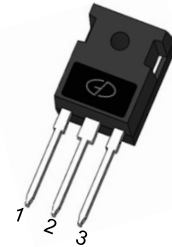


15mΩ,250V (D-S) Super Junction Power MOSFET

Features

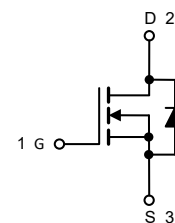
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{ds(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



TO-247AD

Applications

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



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)			
Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	250	V
Gate Source Voltage	V_{GS}	± 20	V
Drain Current, Continuous $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	140
		$T_C=125^\circ\text{C}$	62.5
Drain Current, Pulsed (Note 1)	I_{DM}	420	A
Single Avalanche Energy (Note 2)	E_{AS}	2000	mJ
Power Dissipation	P_D	500	W
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: $V_{DD} = 50\text{V}$, $I_D = 20\text{A}$, starting $T_J = 25^\circ\text{C}$.

Thermal Characteristics			
Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	0.25	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 3)	R_{thJA}	62	$^\circ\text{C/W}$

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 ($T_J = 25^\circ\text{C}$ unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=1mA$	250	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=250V, V_{GS}=0V$	--	--	10	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2.5	--	4.5	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Drain-Source On-state Resistance (Note 4)	$R_{DS(on)}$	$V_{GS}=10V, I_D=40A$	--	10	15	m Ω
Total Gate Charge	Q_g	$V_{GS(off)}=0V, V_{GS(on)}=10V, V_{DD}=200V, I_D=40A$	--	84	--	nC
Gate-Source Charge	Q_{gs}		--	27.5	--	
Gate-Drain Charge	Q_{gd}		--	21.7	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=200V, I_D=40A$	--	33	--	ns
Turn-on Rise Time	t_r		--	15	--	
Turn-off Delay Time	$t_{d(off)}$		--	75	--	
Turn-off Fall Time	t_f		--	8	--	
Gate Resistance	R_g	$V_{GS}=0V, f=1MHz, \text{open drain}$	--	3.5	--	Ω
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1MHz$	--	5130	--	pF
Output Capacitance	C_{oss}		--	351	--	
Reverse Transfer Capacitance	C_{rss}		--	20.8	--	

Reverse Diode Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Current, Continuous	I_{SD}	$T_C=25^\circ\text{C}$	--	--	140	A
Diode Forward Voltage (Note 4)	V_{SD}	$I_F=40A, V_{GS}=0V$	--	--	1.2	V
Reverse Recovery Time	T_{rr}	$V_R=200V, I_F=40A, di/dt=100 A/\mu s$	--	118	--	ns
Reverse Recovery Charge	Q_{rr}		--	550	--	nC

Note 4: Pulse test; pulse width $\leq 380\mu s$, duty cycle $\leq 1\%$.

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

Fig.1 - Output Characteristics

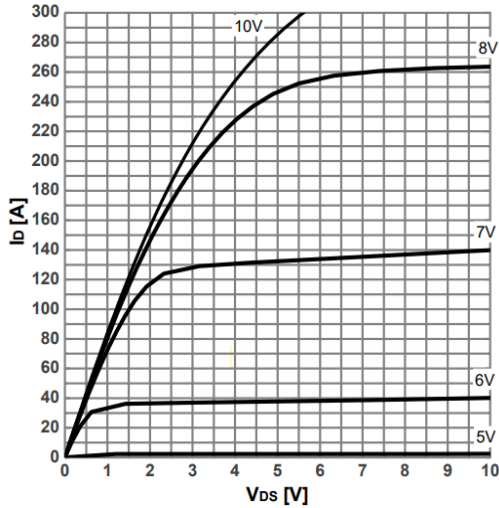


Fig.2 - Transfer Characteristics

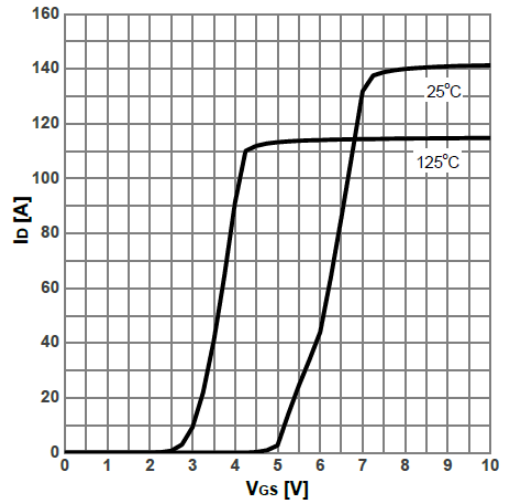


Fig.3 - Drain-Source On-Resistance

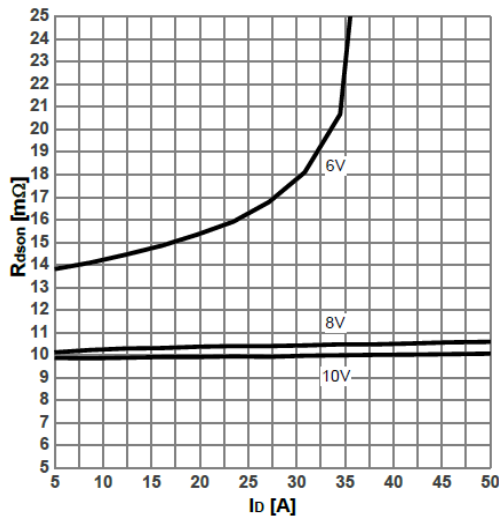


Fig.4 - Normalized On-Resistance

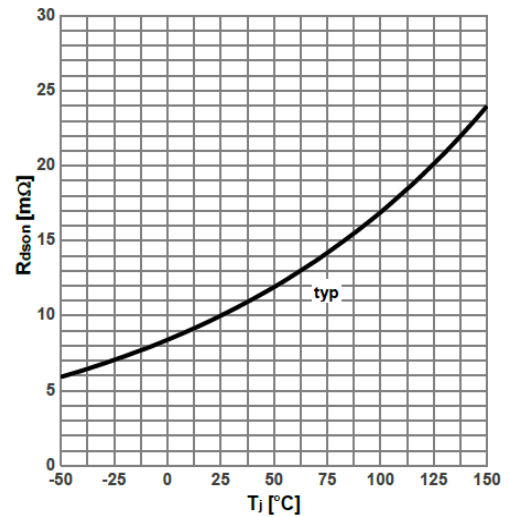


Fig.5 - Capacitance

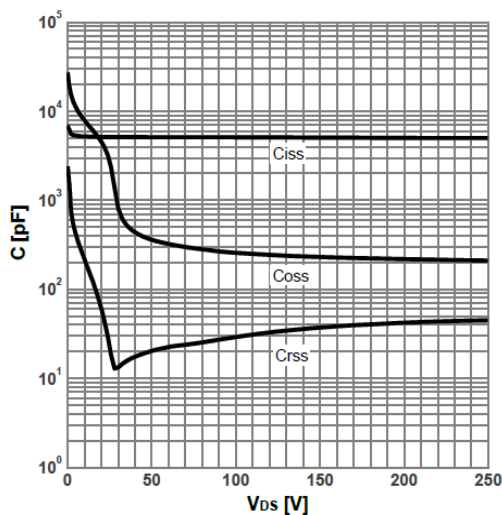
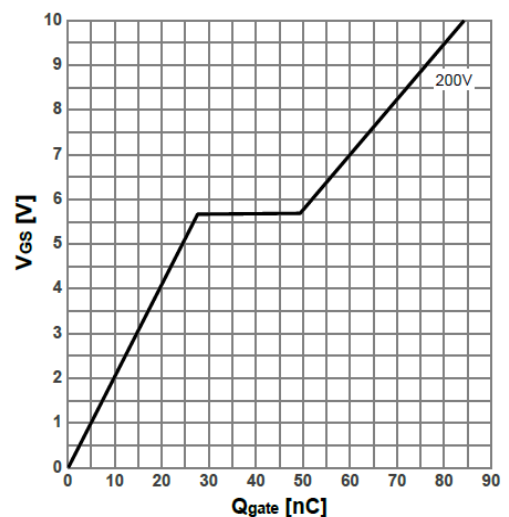


Fig.6 - Gate charge



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

Fig.7 - Forward Characteristic

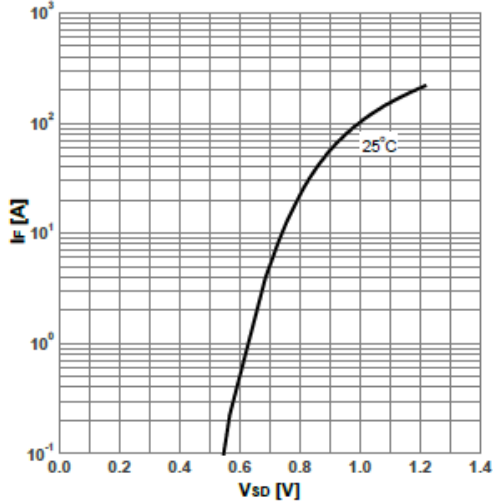


Fig.8 - Safe Operating Area

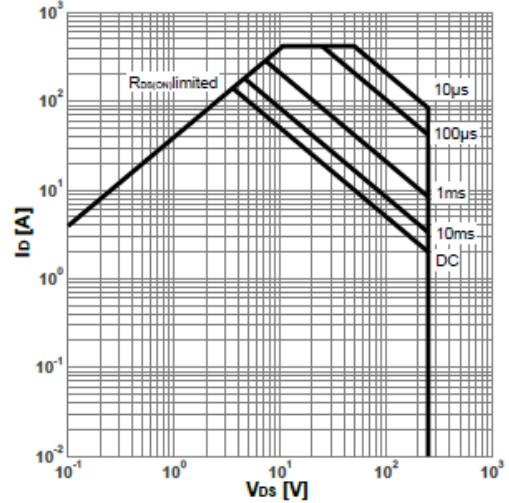


Fig.9 - Normalized Thermal Impedance, Junction-Case

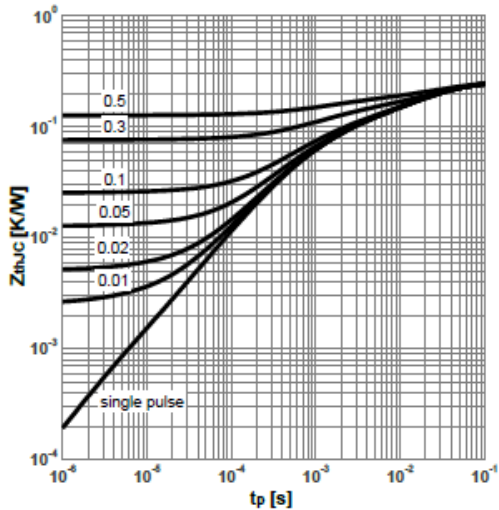


Fig.10 - Power Derating

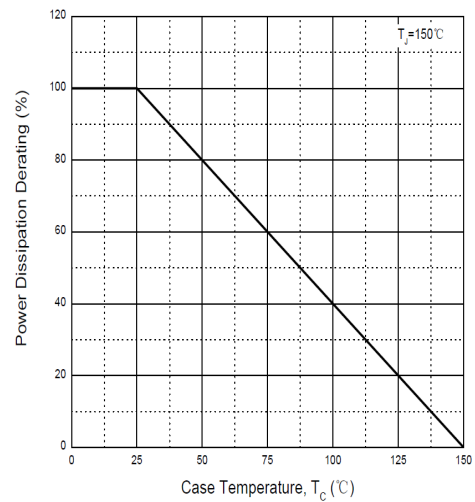
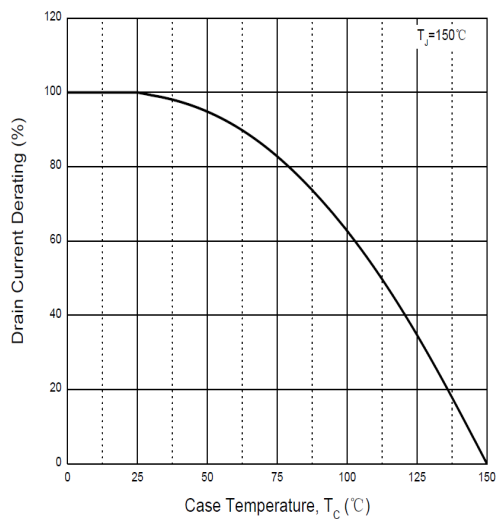
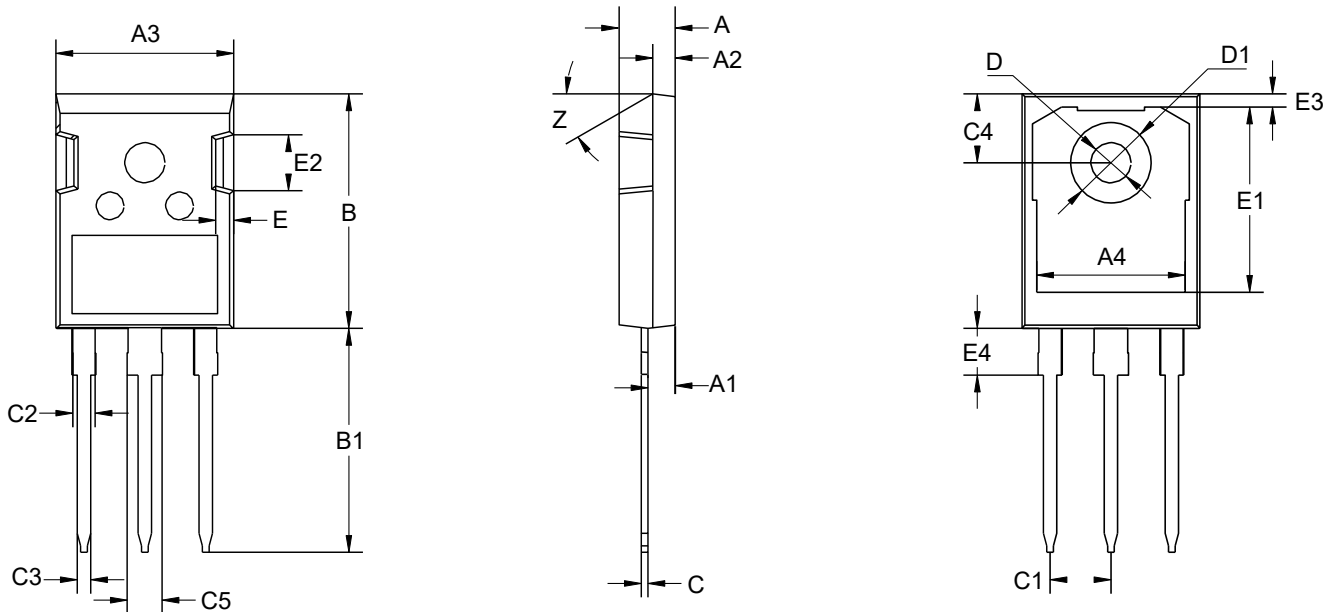


Fig.11 - Drain Current Derating



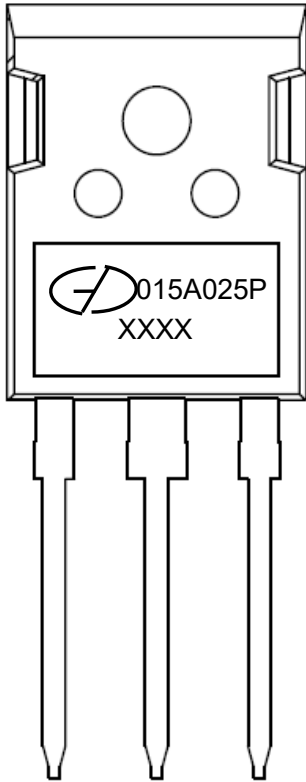
Package Outline Dimensions (Unit: millimeters)

TO-247AD




TO-247AD							
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	4.7	5	5.2	C4	6.04	6.15	6.30
A1	2.3	2.4	2.5	C5	2.8	3	3.2
A2	1.9	2	2.1	D	3.5	3.6	3.7
A3	15.48	15.88	16.28	D1	7	7.19	7.4
A4	13.2	13.5	13.8	E	1.5	1.6	1.7
B	20.8	20.95	21.1	E1	16.25	16.55	16.85
B1	19.8	20	20.32	E2	4.9	5.0	5.1
C	0.5	0.6	0.7	E3	0.95	1.17	1.35
C1	5.34	5.44	5.54	E4	-	4.17	4.5
C2	1.8	2	2.2	Z	-	30°	-
C3	1.1	1.2	1.3		-	-	-

Marking Outline



Part Name: GMN015A025P

1. Logo Mark: 
2. P/N Mark: 015A025P
3. Date Code: XXXX

Revision History

Version	Date	Major Changes
Rev.A	2024.10.21	Official Release

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