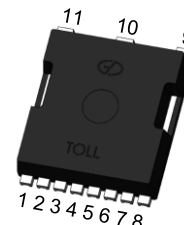


N-Channel 100V (D-S) Power MOSFET

Features

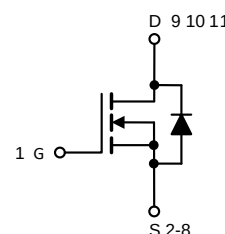
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{DS(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



TOLL

Applications

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



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 $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	A
		$T_C=100^\circ\text{C}$	
Drain Current, Pulsed (Note 1)	I_{DM}	1527	A
Single Avalanche Energy (Note 2)	E_{AS}	2132	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	W
		$T_C=100^\circ\text{C}$	
Operating Junction/ Storage Temperature Range	T_J / T_{STG}	-55 to +150	$^\circ\text{C}$

Note 1: Single Pulse; $t_p \leq 1\mu\text{s}$.

Note 2: $V_{DD} = 50\text{V}$, $V_{GS} = 10\text{V}$, $L = 1\text{mH}$, $R_G = 25\Omega$, starting $T_J = 25^\circ\text{C}$.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	0.3	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 3)	R_{thJA}	25	$^\circ\text{C/W}$

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	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	2	--	4	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 =80A	--	1.2	1.5	mΩ
Total Gate Charge	Q _g	V _{GS(off)} =0V, V _{GS(on)} =10V, V _{DD} =50V, I _D =80A	--	154	--	nC
Gate Source Charge	Q _{gs}		--	46	--	
Gate Drain Charge	Q _{gd}		--	29	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =50V, I _D =80A, R _G =3Ω	--	26	--	ns
Turn-on Rise Time	t _r		--	35	--	
Turn-off Delay Time	t _{d(off)}		--	94	--	
Turn-off Fall Time	t _f		--	49	--	
Gate Resistance	R _g	V _{GS} =0V, f=1MHz, open drain	--	1.6	--	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz	--	11930	--	pF
Output Capacitance	C _{oss}		--	2720	--	
Reverse Transfer Capacitance	C _{rss}		--	71	--	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Current, Continuous	I _{SD}	T _C =25°C	--	--	399	A
Diode Forward Voltage (Note 4)	V _{SD}	I _F =2A, V _{GS} =0V	--	--	1.2	V
Reverse Recovery Time	T _{rr}	I _F = 80A, di/dt = 100 A/μs	--	107	--	ns
Reverse Recovery Charge	Q _{rr}		--	229	--	nC

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

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

Fig.1 - Output Characteristics

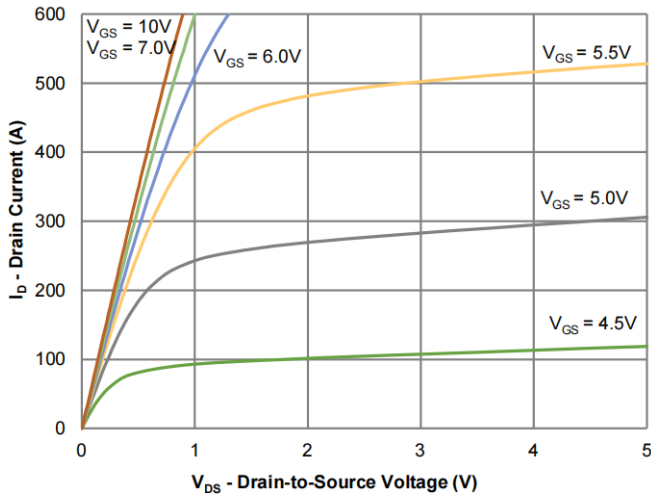


Fig.2 - Transfer Characteristics

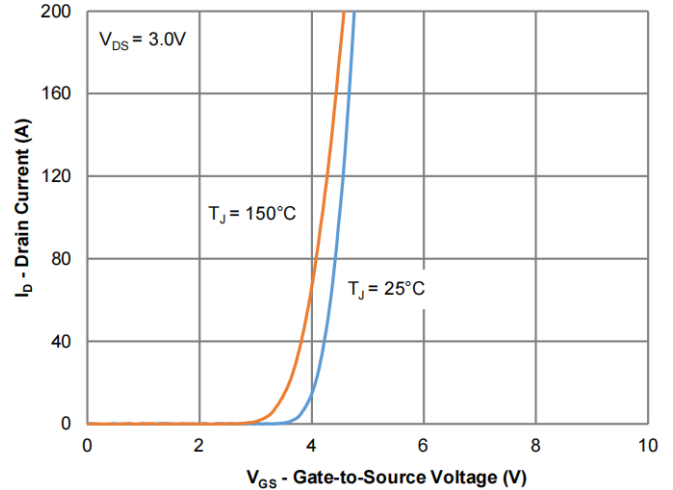


Fig.3 - On-Resistance vs. Gate-Source Voltage

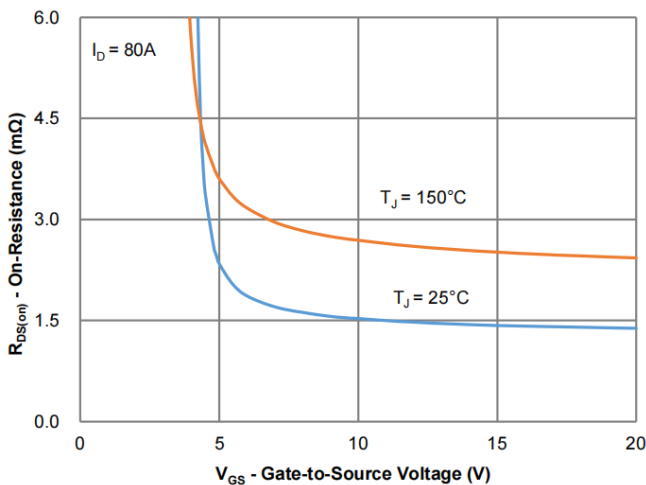


Fig.4 - On-Resistance vs. Drain Current and Gate Voltage

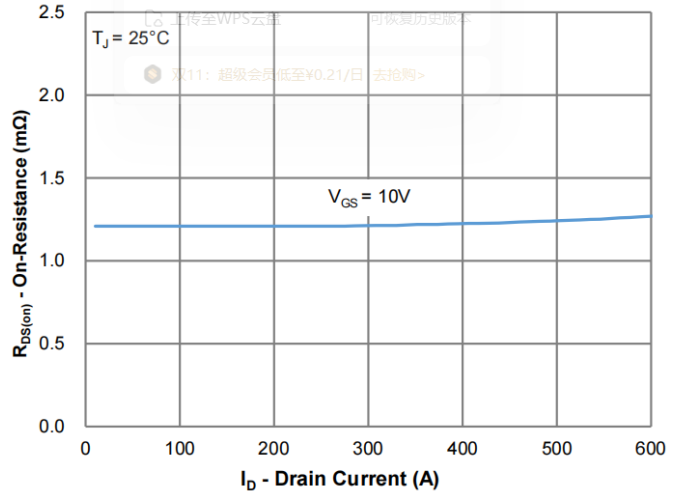


Fig.5 - On-Resistance vs. Junction Temperature

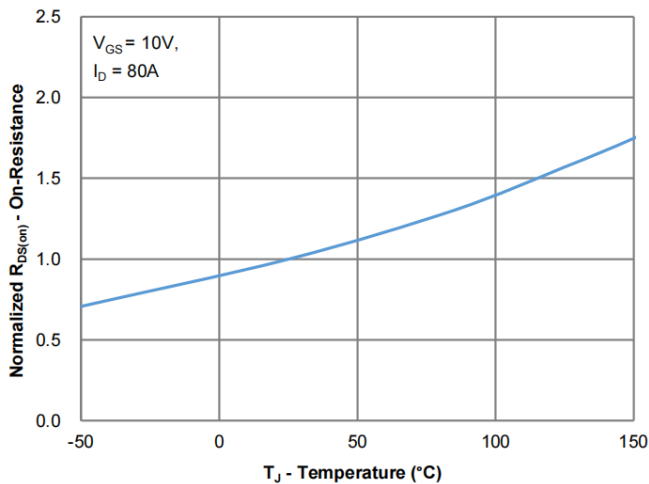
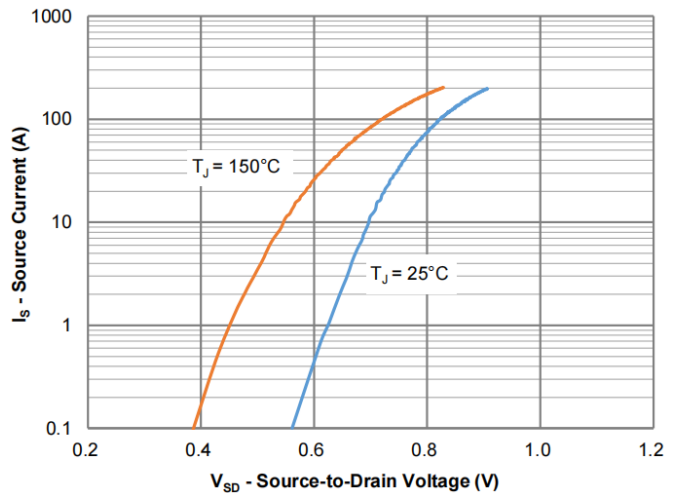


Fig.6 - Source-Drain Diode Forward Voltage



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

Fig.7 - Gate Threshold Variation vs. Junction Temperature

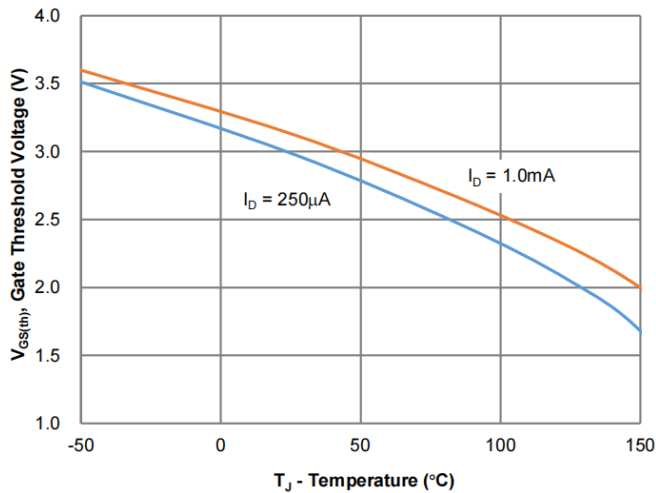


Fig.8 - Gate charge

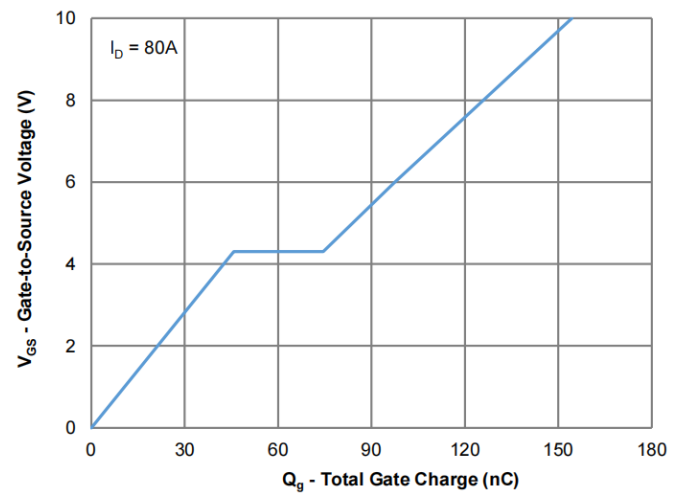


Fig.9 - Capacitance Characteristics

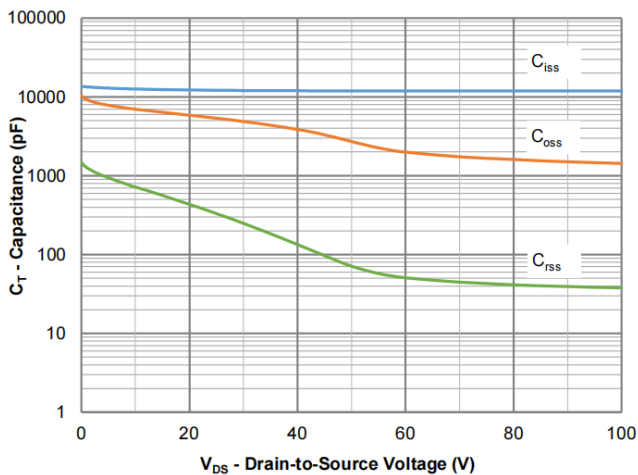


Fig.10 - Power Derating

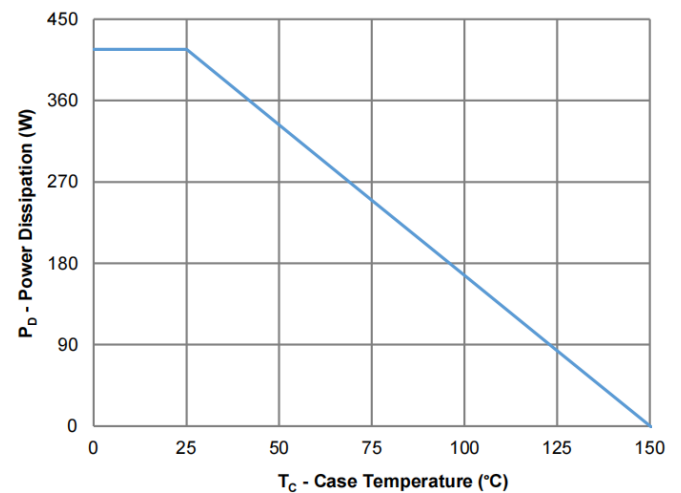


Fig.11 - Current Derating

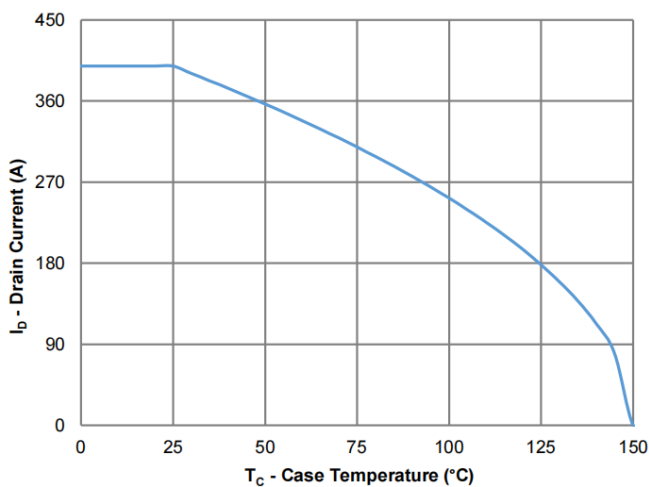
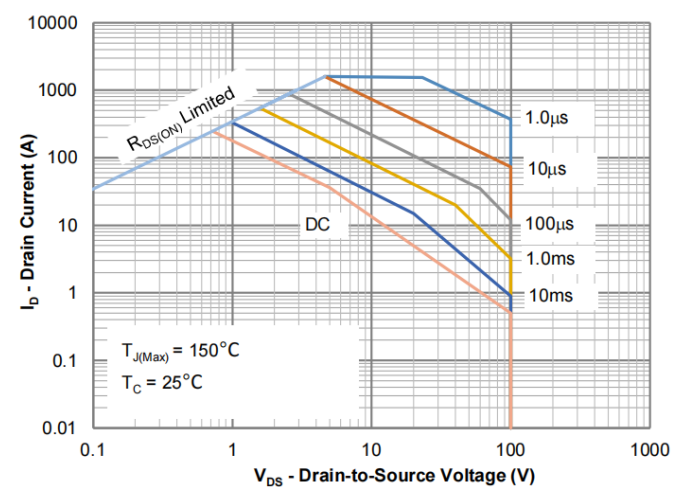
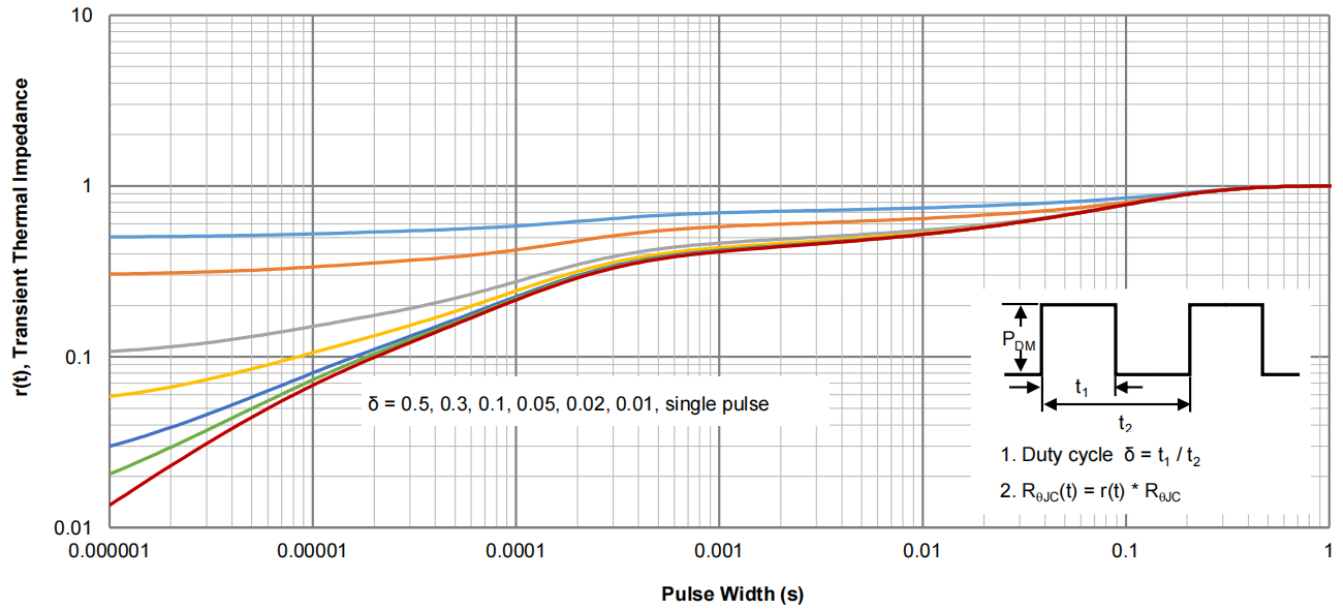


Fig.12 - Safe Operating Area



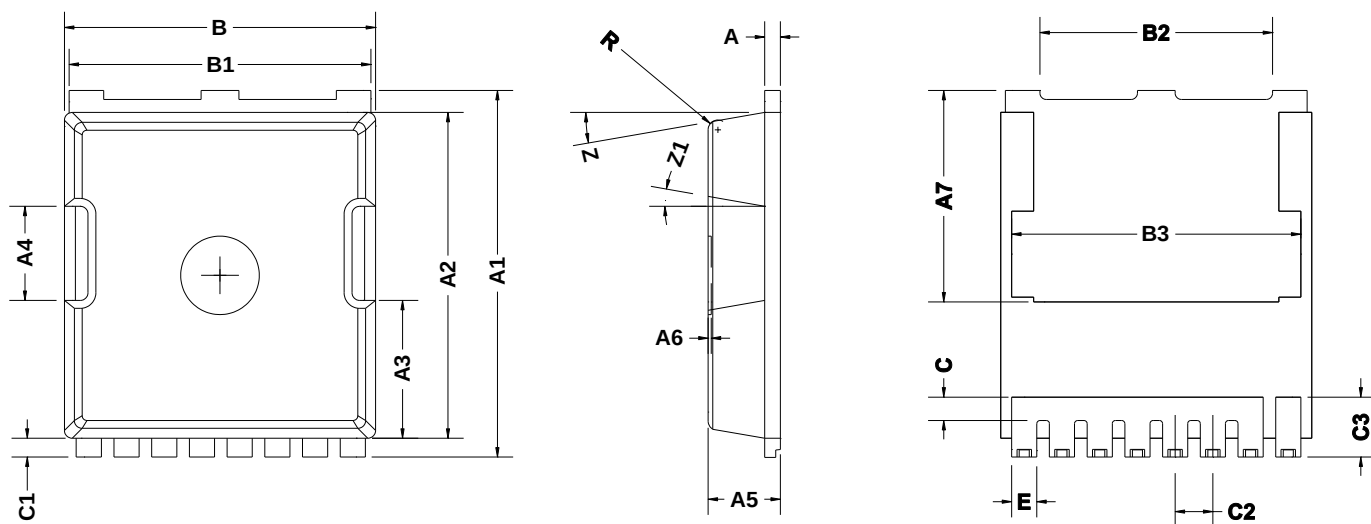
Typical Characteristics Curves (T_J = 25°C unless otherwise noted)

Fig.13 - Normalized Maximum Transient Thermal Impedance



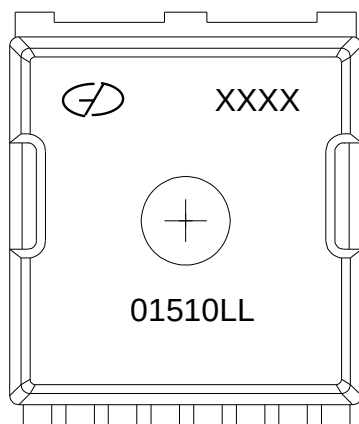
Package Outline Dimensions (Unit: millimeters)

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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: GMN01510LL

1. Logo Mark: 
2. P/N Mark: 01510LL
3. Date Code: XXXX

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