

70A,650V (D-S) Super Junction Power MOSFET

Features

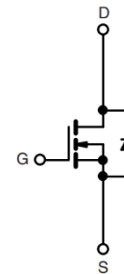
- 100% Avalanche Tested
- Improved dv/dt
- Lower Rds(on), Lower Qg
- Compliant to RoHS Directive 2011/65/EU
and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21
- AEC-Q101 qualified



TO-247AD

Applications

- Inverter
- Solar
- SMPS/Telecom
- EV Charger



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	650	V
Gate Source Voltage	V _{GS}	±30	V
Drain Current Continuous@Note1	I _D	70	A
T _C =25°C			
Drain Current Pulse@Note2	I _{DM}	230	A
Single Pulse Avalanche Energy@Note3	E _{AS}	4202	mJ
Avalanche Current	I _{AS}	20.5	A
Power Dissipation(T _C =25°C)	P _D	500	W
Operating Temperature/ Storage Temperature	T _J /T _{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Unit
Thermal Resistance ,Junction-to-Ambient@Note1	R _{θJA}	63	°C/W
Thermal Resistance Junction-to-Case@Note1	R _{θJC}	0.25	°C/W

Electrical Characteristics (@TA=25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	--	--	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	--	--	10	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	4	--	5	V
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	--	35	41	m Ω
Forward Transconductance	g_{fs}	$I_{SD}=38A, V_{DS}=20V$	20	--	--	S
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DD}=380V, I_D=38A$	--	160	--	nC
Gate- Source Charge	Q_{gs}		--	35	--	nC
Gate- Drain Charge	Q_{gd}		--	55	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=380V, I_D=38A, R_G=4.7\Omega$	--	54	--	ns
Turn-on Rise Time	t_r		--	66	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	174	--	ns
Turn-off Fall Time	t_f		--	47	--	ns
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=380V, f=200kHz$	--	7650	--	pF
Output Capacitance	C_{oss}		--	180	--	pF
Reverse Transfer Capacitance	C_{rss}		--	1.3	--	pF

Reverse Diode Characteristics (@TA=25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_{SD}	$V_G=V_D=0V, \text{ Force Current}$	--	--	70	A
Diode Forward Voltage	V_{SD}	$I_{SD}=50A, V_{GS}=0V$	--	--	1.3	V
Reverse Recovery Time	t_{rr}	$I_F = 30A$ $di/dt = 100 A/\mu s, T_J=25^\circ C$	--	118	--	ns
Reverse Recovery Charge	Q_{rr}		--	1175	--	nC

Note:

1. The data tested by surface mounted on a 1 inch² FR-4 with 2oz copper.
2. The data tested by pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. The test condition is $V_{DD}=100V, V_{GS}=10V, L=20mH$.

Ratings and Characteristics Curves

(TA = 25°C unless otherwise noted)

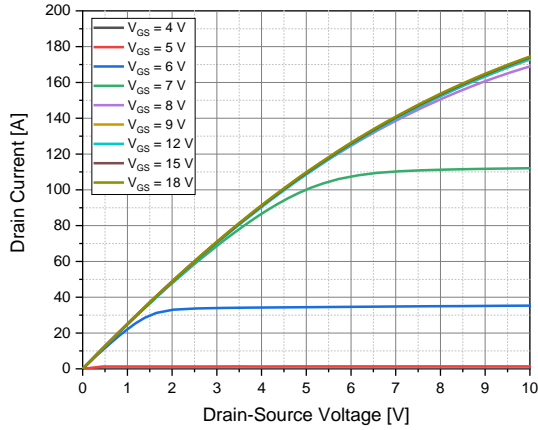


Figure 1. On-state Characteristics

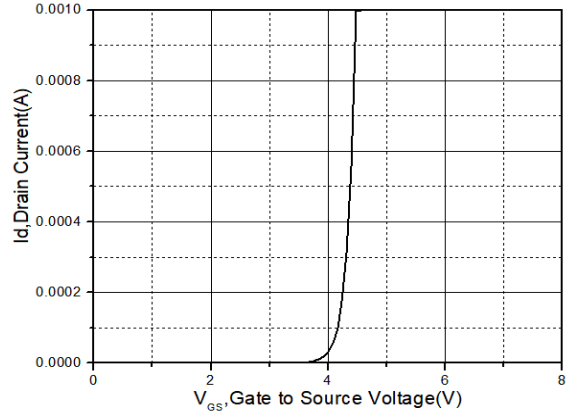


Figure 2. Transfer Characteristics

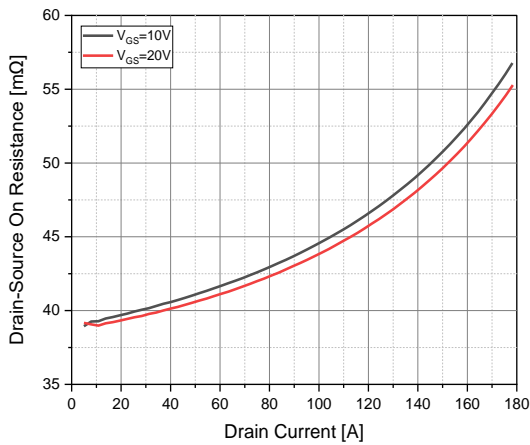


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

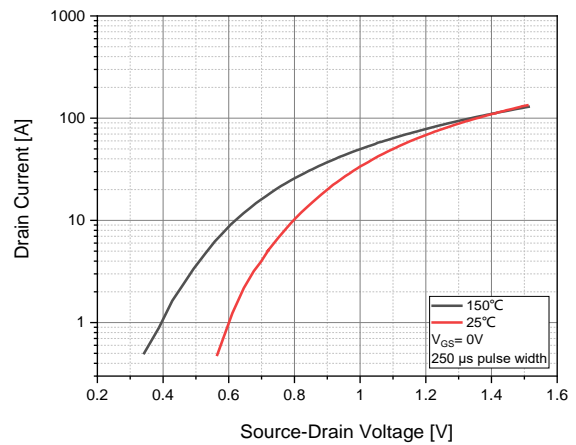


Figure 4. Body Forward Voltage Variation vs Source Current and Temperature

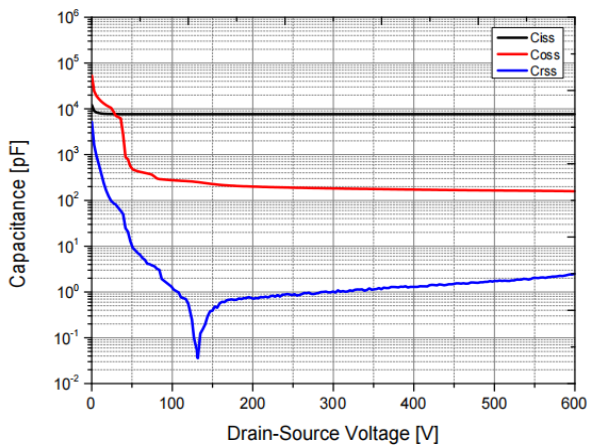


Figure 5. Capacitance Characteristics

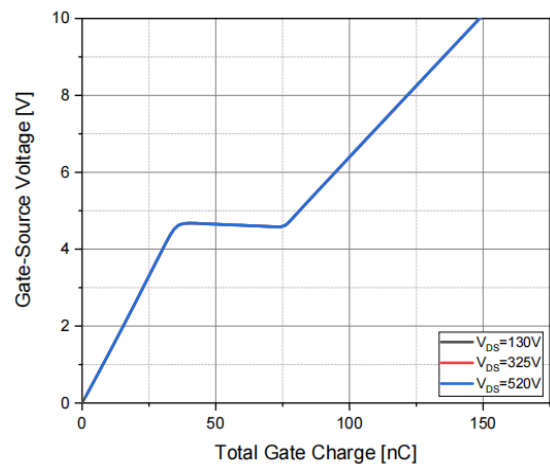


Figure 6. Gate Charge Characteristics

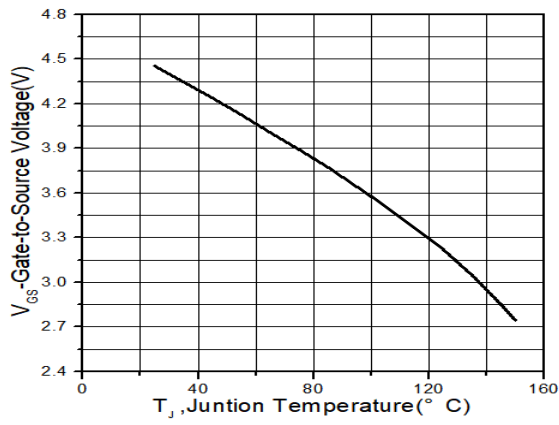


Figure 7. Normalized $V_{GS(th)}$ @1mA vs. Junction Temperature

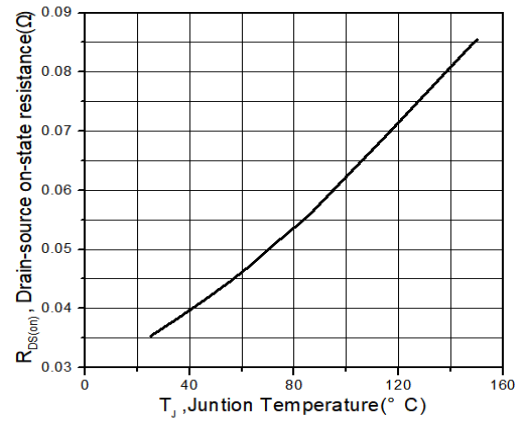
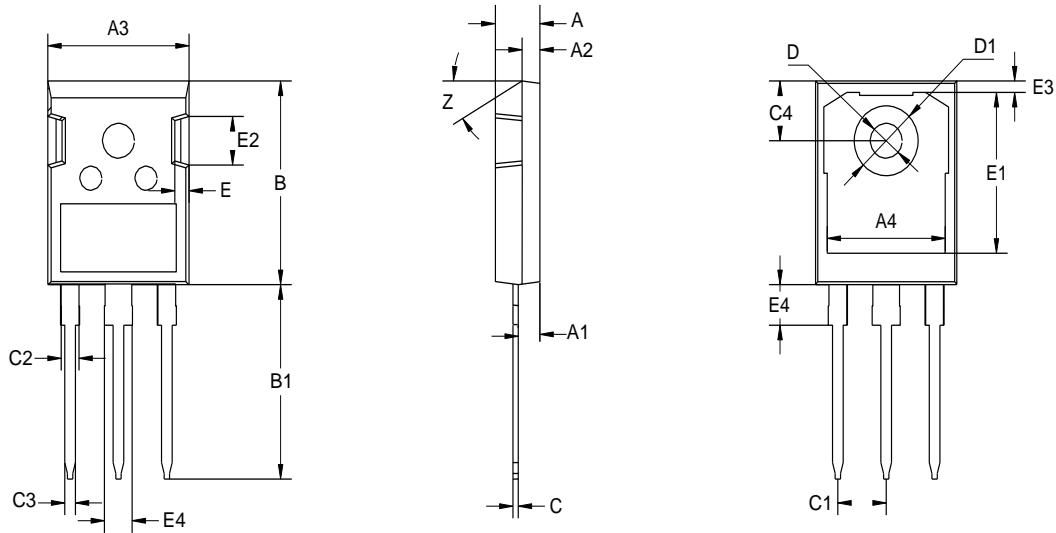


Figure 8. Normalized On-Resistance vs. Junction Temperature

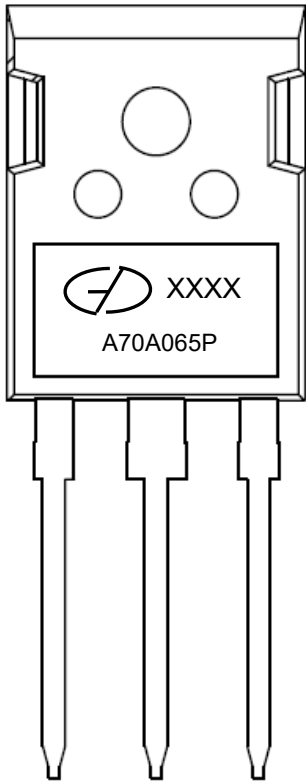
Package Outline Dimensions (Unit: millimeters)


TO-247AD



TO-247AD							
	Min.	Nom.	Max.		Min.	Nom.	Max.
A	4.7	5	5.2	C3	1.1	1.2	1.3
A1	2.3		2.5	C4	6.04	6.15	6.30
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	13.06	13.26	13.56	E	1.5	1.6	1.7
B	20.8	20.95	21.1	E1		16.55	
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		2		Z		30°	

Marking Outline



1. Logo Mark: 
2. Part Name: AGMN70A065P
3. Date Code: XXXX

Revision History

Document Version	Date of release	Description of changes
		Preliminary Datasheet

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