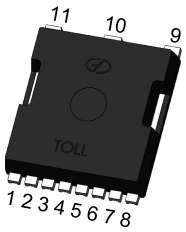
N-Channel 200V (D-S) Power MOSFET

Features

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



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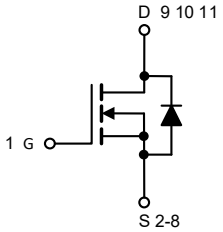
Applications

- DC/DC
- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit



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

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	200	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V	T_C=25°C	I_D	120	A
	T_C=100°C		76	
Drain Current, Pulsed *(Note 1)*		I_{DM}	480	A
Single Avalanche Energy *(Note 2)*		E_{AS}	900	mJ
Power Dissipation	T_C=25°C	P_D	417	W
	T_C=100°C		167	
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Single Pulse; $t_p \leq$ 1us.
Note 2: V_{DD} = 50V, I_D = 60A, R_G = 25Ω, starting T_J = 25 °C.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	0.3	°C/W
Thermal Resistance Junction to Ambient *(Note 3)*	R_{thJA}	50	°C/W

Note 3: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.

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	200	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=200V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	2.0	--	4.0	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance *(Note 4)*	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	--	8.5	11	mΩ
Total Gate Charge	Q_g	$V_{GS(off)}$=0V, $V_{GS(on)}$=10V, V_{DD}=100V, I_D=20A	--	67.3	--	nC
Gate Source Charge	Q_{gs}		--	21.7	--	
Gate Drain Charge	Q_{gd}		--	7.8	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=100V, I_D=20A, R_G=10Ω	--	15	--	ns
Turn-on Rise Time	t_r		--	20	--	
Turn-off Delay Time	$t_{d(off)}$		--	35	--	
Turn-off Fall Time	t_f		--	9	--	
Gate Resistance	R_g	V_{GS}=0V, f=1MHz, open drain	--	3.7	--	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=100V, f=250KHz	--	5430	--	pF
Output Capacitance	C_{oss}		--	406	--	
Reverse Transfer Capacitance	C_{rss}		--	6.5	--	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Diode Forward Voltage *(Note 4)*	V_{SD}	I_F=20A, V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	V_R =100V, I_F =20A, di/dt = 100 A/μs	--	107	--	ns
Reverse Recovery Charge	Q_{rr}		--	557	--	nC

Note 4: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

Typical Characteristics Curves (T$_J$ = 25℃ unless otherwise noted)

Fig.1 - Output Characteristics

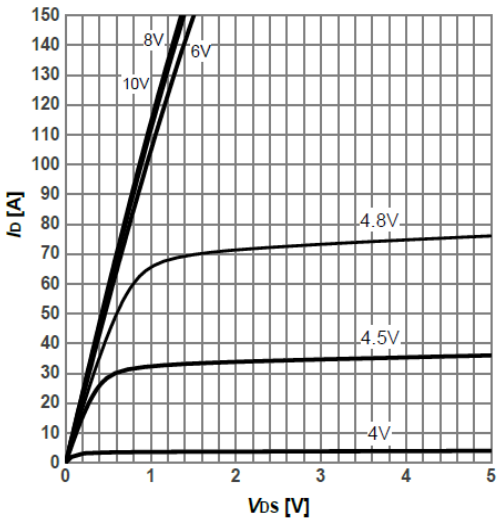


Fig.2 - Transfer Characteristics

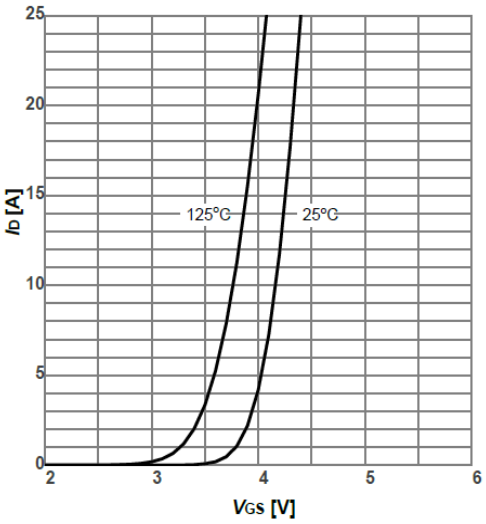


Fig.3 - Drain-Source On-Resistance

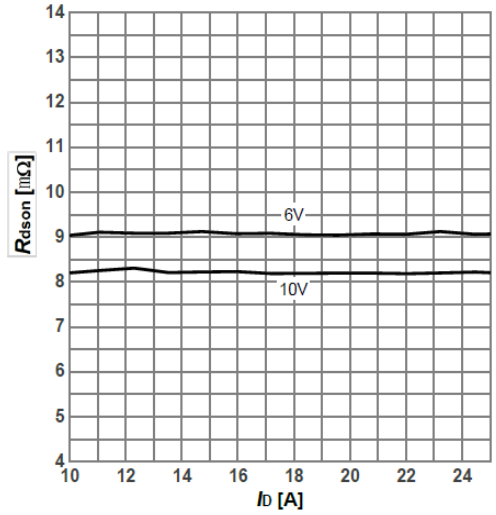


Fig.4 - Normalized On-Resistance

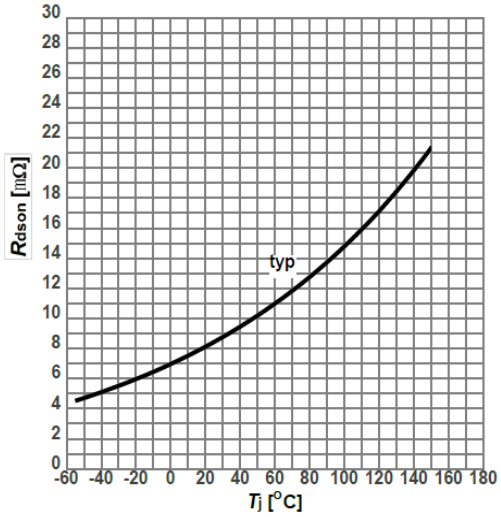


Fig.5 - Drain-Source On-Resistance

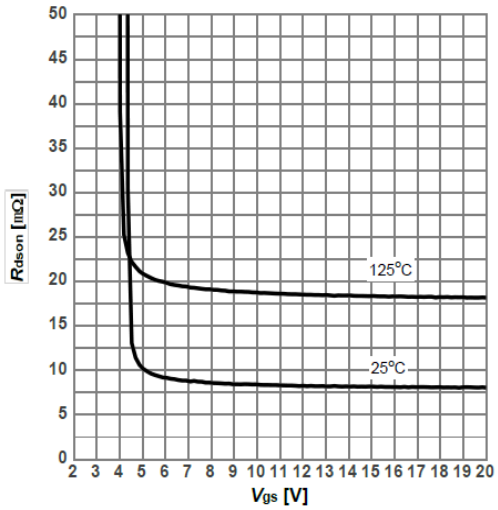
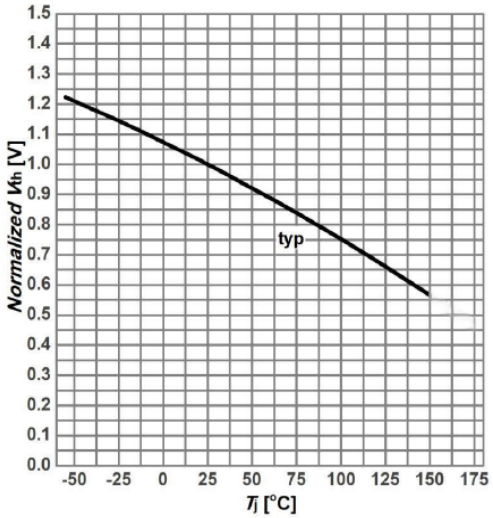


Fig.6 - Normalized Threshold Voltage



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

Fig.7 - Capacitance

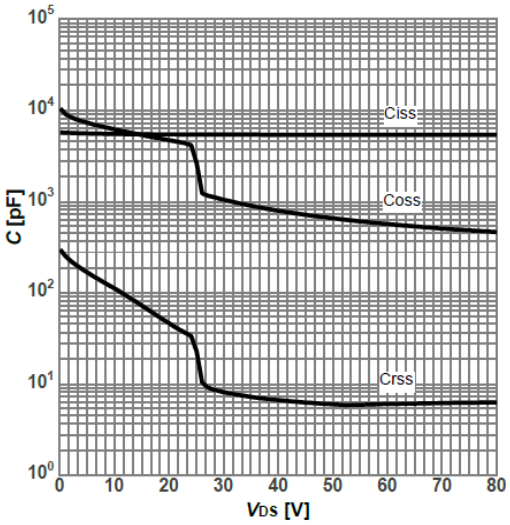


Fig.8 - Gate charge

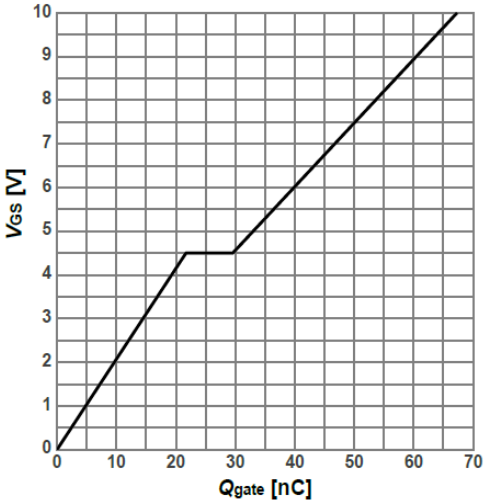


Fig.9 - Forward Characteristic

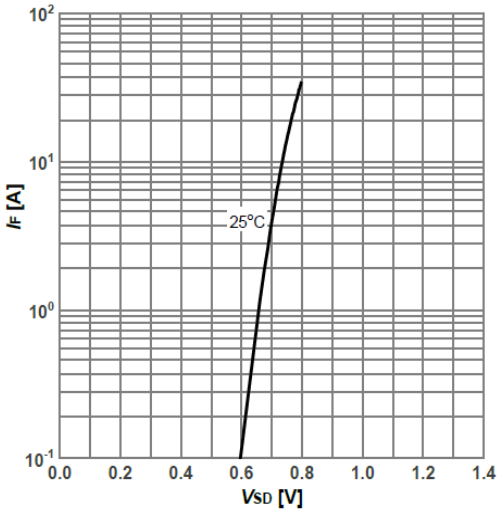


Fig.10 - Safe Operating Area

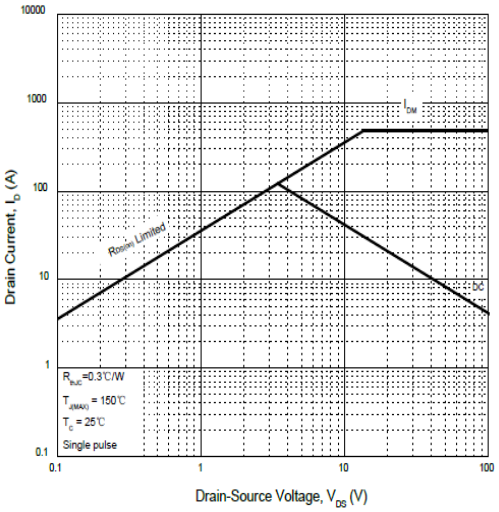


Fig.11 - Normalized Thermal Impedance, Junction-Case

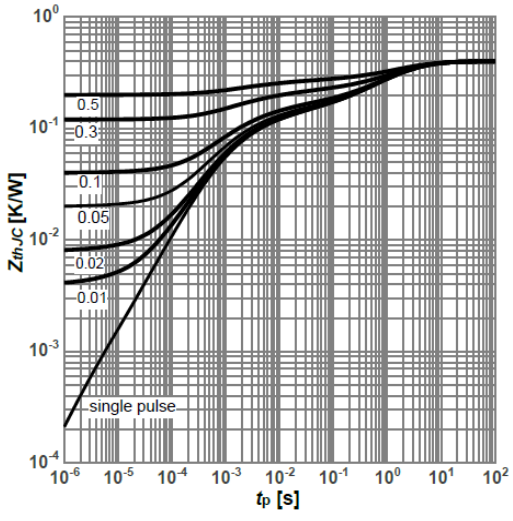
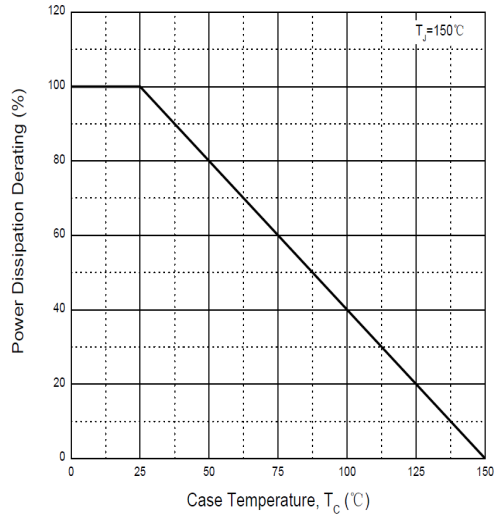
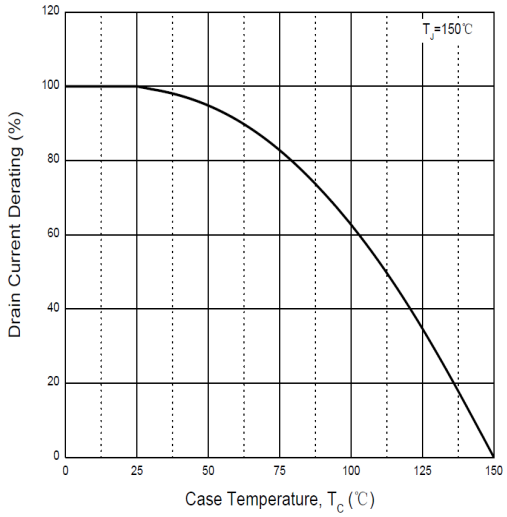


Fig.12 - Power Derating



Typical Characteristics Curves (TJ = 25°C unless otherwise noted)

Fig.13 - Drain Current Derating



Package Outline Dimensions (Unit: millimeters)

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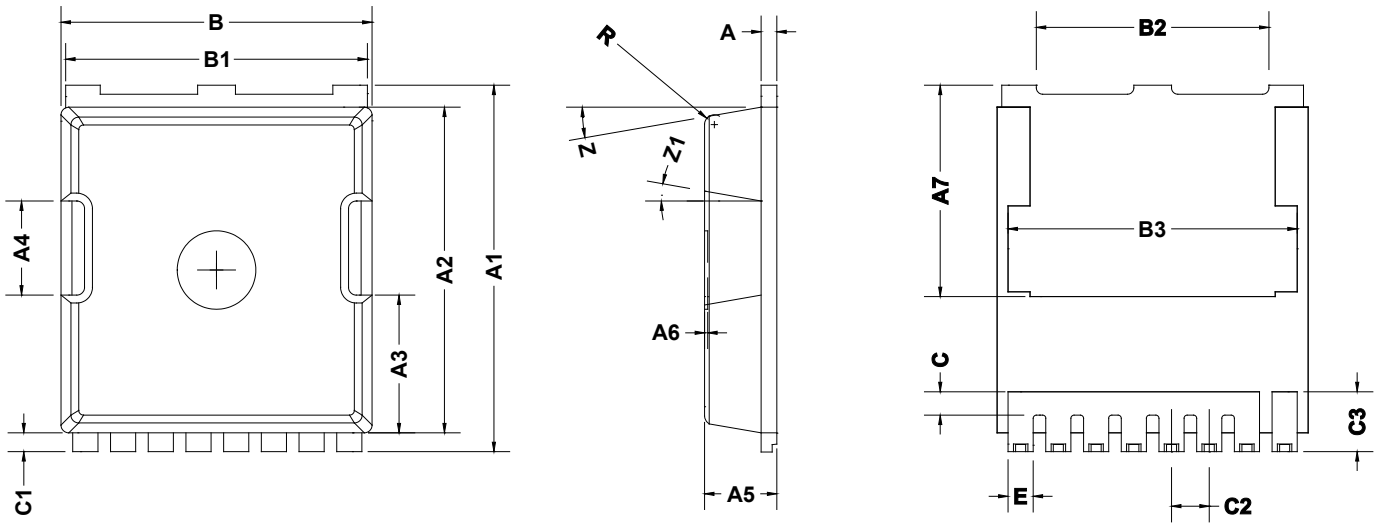

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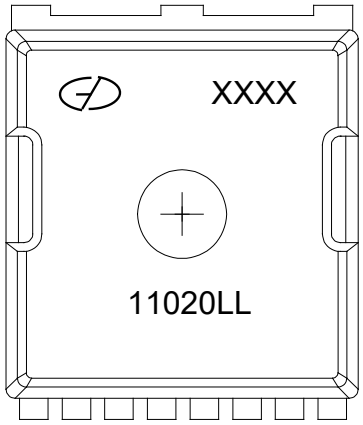
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	0.400	0.500	0.600	B2	7.300	7.400	7.500
A1	11.58	11.68	11.78	B3	9.100	9.200	9.300
A2	10.33	10.38	10.43	C	0.650	0.750	0.850
A3	4.290	4.390	4.490	C1	0.500	0.600	0.700
A4	2.900	3.000	3.100	C2	1.100	1.200	1.300
A5	2.250	2.300	2.350	C3	1.810	1.910	2.010
A6	-	0.100	0.200	E	0.700	0.800	0.900
A7	6.640	6.740	6.840	R	-	-	0.3
B	9.850	9.900	9.950	Z	-	-	10°
B1	9.500	9.600	9.700	Z1	-	10°	-

Marking Outline



Part Name: GMN11020LL

1. Logo Mark:
2. P/N Mark: 11020LL
3. Date Code: XXXX

Revision History

Version	Date	Major Changes
Rev.A	2024.09.30	Official Release

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