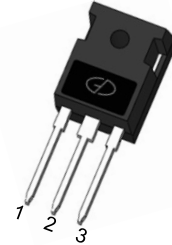


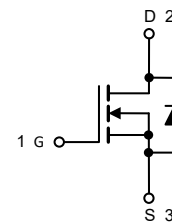
65mΩ,650V (D-S) Super Junction Power MOSFET

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

- AC/DC power supply
- Telecom, Server
- Solar inverter

Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	650	V
Gate Source Voltage	V_{GS}	± 20	V
Drain Current, Continuous $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	62
		$T_C=100^\circ\text{C}$	39
Drain Current, Pulsed (Note 1)	I_{DM}	248	A
Single Avalanche Energy (Note 2)	E_{AS}	82	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	625
		$T_C=100^\circ\text{C}$	250
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: $V_{DD} = 50\text{V}$, $V_{GS} = 10\text{V}$, $L = 0.5\text{mH}$, $R_G = 25\Omega$, starting $T_J = 25^\circ\text{C}$.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	0.2	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 3)	R_{thJA}	62.5	$^\circ\text{C/W}$

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	650	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	--	--	1	uA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250uA	2.7	3.7	4.7	V
Gate Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance (Note 4)	R _{DS(on)}	V _{GS} =10V, I _D =20A	--	57	65	mΩ
Total Gate Charge	Q _g	V _{GS(off)} =0V, V _{GS(on)} =10V, V _{DD} =300V, I _D =20A	--	97	--	nC
Gate-Source Charge	Q _{gs}		--	22	--	
Gate-Drain Charge	Q _{gd}		--	28	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =400V, I _D =23A	--	66	--	ns
Turn-on Rise Time	t _r		--	79	--	
Turn-off Delay Time	t _{d(off)}		--	139	--	
Turn-off Fall Time	t _f		--	12	--	
Gate Resistance	R _g	V _{GS} =0V, f=1MHz, open drain	--	3.6	--	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =650V, f=1MHz	--	3883	--	pF
Output Capacitance	C _{oss}		--	65	--	
Reverse Transfer Capacitance	C _{rss}		--	9.4	--	

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	--	--	62	A
Diode Forward Voltage (Note 4)	V _{SD}	I _F =20A, V _{GS} =0V	--	--	1.2	V
Reverse Recovery Time	T _{rr}	V _R =400V, I _F =23A, di/dt = 100 A/μs	--	165	--	ns
Reverse Recovery Charge	Q _{rr}		--	1900	--	nC

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

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

Fig. 1 - Output Characteristics

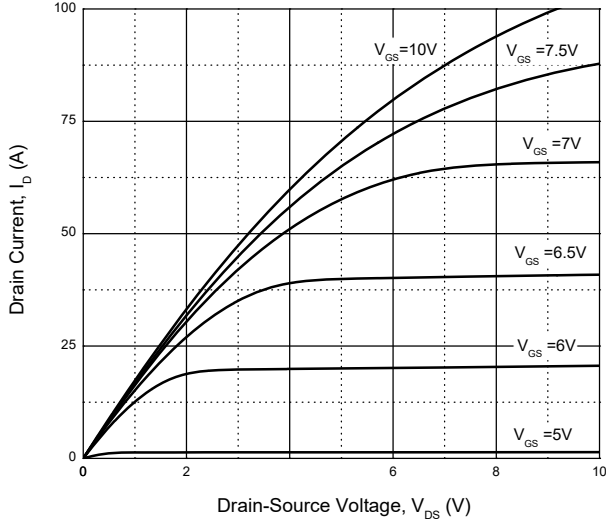


Fig. 2 - Transfer Characteristics

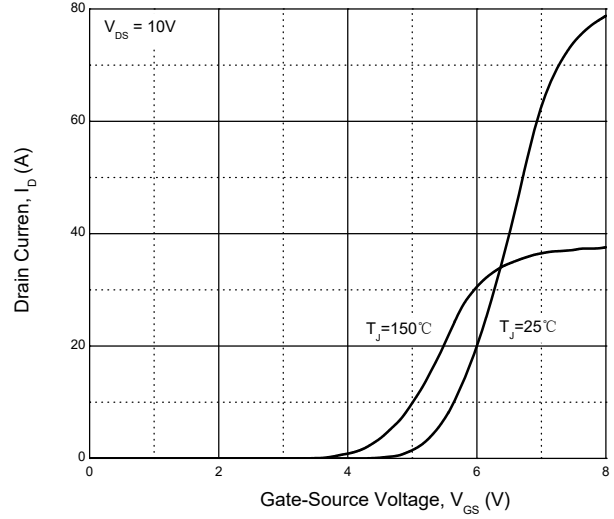


Fig. 3 - Drain-Source On-Resistance

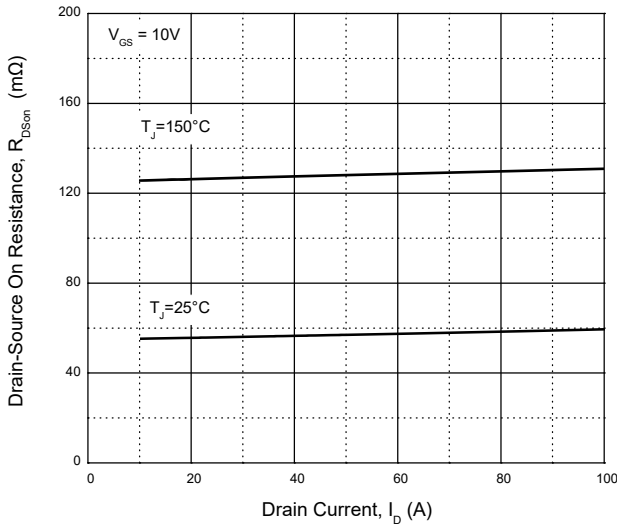


Fig. 4 - Normalized On-Resistance

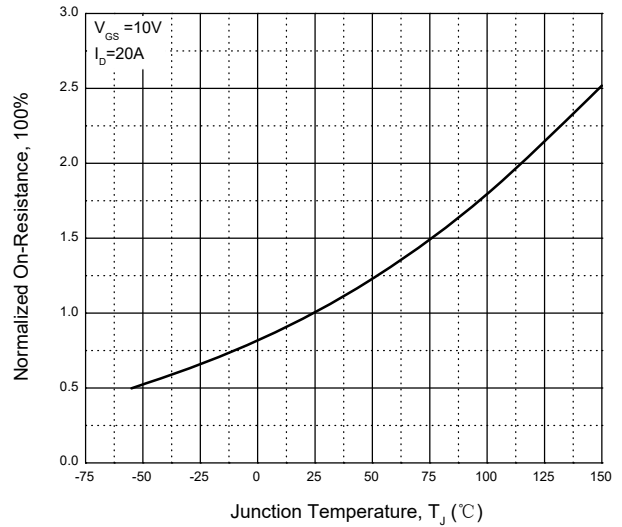


Fig. 5 - Drain-Source On-Resistance

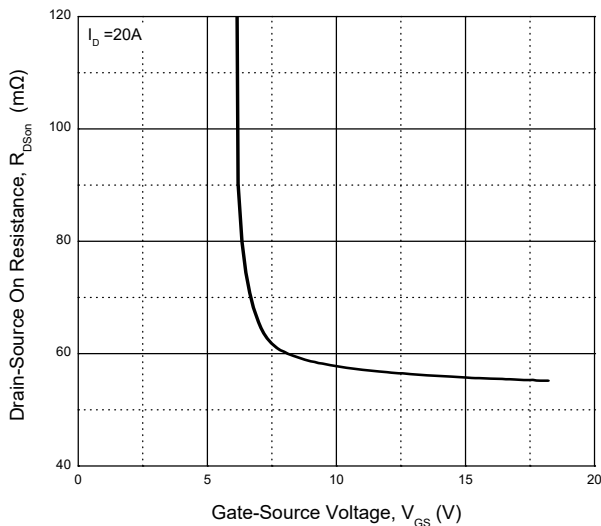
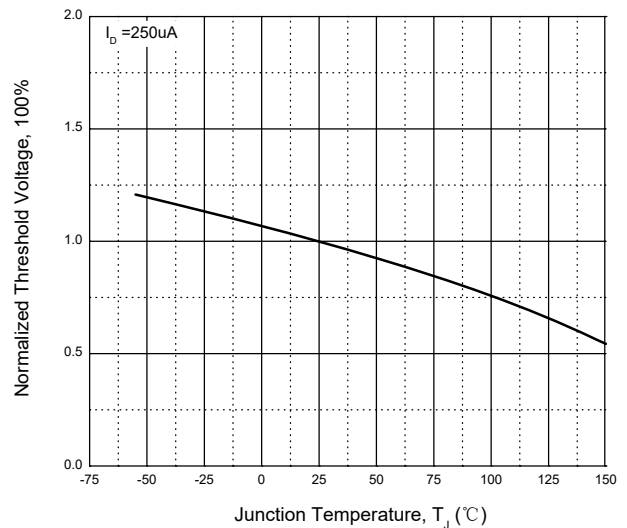


Fig. 6 - Normalized Threshold Voltage



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

Fig. 7 - Capacitance

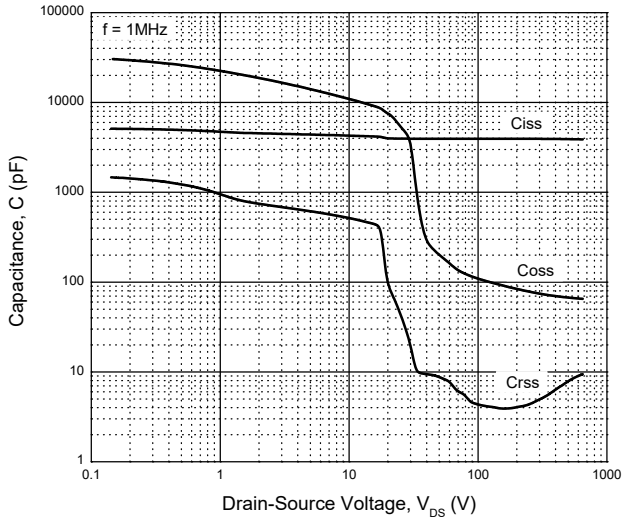


Fig. 8 - Gate Charge

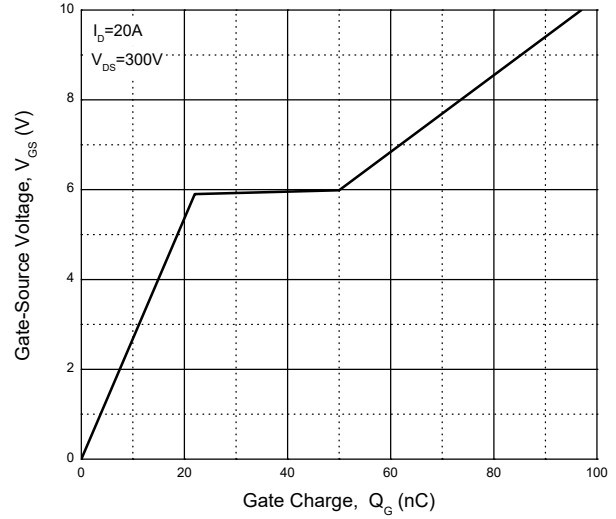


Fig. 9 - Forward Characteristic

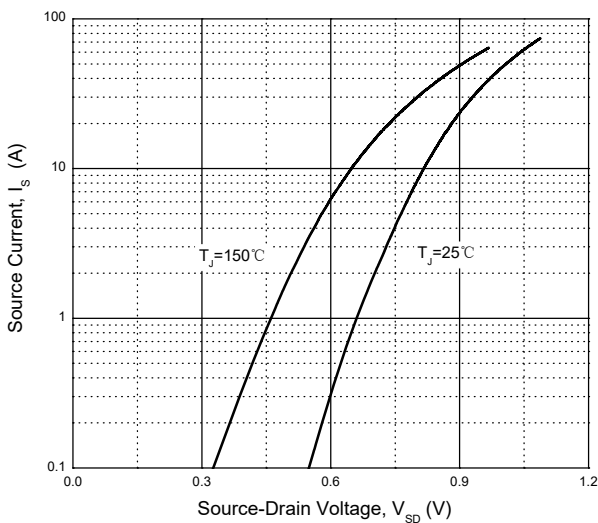


Fig. 10 - Safe Operating Area

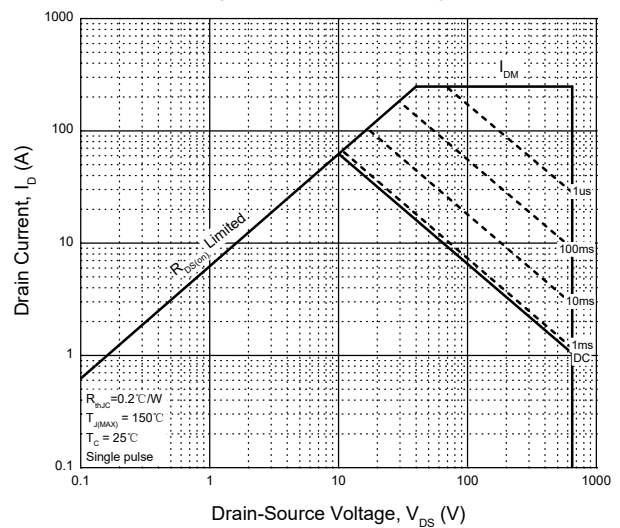
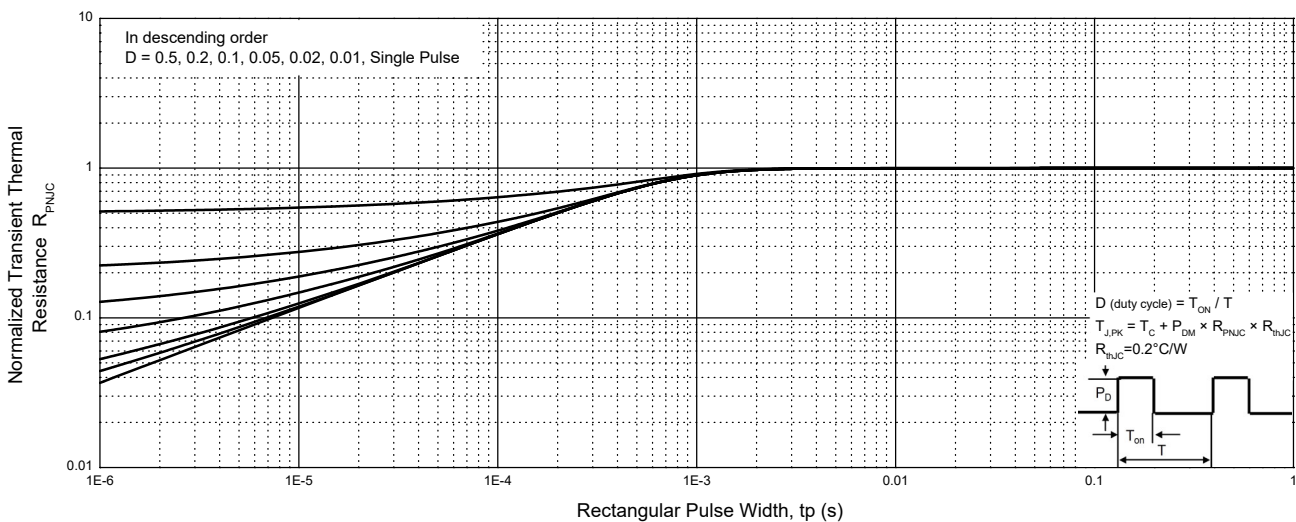


Fig. 11 - Normalized Thermal Impedance, Junction-Case



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

Fig. 12 - Power Derating

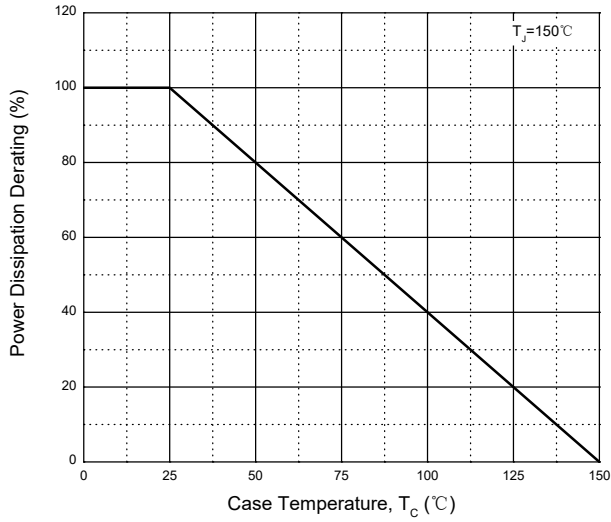
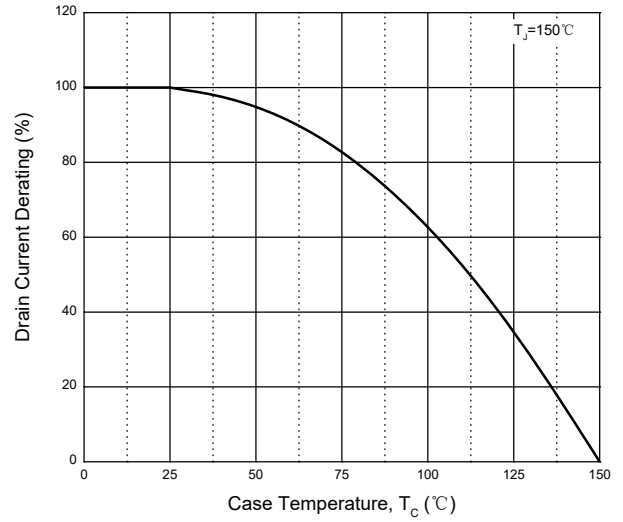
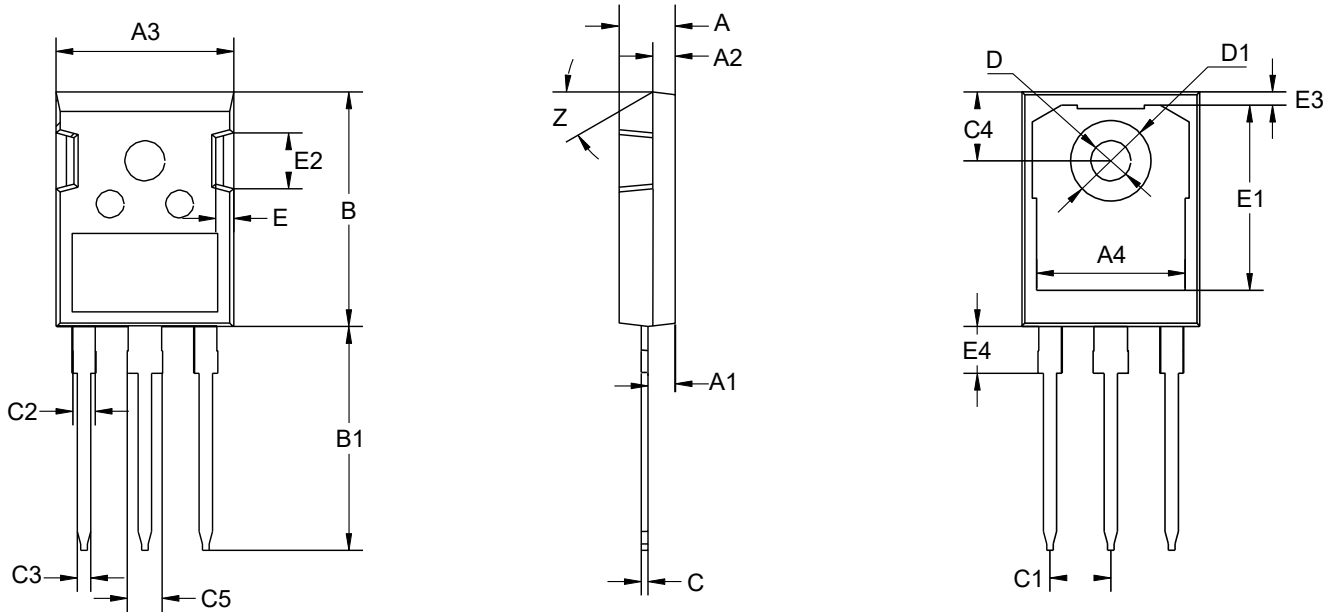


Fig. 13 - Drain Current Derating



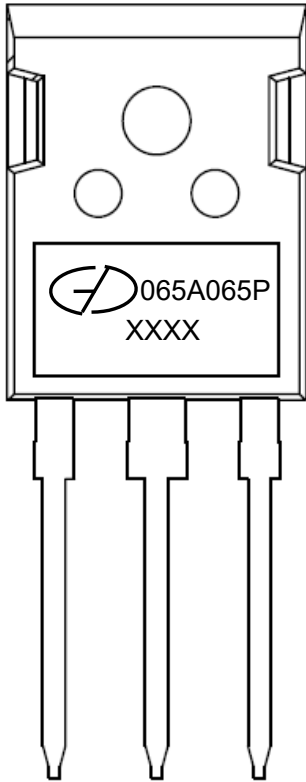
Package Outline Dimensions (Unit: millimeters)

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: GMN065A065P

1. Logo Mark: 
2. P/N Mark: 065A065P
3. Date Code: XXXX

Revision History

Version	Date	Major Changes
Rev.A	2025.02.06	Official Release

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