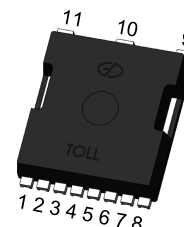


N-Channel 150V (D-S) Power MOSFET

Features

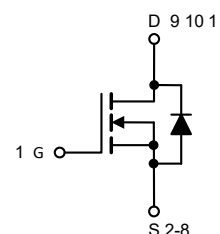
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{DS(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



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}	150	V
Gate Source Voltage		V_{GS}	± 20	V
Drain Current, Continuous $V_{GS}=10\text{V}$	$T_C=25^\circ\text{C}$	I_D	240	A
	$T_C=100^\circ\text{C}$		155	
Drain Current, Pulsed (Note 1)		I_{DM}	745	A
Single Avalanche Energy (Note 2)		E_{AS}	1904	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	500	W
	$T_C=100^\circ\text{C}$		250	
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +175	$^\circ\text{C}$

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

Note 2: $V_{DD} = 75\text{V}$, $V_{GS} = 10\text{V}$, $L = 1\text{mH}$, $R_G = 25\Omega$, 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	150	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =150V, V _{GS} =0V	--	--	1	μA
		V _{DS} =150V, V _{GS} =0V, T _J = 125°C	--	--	100	
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250μA	2.5	3.4	4.5	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	--	3.6	4.3	mΩ
Total Gate Charge	Q _g	V _{GS(off)} =0V, V _{GS(on)} =10V, V _{DD} =75V, I _D =80A	--	87	--	nC
Gate Source Charge	Q _{gs}		--	32	--	
Gate Drain Charge	Q _{gd}		--	21	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =75V, I _D =80A, R _G =3Ω	--	19.8	--	ns
Turn-on Rise Time	t _r		--	33	--	
Turn-off Delay Time	t _{d(off)}		--	48	--	
Turn-off Fall Time	t _f		--	27	--	
Gate Resistance	R _g	V _{GS} =0V, f=1MHz, open drain	--	2.5	--	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =75V, f=1MHz	--	6385	--	pF
Output Capacitance	C _{oss}		--	734	--	
Reverse Transfer Capacitance	C _{rss}		--	18.4	--	

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	--	--	240	A
Diode Forward Voltage (Note 4)	V _{SD}	I _F =2A, V _{GS} =0V	--	0.7	1.2	V
Reverse Recovery Time	T _{rr}	V _R = 80V, di/dt = 100 A/μs	--	48	--	ns
Reverse Recovery Charge	Q _{rr}		--	46	--	nC

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

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

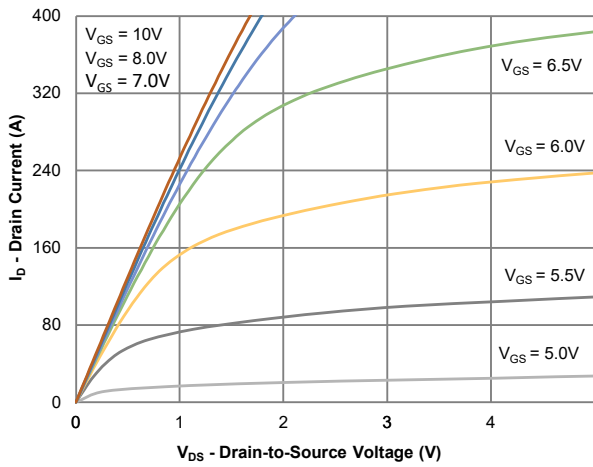


Figure 1: Output Characteristics

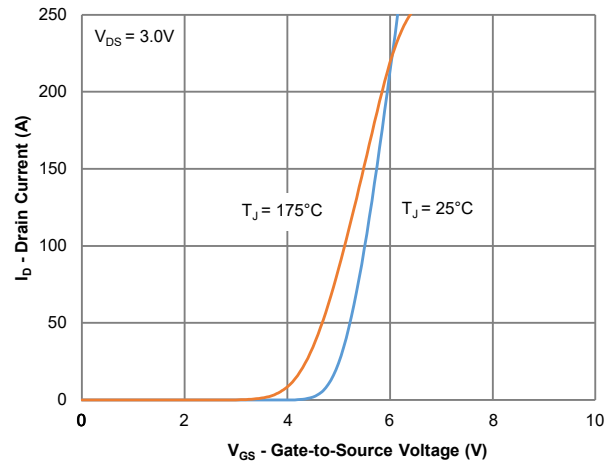


Figure 2: Transfer Characteristics

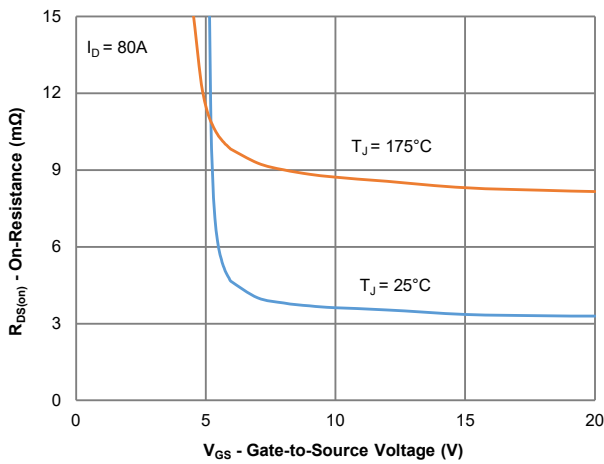


Figure 3: On-Resistance vs. Gate-Source Voltage

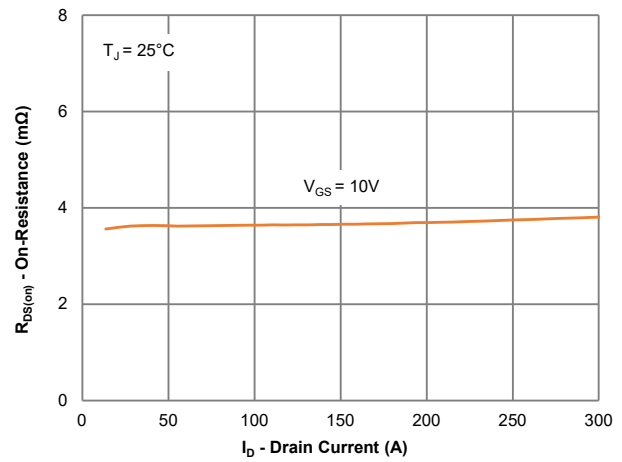


Figure 4: On-Resistance vs. Drain Current and Gate Voltage

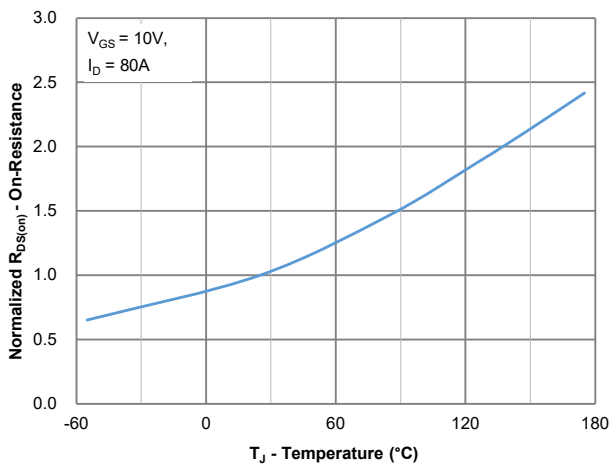


Figure 5: On-Resistance vs. Junction Temperature

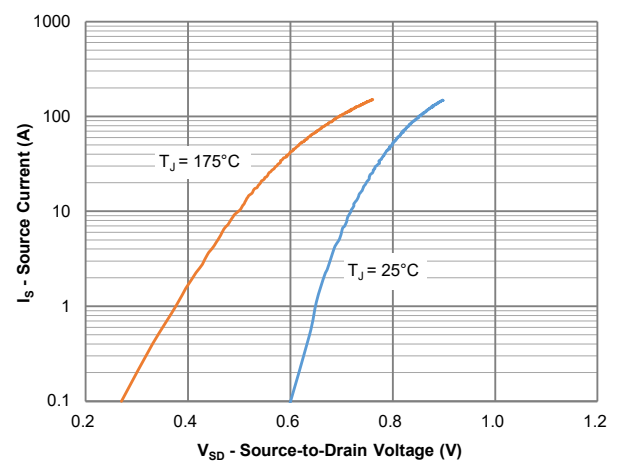


Figure 6: Source-Drain Diode Forward Voltage

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

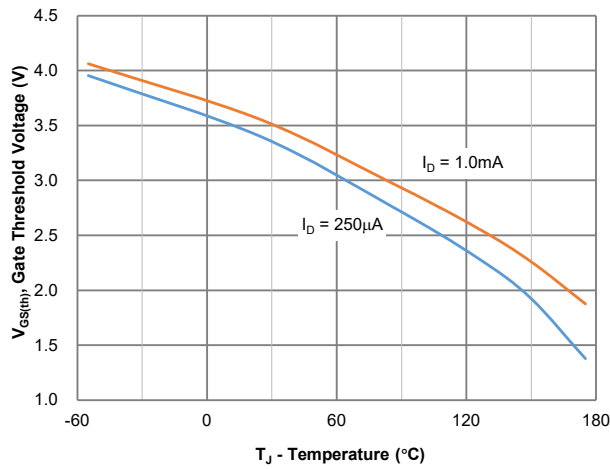


Figure 7: Gate Threshold Variation vs. Junction Temperature

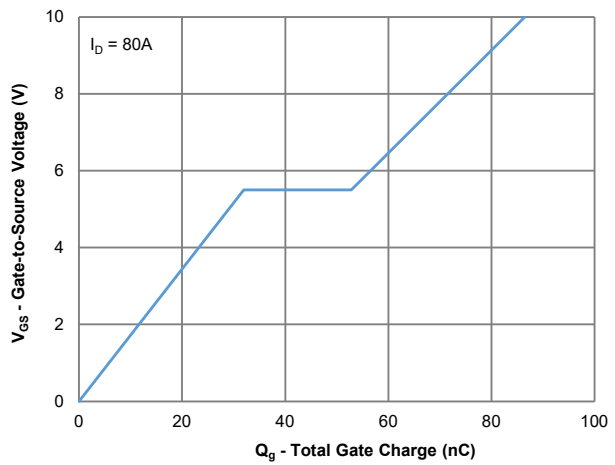


Figure 8: Gate Charge Characteristics

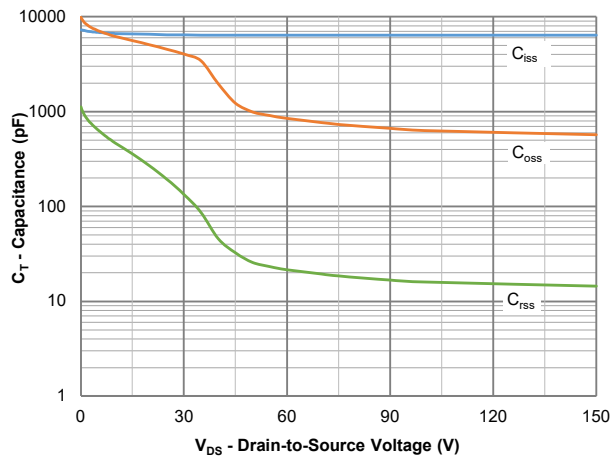


Figure 9: Capacitance Characteristics

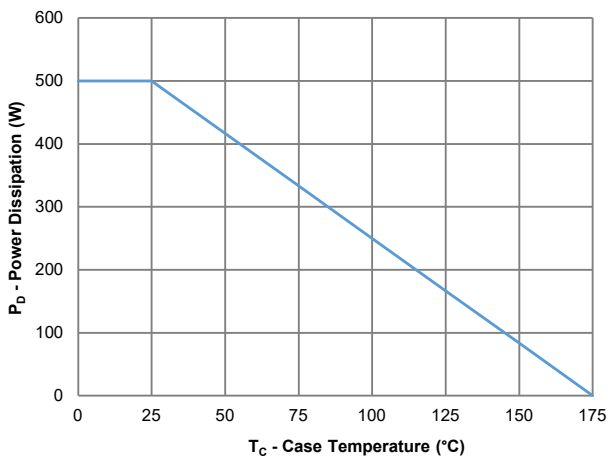


Figure 10: Power Derating

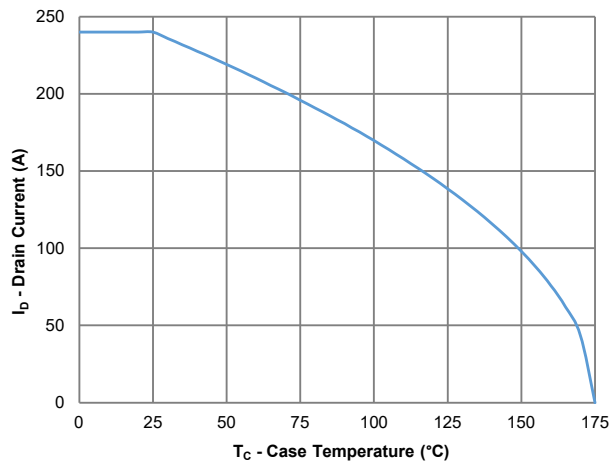


Figure 11: Current Derating

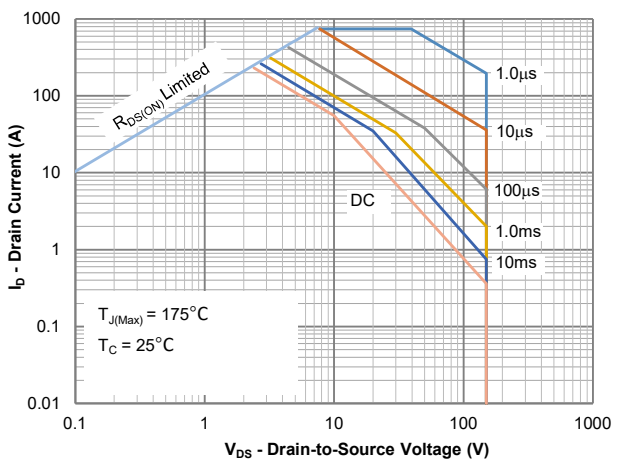


Figure 12: Safe Operating Area

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

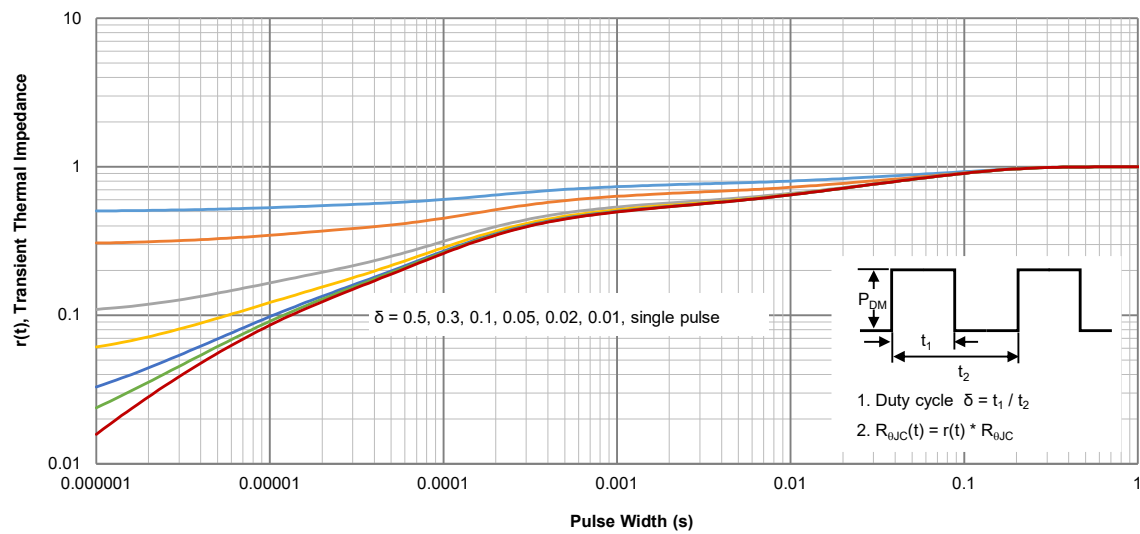
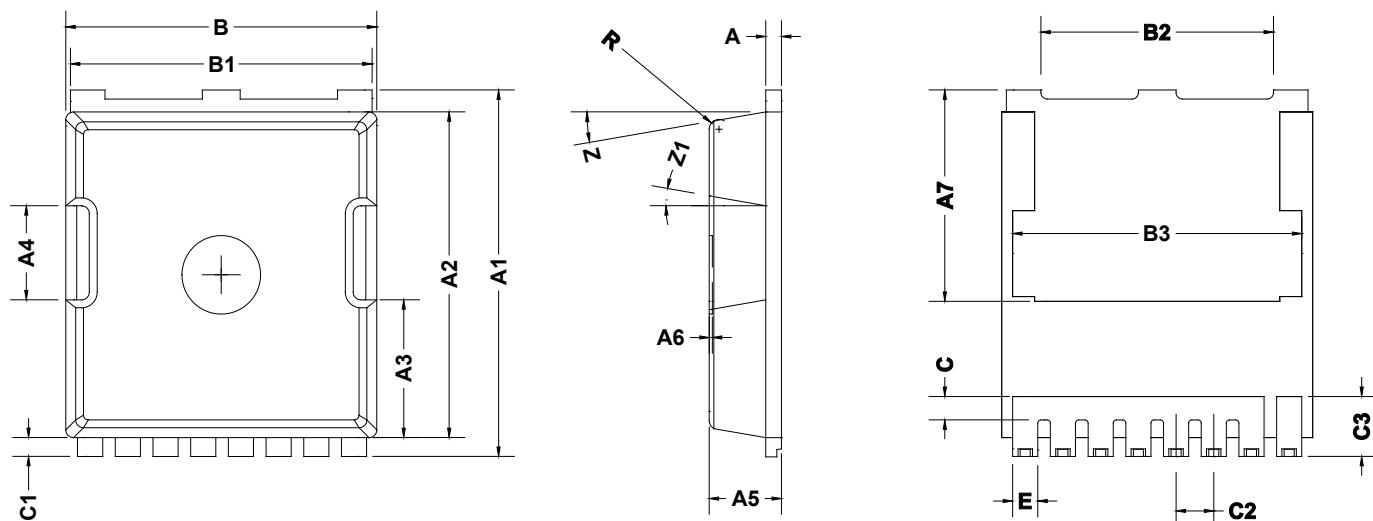


Figure 13: Normalized Maximum Transient Thermal Impedance

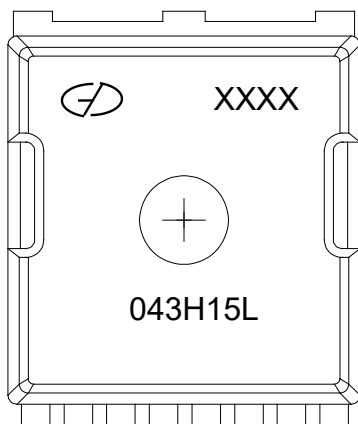
Package Outline Dimensions (Unit: millimeters)

TOLL



TOLL							
	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: GMN043H15LL

1. Logo Mark: 
2. P/N Mark: 043H15LL
3. Date Code: XXXX

Revision History

Version	Date	Major Changes
Rev.A	2025.11.17	Official Release

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