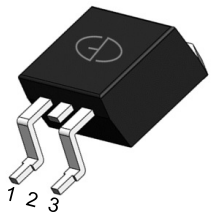
N-Channel 80V (D-S) Power MOSFET

Features

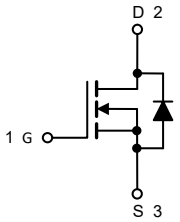
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant



TO-263AB (D^2PAK)

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}	80	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V	T_C=25°C	I_D	52	A
	T_C=100°C		33	
Drain Current, Pulsed *(Note 1)*		I_{DM}	208	A
Single Avalanche Energy *(Note 2)*		E_{AS}	180	mJ
Power Dissipation	T_C=25°C	P_D	63	W
	T_C=100°C		25	
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, V_{GS} = 10V, L = 0.4mH, R_G = 25Ω, starting T_J = 25 °C.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	2	°C/W
Thermal Resistance Junction to Ambient *(Note 3)*	R_{thJA}	62.5	°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	80	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V, 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 *(Note 4)*	$R_{DS(on)}$	V_{GS}=10V, I_D=15A	--	9.5	12	mΩ
Total Gate Charge	Q_g	$V_{GS(off)}$=0V, $V_{GS(on)}$=10V, V_{DD}=40V, I_D=14.5A	--	26	--	nC
Gate Source Charge	Q_{gs}		--	6.4	--	
Gate Drain Charge	Q_{gd}		--	3.2	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=40V, I_D=14.5A, R_G=3Ω	--	19	--	ns
Turn-on Rise Time	t_r		--	10	--	
Turn-off Delay Time	$t_{d(off)}$		--	24.6	--	
Turn-off Fall Time	t_f		--	5	--	
Gate Resistance	R_g	V_{GS}=0V, f=1MHz, open drain	--	1.9	--	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=40V, f=1MHz	--	1450	--	pF
Output Capacitance	C_{oss}		--	209	--	
Reverse Transfer Capacitance	C_{rss}		--	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	--	--	68	A
Diode Forward Voltage *(Note 4)*	V_{SD}	I_F=15A, V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	V_R=40V, I_F=10A, di/dt=100A/μs	--	17	--	ns
Reverse Recovery Charge	Q_{rr}		--	64	--	nC

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

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

Fig.1 - Output Characteristics

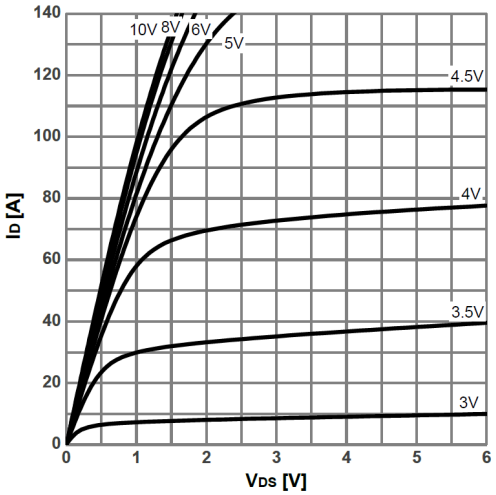


Fig.2 - Transfer Characteristics

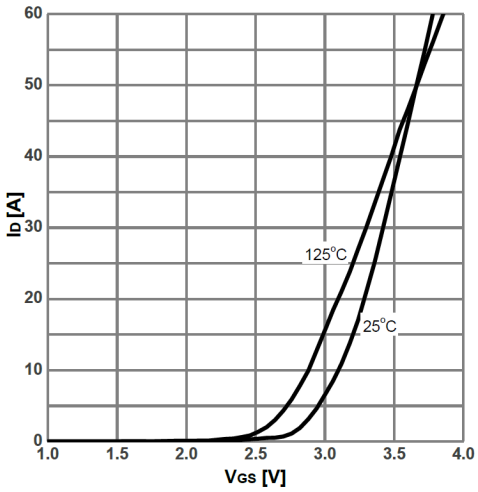


Fig.3 - Drain-Source On-Resistance

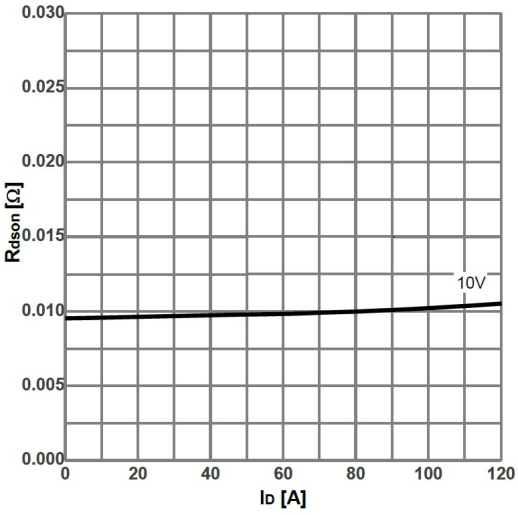


Fig.4 - Drain-Source On-Resistance

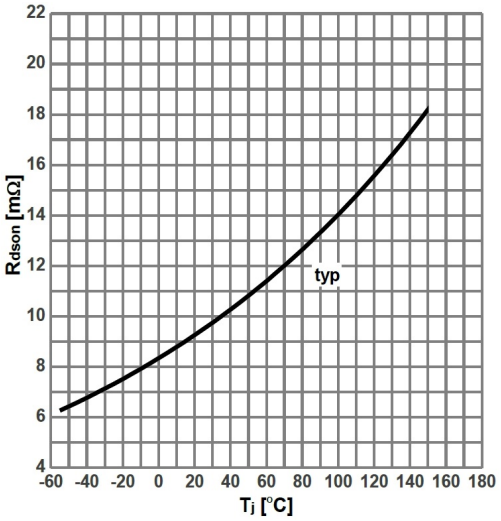


Fig.5 - Drain-Source On-Resistance

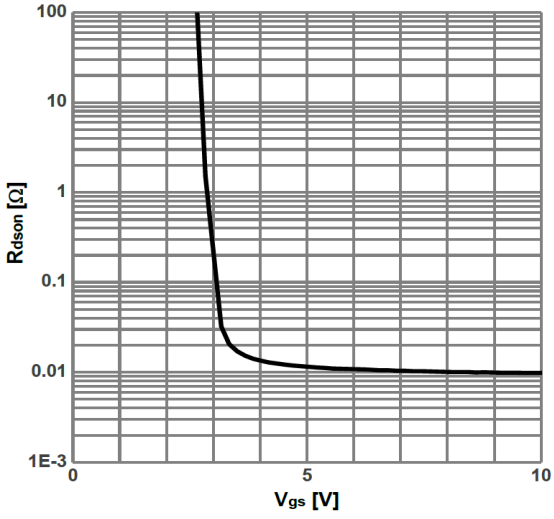
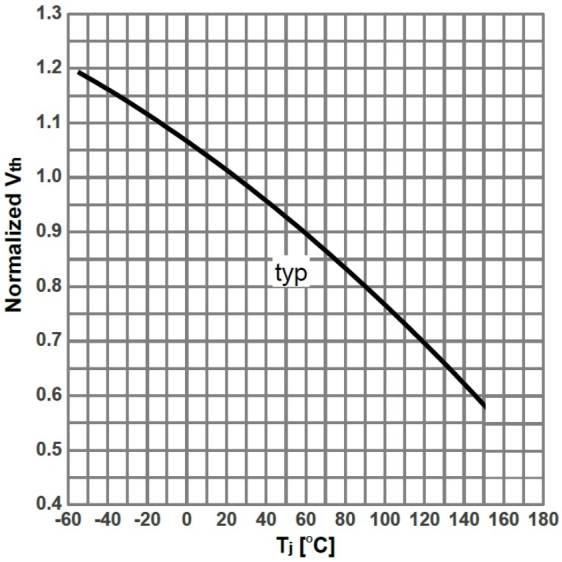


Fig.6 - Normalized Threshold Voltage



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

Fig.7 - Capacitance

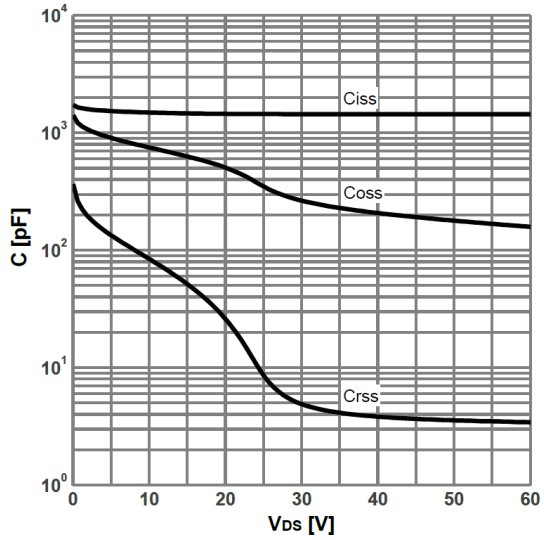


Fig.8 - Gate charge

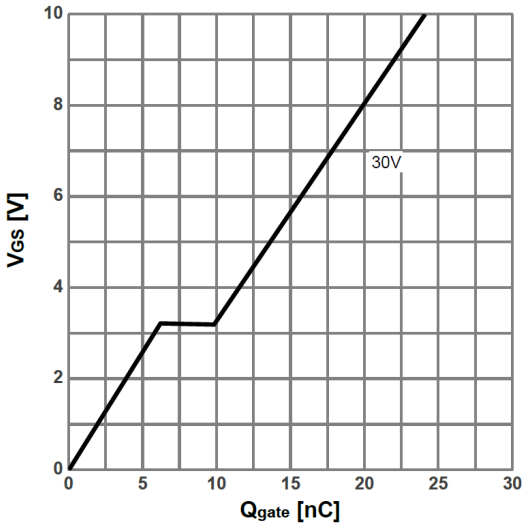


Fig.9 - Forward Characteristic

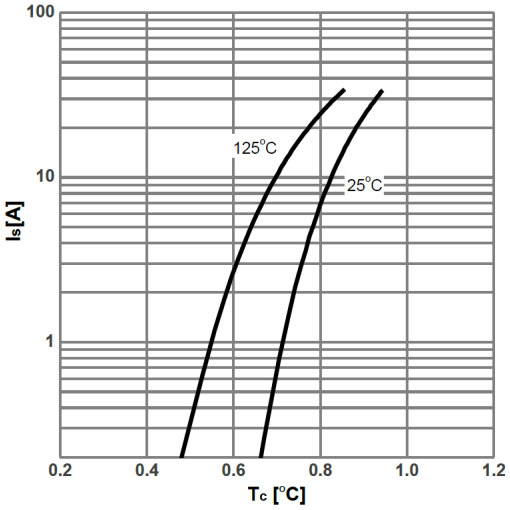


Fig.10 - Safe Operating Area

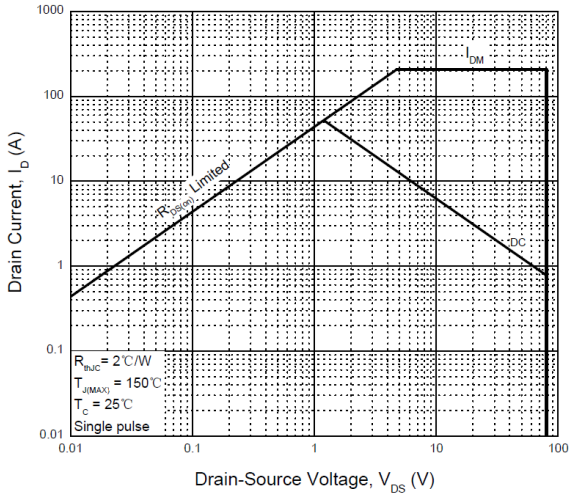


Fig.11 - Thermal Impedance, Junction-Case

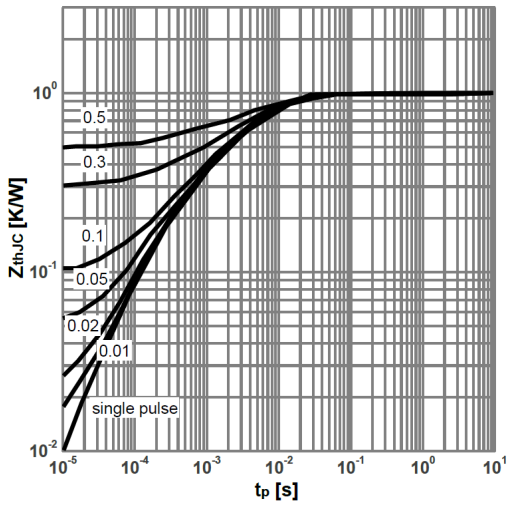
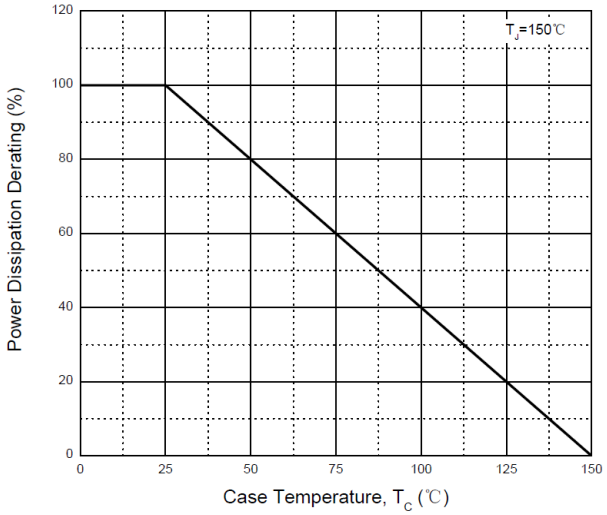
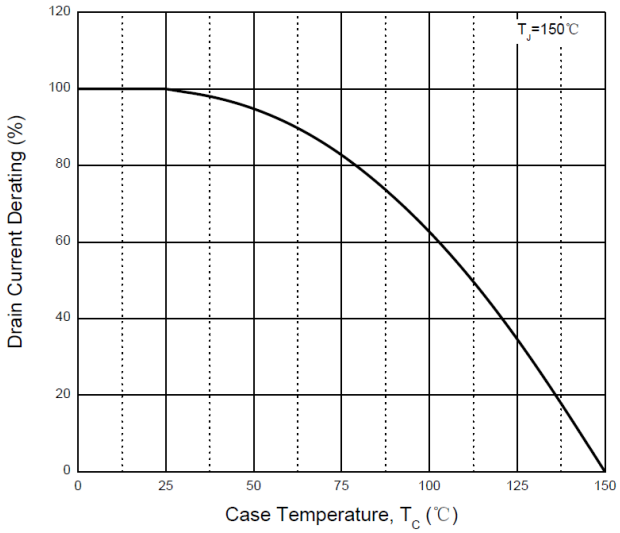


Fig.12 - Power Derating



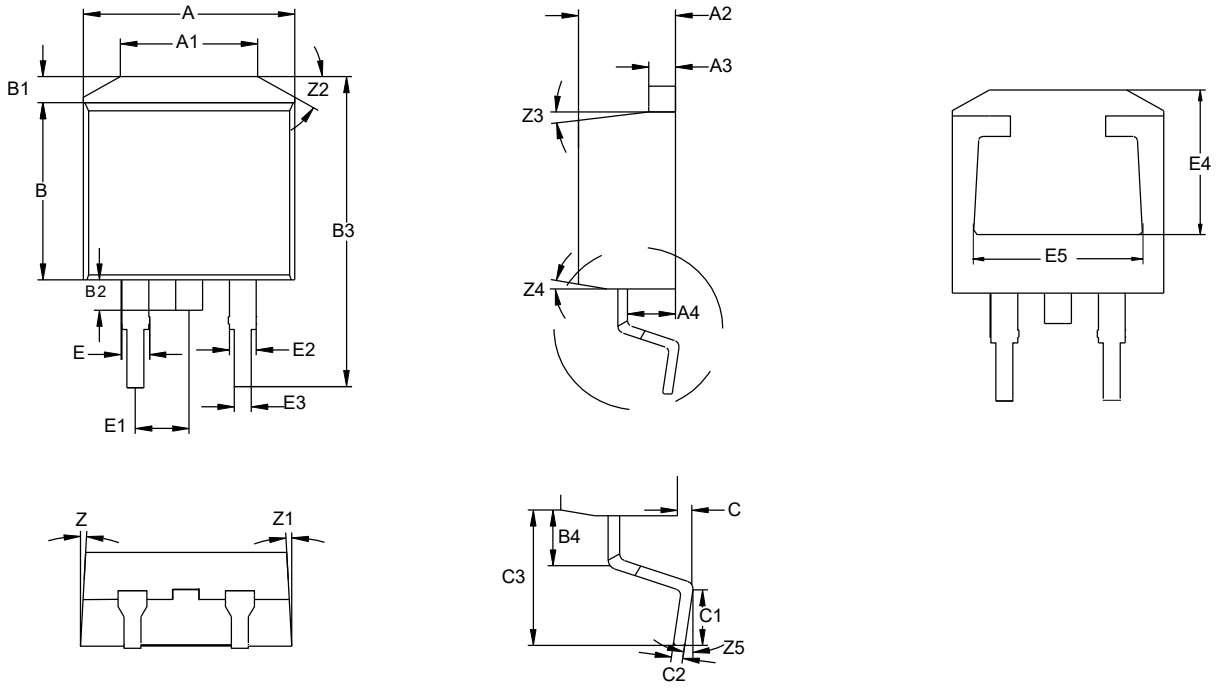
Typical Characteristics Curves (TJ = 25°C unless otherwise noted)

Fig.13 - Drain Current Derating



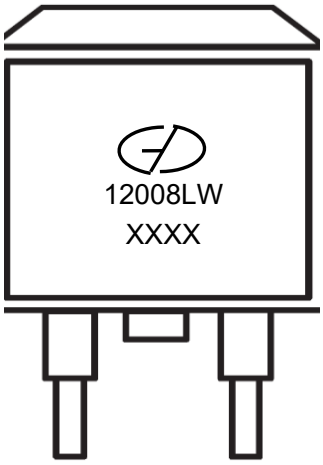
Package Outline Dimensions (Unit: millimeters)

TO-263



TO-263AB							
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	9.8	10	10.2	C3	5	5.3	5.6
A1	6.5	-	-	E	1.17	1.37	1.57
A2	4.4	4.6	4.8	E1	2.44	2.54	2.64
A3	1.17	1.27	1.37	E2	1.17	1.27	1.37
A4	2.37	2.67	2.97	E3	0.7	0.8	0.9
B	8.5	8.7	8.9	E4	-	7.1	-
B1	1.07	1.27	1.47	E5	-	8.7	-
B2	1.2	1.5	1.8	Z	-	3°	-
B3	15	15.3	15.6	Z1	-	3°	-
B4	1.8	2	2.2	Z2	-	30°	-
C	0	-	0.25	Z3	-	7°	-
C1	2.34	2.54	2.74	Z4	-	7°	-
C2	0.3	0.45	0.6	Z5	0°	-	8°

Marking Outline



Part Name: GMN012008LW

1. Logo Mark:
2. P/N Mark: 12008LW
3. Date Code: XXXX

Revision History

Version	Date	Major Changes
Rev.A	2024.04.30	Official Release

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