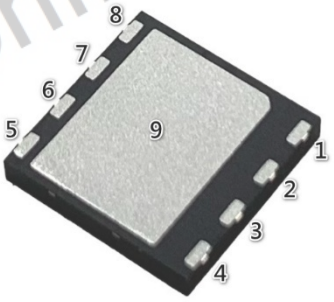
INF-065B150AGA

650V 150mΩ GaN HEMT Discrete in PDFN8

Description

The INF-065B150AGA is a normally-on D-mode Gallium Nitride (GaN) high electron mobility transistor (HEMT) device in discrete configuration. With the characteristics of high breakdown voltage, high current and high switching frequency, it is suitable for high power applications.

INF- 065B150AGA: (PDFN8 8x8 mm)



Drain: 1, 2, 3, 4
Source: 5, 6
Kelvin Source: 7
Gate: 8
9: Floating

Key Specifications

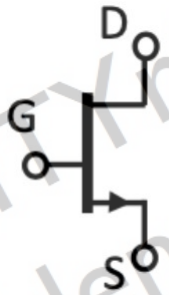
Part Number	INF-065B150AGA
V_{DSS} (V), min.	650
$V_{(TR)DSS}$ (V)	800
$R_{DS(ON)}$ (mΩ) , typ.	150
Q_G (nC), typ.	26
Package	PDFN8 8 x 8 mm

Features

- Gate drive voltage compatibility (-22V to 10V)
- High switching frequency

Applications

- Switch Mode Power Supplies (SMPS)
- AC-DC/ DC-DC Converters
- Motor Drives



Discrete Schematic Symbol

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1. Electrical Characteristics

➢ Table 1. Absolute maximum ratings

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-source voltage		650	V
$V_{(TR)DSS}$	Transient drain to source voltage[a]		800	V
V_{GSS}	Gate-source voltage		-22 ~ 10	V
I_D	Drain current (continuous) at T_C = 25°C operation		12	A
	Drain current (continuous) at T_C = 100°C operation		7.5	A
I_{DM}	Pulsed drain current (pulse width: 10 µs)		48	A
T_c	Operating temperature	Case	-55 to +150	°C
T_J		Junction	-55 to +150	°C
T_S	Storage temperature		-55 to +150	°C
T_{SOLD}	Soldering peak temperature[b]		260	°C

Note:
a. In off-state, spike duty cycle D < 0.01, spike duration < 1µs
b. For 10 sec., 1.6 mm from the case

➢ Table 2. Thermal Characteristics

TBD

➢ **Table 3. Electrical Characteristics** (T_{CASE} = 25 °C unless otherwise stated)

Symbol	Parameter	Conditions	Values			Unit
			min.	typ.	max.	
$V_{(BL)DSS}$	Drain-source voltage	V_{GS} = -22 V	650	-	-	V
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = 10 V, I_D = 25 μA	-18	-15	-12	V
$R_{DS(on)}$	Static drain-source on-resistance	V_{GS} = 0 V, I_D = 8.5 A, T_J = 25 °C	-	150	180	mΩ
		V_{GS} = 0 V, I_D = 8.5 A, T_J = 150 °C	-	300	-	
I_{DSS}	Drain-source leakage current	V_{GS} = -22 V, V_{DS} = 650 V, T_J = 25 °C	-	2	25	μA
		V_{GS} = -22V, V_{DS} = 650V, T_J = 150 °C	-	15	-	
I_{GSS}	Gate-to-source forward leakage current	V_{GS} = 10 V	-	-	100	nA
	Gate-to-source reverse leakage current	V_{GS} = -22 V	-	-	-100	
C_{ISS}	Input capacitance	V_{GS} = -22 V, V_{DS} = 400 V, F = 1 MHz		136.10	-	pF
C_{OSS}	Output capacitance		-	15.30	-	
C_{RSS}	Reverse transfer capacitance		-	11.24	-	
Q_G	Gate charge	V_{GS} = -22~0 V, V_{DS} = 400 V, I_{DS} = 8.5 A	-	25.70	-	nC
Q_{GS}	Gate-source charge		-	0.39	-	
Q_{OSS}	Output charge	V_{GS} = -22 V, V_{DS} = 0~400 V	-	15.80	-	nC
$t_{D(on)}$	Turn-on delay time	V_{DS} = 400 V, V_{GS} = -22 to 0 V, I_{DS} = 2 A , R_G = 25 Ω	-	TBD	-	ns
$t_{D(off)}$	Turn-off delay time		-	TBD	-	

2. Typical Characteristic Curves (TC = 25 °C unless otherwise stated)

Note: The characteristic curves were measured from the discrete product packaged as 8x8 pDFN8.

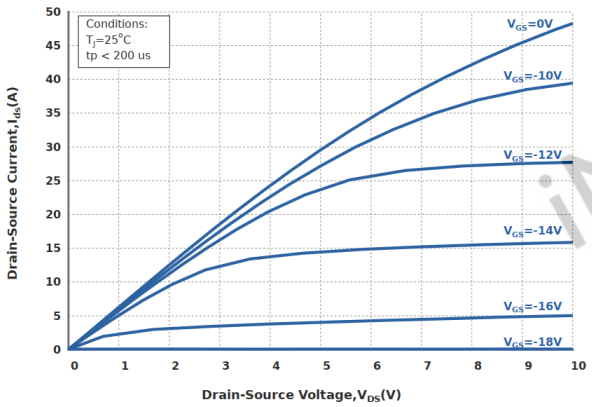


Figure 1 Typical Output Characteristics T_j = 25 °C
(Parameter：V_{GS})

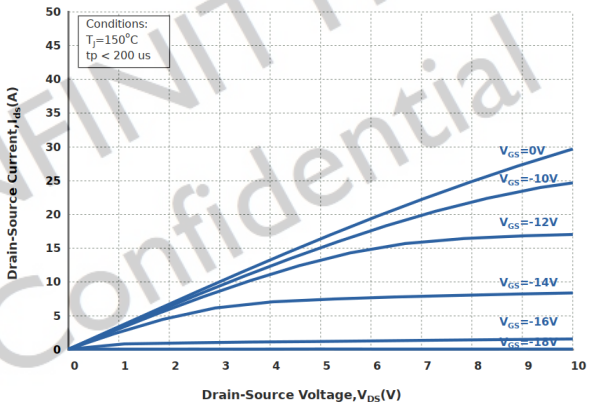


Figure 2 Typical Output Characteristics T_j = 150 °C
(Parameter：V_{GS})

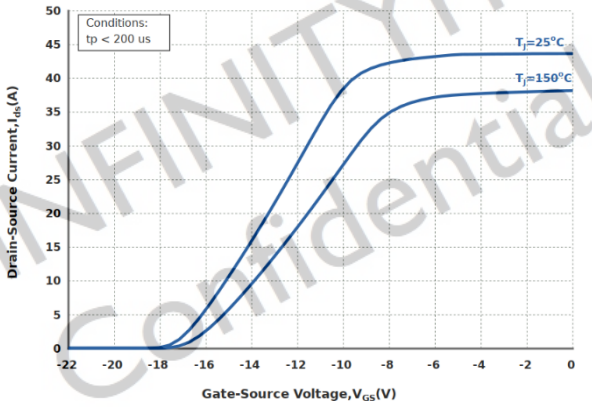


Figure 3. Typical Transfer Characteristics
V_{DS} = 10 V, parameter: T_J

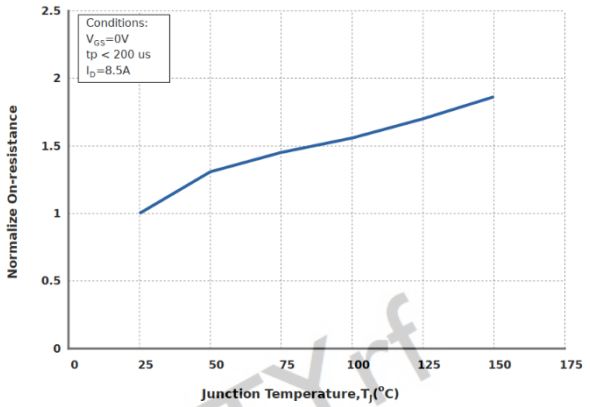


Figure 4. Normalized On-resistance
I_D = 8.5 A, V_{GS} = 10 V

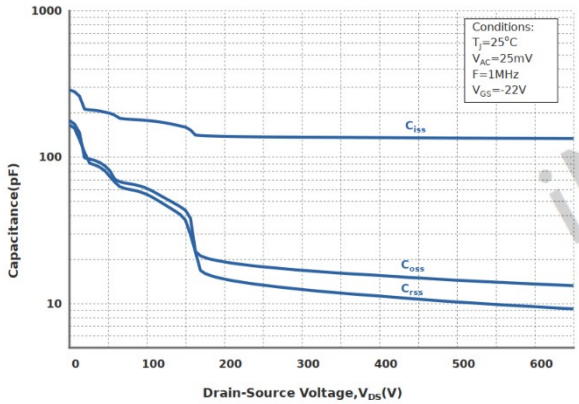


Figure 5. Typical Capacitance
V_{GS} = -22 V, f = 1 MHz

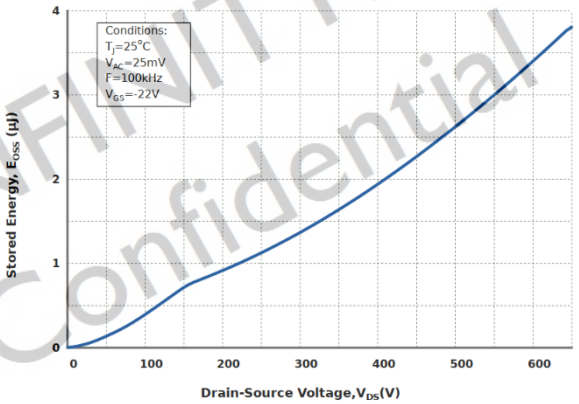


Figure 6. Typical E_{OSS} Stored Energy

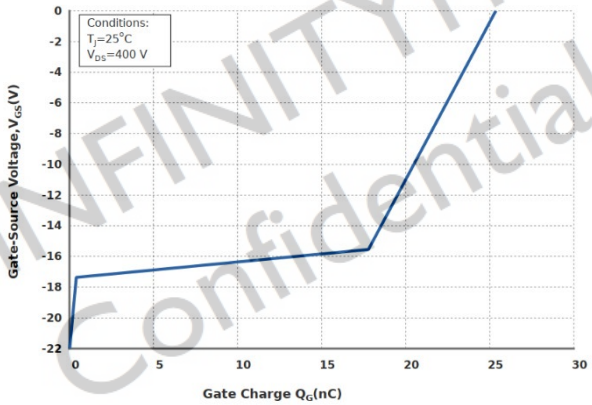


Figure 7. Typical Gate Charge
I_{DS} = 8.5 A, V_{DS} = 400 V

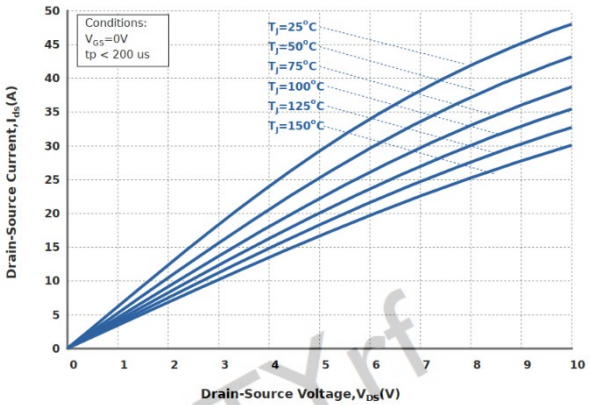
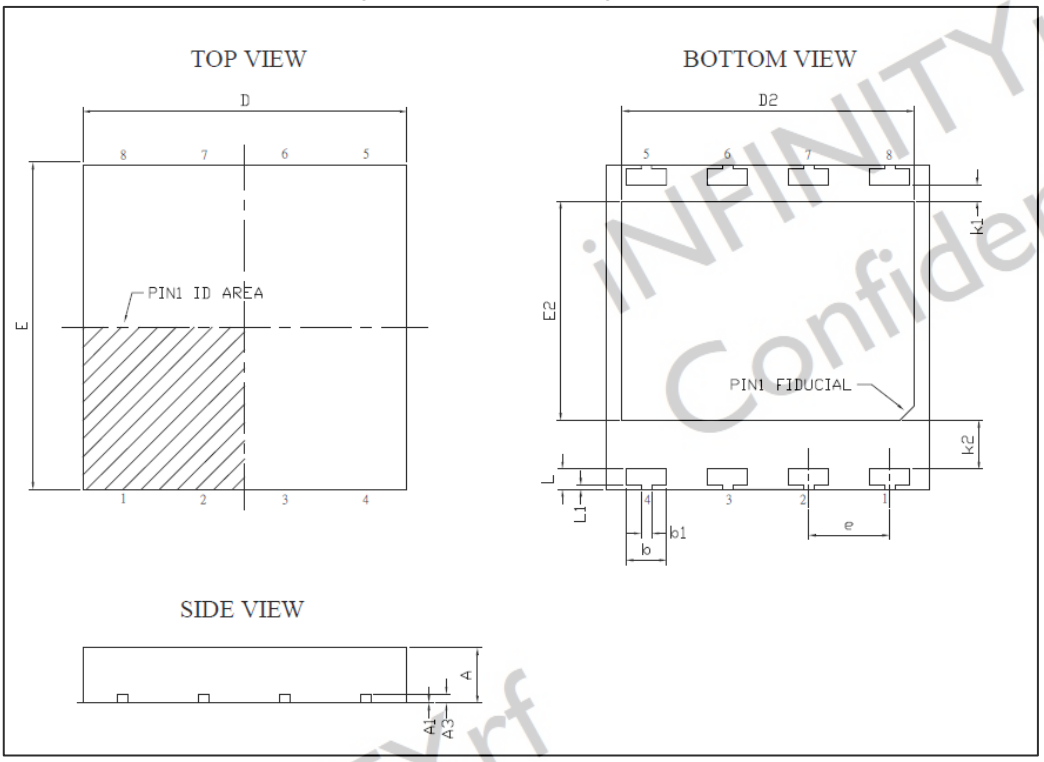


Figure 8. Characteristics for various temperatures
Parameter: T_J

3. Package Dimensions

INF-065B150AGA (PDFN8 8 x 8 mm)



➢ **Table 4 Dimension of INF-065B150AGA**

Symbol	DIMENSION (MM)			Symbol	DIMENSION (MM)		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	1.20	1.25	1.30	b	0.90	1.00	1.10
A1	0	0.02	0.05	b1		0.25 REF	
A3		0.203 REF		L	0.40	0.50	0.60
D	7.90	8.00	8.10	L1		0.10 REF	
E	7.90	8.00	8.10	K1	0.30	0.40	0.50
D2	7.10	7.20	7.30	K2	1.10	1.20	1.30
E2	5.30	5.40	5.50	e		2.00 REF	

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