INF-065F050WZA

650V 50mΩ GaN HEMT Wafer

Description

The INF-065F050AGA is a normally-on D-mode Gallium Nitride (GaN) high electron mobility transistor (HEMT) device in wafer form. With the characteristics of high breakdown voltage, high current and high switching frequency, it is suitable for high power applications.

Applications

- Power Adapters / Converter
- PFC Application
- Appliance Motor Drives
- Wireless Power Transfer
- Synchronous Rectifier for Application

Key Features

Parameter	Value	Unit
BV_{DSS}	650	V
I_D	22.5	A
Die Size	6003 x 1905	µm
Gross Die	536	pieces

Chip Size & Pad Position (unit: µm)

Die w/o scribe line (50µm)

A1 (0,0), A2 (5953,1855)

Gate

G1 (34,1825), G2 (174,1685)

G3 (5781,1825), G4 (5921,1685)

Source

S1 (207,1820), S2 (5747,1680)

Drain

D1 (41,172), D2 (5913,32)

Die Descriptions

- Wafer Size: 4 inch (±0.1inches)
- Wafer thickness: 650 ±25 µm
- Die Size: 6003 x 1905 µm
- Scribe Line Width: 50 µm
- Pad Metal: Al
- Metal Thickness: 4 µm
- Dimension of Bonding Area: (unit: µm* µm)
  - Gate Pad: 140*140 μm^2
  - Drain Pad: 5872*140 μm^2
  - Source Pad: 5540*140 μm^2
- Gross Die / Wafer: 536 pieces (E.E=2mm)

2F, No. 6, Chuangxin 3rd Rd. East Dist.,
Hsinchu City 300092, Taiwan (R.O.C)
Tel: 886-5790055
mailto: service@infinityrf.com
https://www.infinityrf.com/

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

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	22.5	A
	Drain current (continuous) at T_C = 100°C operation	15	A
I_{DM}	Pulsed drain current (pulse width: 10 µs)	90	A
T_J	Operating temperature	-55 to +150	°C

Note:
a. In off-state, spike duty cycle D < 0.01, spike duration < 1µs

Static Electrical Characteristic (T_C = 25 °C unless otherwise noted)

Symbol	Parameter	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	V_G= -22 V, I_D= 10 uA,	650			V
$V_{GS(th)}$	Gate Threshold Voltage	V_D= 10 V, I_D= 1 mA	-18	-15	-12	V
I_{GSS}	Gate -Source Leakage Current	V_D= 0 V, V_G= -22 V	-		100	nA
I_{DSS}	Drain-Source Leakage Current	V_D= 650 V, V_G= -22 V	-		2	µA
$R_{DS(on)}$	Drain-Source on-state Resistance	I_D= 2 A, V_G= 0 V	-	50		mΩ
I_{DM}	Pulsed drain current (pulse with: 10 µs)	V_D= 10 V, V_G= 0 V		90		A

1) Performance will vary pursuant to the assembly techniques and substrate of choice.

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Typical Characteristic Curves (T_C = 25 °C unless otherwise noted)

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

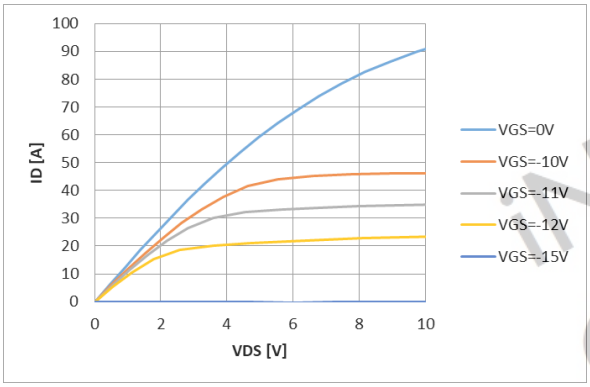

Figure 1 Typical Output Characteristics T_j = 25 °C
(Parameter：V_{GS})

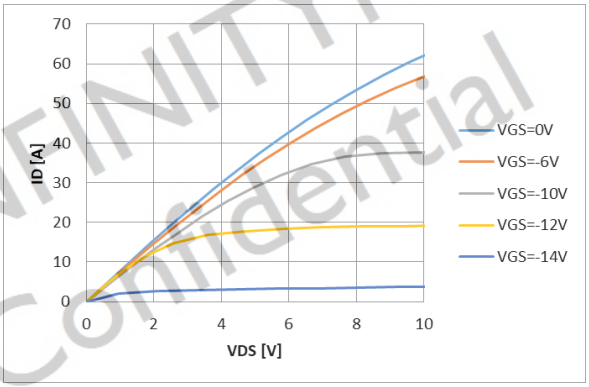

Figure 2 Typical Output Characteristics T_j = 150 °C
(Parameter：V_{GS})

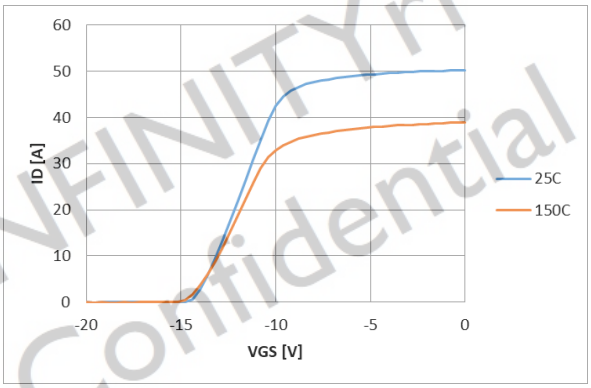

Figure 3. Typical Transfer Characteristics
V_{DS} = 10 V, parameter: T_J

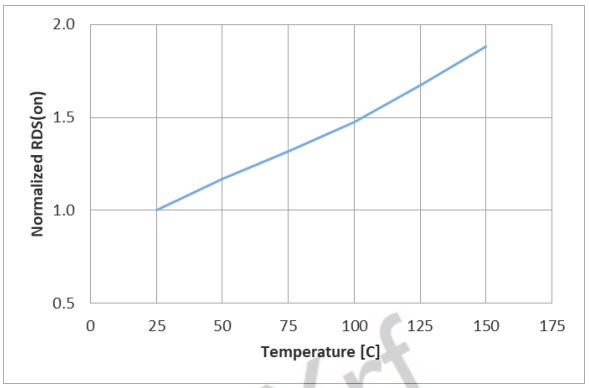

Figure 4. Normalized On-resistance
I_D = 8.5 A, V_{GS} = 10 V

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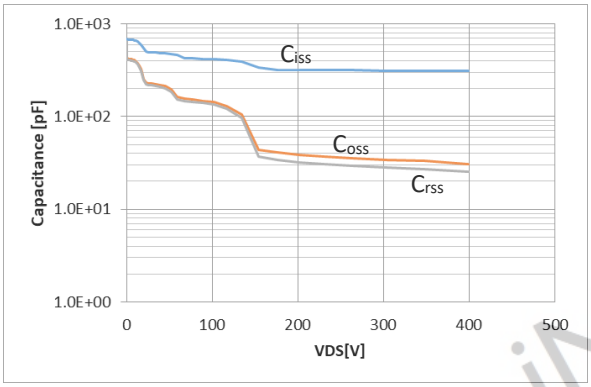

Figure 5. Typical Capacitance
V_{GS} = -22 V, f = 1 MHz

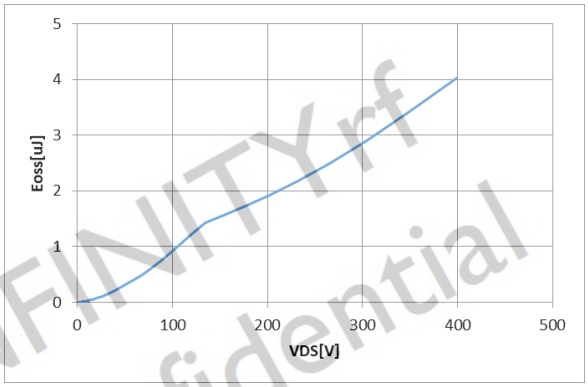

Figure 6. Typical E_{OSS} Stored Energy

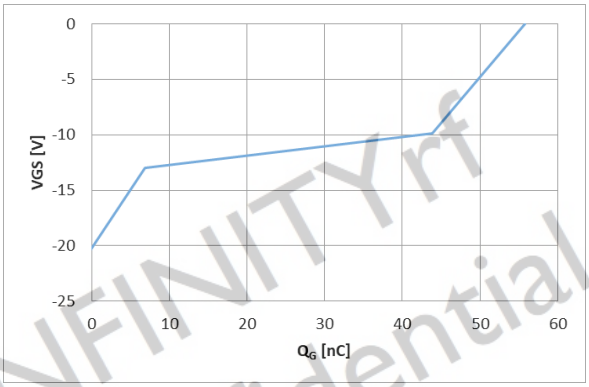

Figure 7. Typical Gate Charge
I_{DS} = 8.5 A, V_{DS} = 400 V

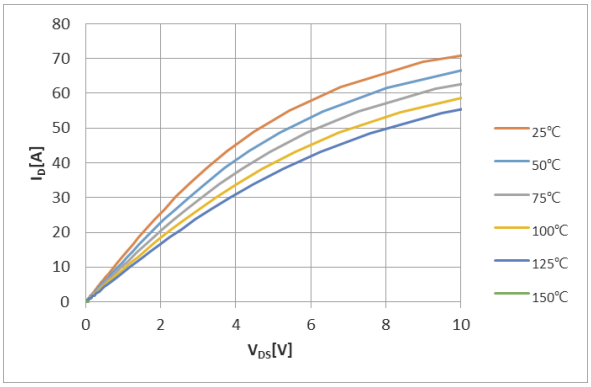

Figure 8. Characteristics for various temperatures
Parameter: T_J

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