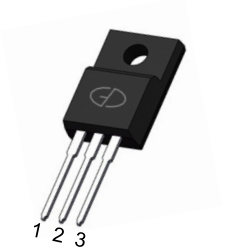
180mΩ,800V (D-S) Super Junction Power MOSFET

Features

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



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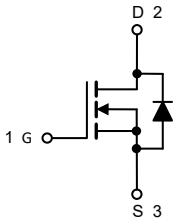
Applications

- Solar inverter
- Telecom/Sever
- AC/DC power supply



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

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	800	V
Gate Source Voltage		V_{GS}	±30	V
Drain Current, Continuous V_{GS}=10V	T_C=25°C	I_D	23	A
	T_C=125°C		10	
Drain Current, Pulsed *(Note 1)*		I_{DM}	92	A
Single Avalanche Energy *(Note 2)*		E_{AS}	845	mJ
Power Dissipation	T_C=25°C	P_D	35	W
	T_C=100°C		14	
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Single pulse; t_p ≤1us.
Note 2: V_{DD} = 50V, I_D = 13A, L = 0.5mH, R_G = 25Ω, starting T_J = 25 °C.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	3.57	°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	800	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=800V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	2.5	--	4.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance *(Note 4)*	$R_{DS(on)}$	V_{GS}=10V, I_D=12A	--	150	180	mΩ
Total Gate Charge	Q_g	$V_{GS(off)}$=0V, $V_{GS(on)}$=10V, V_{DD}=640V, I_D=24A	--	56	--	nC
Gate-Source Charge	Q_{gs}		--	15	--	
Gate-Drain Charge	Q_{gd}		--	21	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=400V, I_D=12A	--	20	--	ns
Turn-on Rise Time	t_r		--	13	--	
Turn-off Delay Time	$t_{d(off)}$		--	117	--	
Turn-off Fall Time	t_f		--	12	--	
Gate Resistance	R_g	V_{GS}=0V, f=1MHz, open drain	--	4	--	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=100V, f=250KHz	--	2440	--	pF
Output Capacitance	C_{oss}		--	83	--	
Reverse Transfer Capacitance	C_{rss}		--	1.9	--	

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	--	--	23	A
Diode Forward Voltage *(Note 4)*	V_{SD}	I_F=12A, V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	V_R =60V, I_F =24A, di/dt = 100 A/μs	--	375	--	ns
Reverse Recovery Charge	Q_{rr}		--	6.7	--	uC

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

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

Fig.1 - Output Characteristics

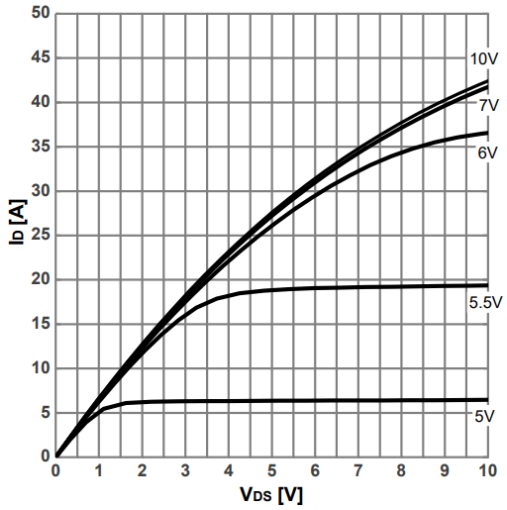


Fig.2 - Transfer Characteristics

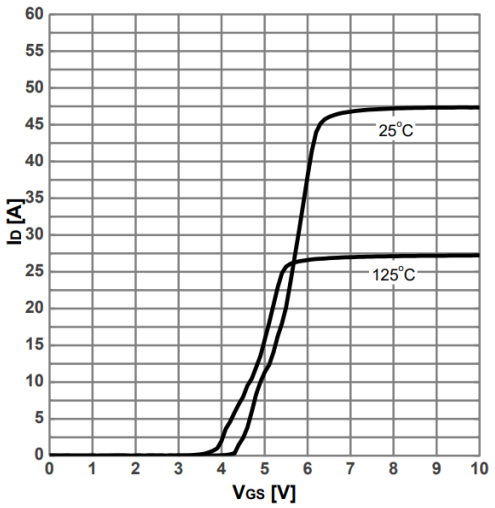


Fig.3 - Drain-Source On-Resistance

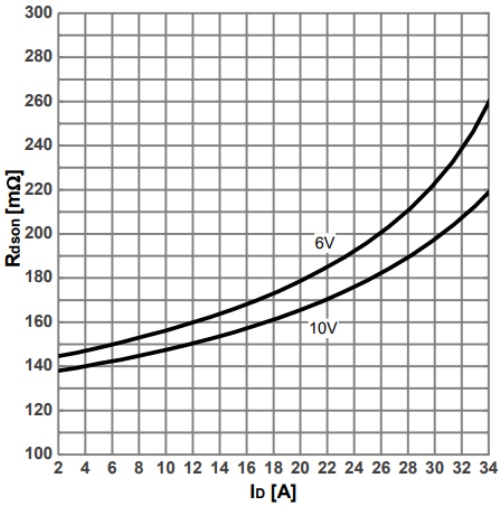


Fig.4 - Normalized On-Resistance

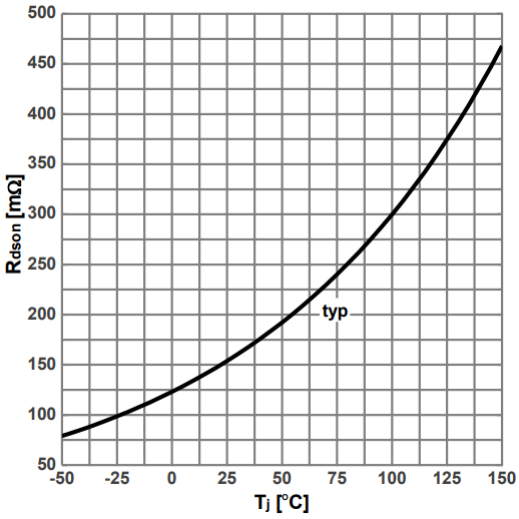


Fig.5 - Capacitance

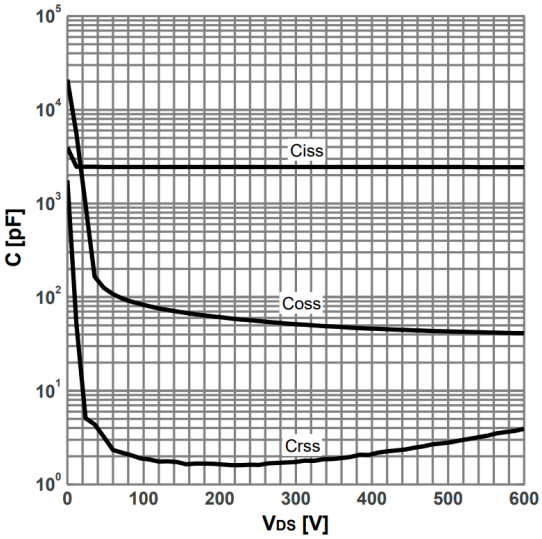
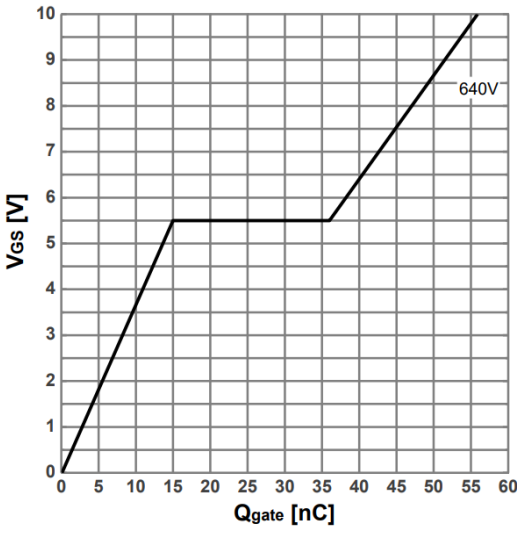


Fig.6 - Gate charge



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

Fig.7 - Forward Characteristic

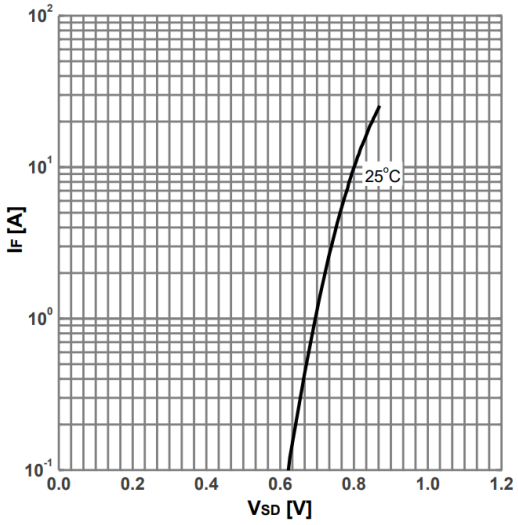


Fig.8 - Safe Operating Area

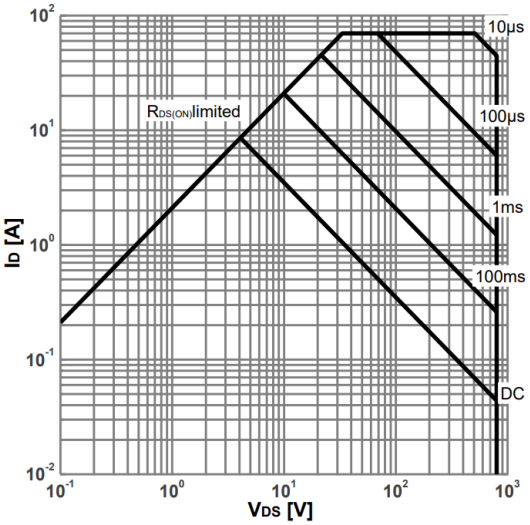


Fig.9 - Normalized Thermal Impedance, Junction-Case

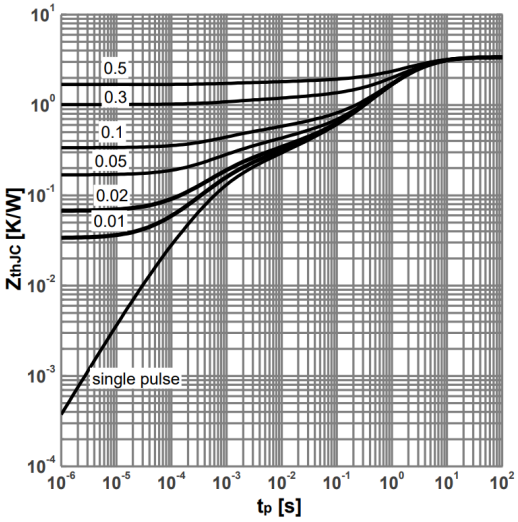


Fig.10 - Power Derating

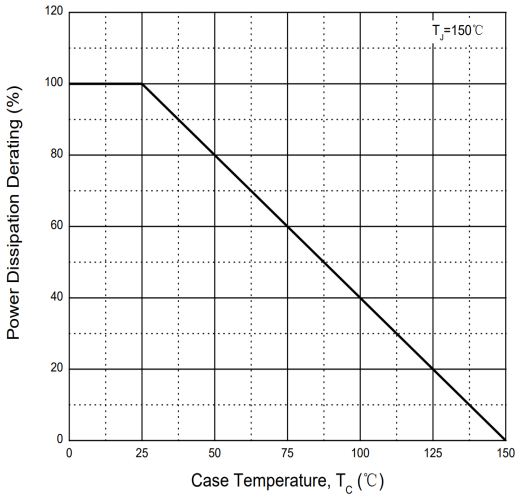
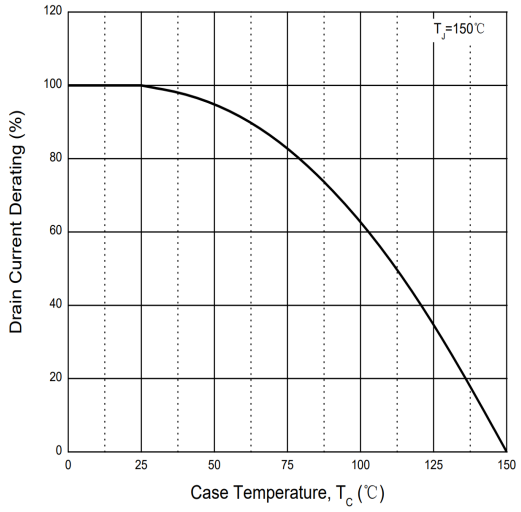


Fig.11 - Drain Current Derating



Package Outline Dimensions (Unit: millimeters)

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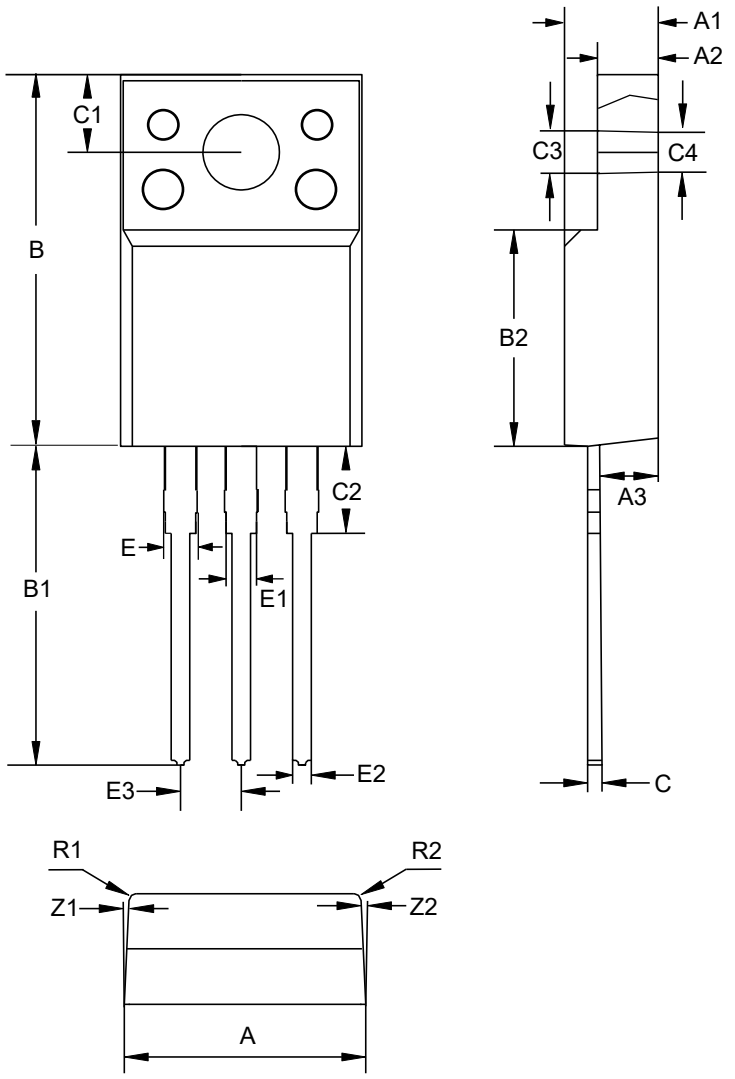

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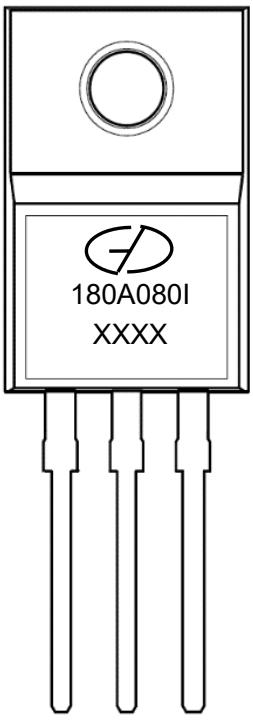
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	9.9	10.1	10.3	C3	3.0	3.2	3.4
A1	4.6	4.7	4.8	C4	3.0	-	-
A2	2.44	2.54	2.64	E	1.15	1.35	1.55
A3	2.25	2.45	2.65	E1	1.17	1.27	1.37
B	15.5	15.8	16.1	E2	0.7	0.8	0.9
B1	13.25	13.55	13.85	E3	2.44	2.54	2.64
B2	9.0	9.2	9.4	R1	-	0.3	-
C	0.5	0.6	0.7	R2	-	0.3	-
C1	3.1	3.3	3.5	Z1	-	3°	-
C2	3.0	3.3	3.6	Z2	-	3°	-

Marking Outline



Part Name: GMN180A080I

1. Logo Mark:
2. P/N Mark: 180A080I
3. Date Code: XXXX

Revision History

Version	Date	Major Changes
Rev.A	2024.03.15	Official Release

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