

Marking Outline



Part Name: GMN1K110LD

1. Logo Mark: 
2. P/N Mark: 1K110LD
3. Date Code: XXXX

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