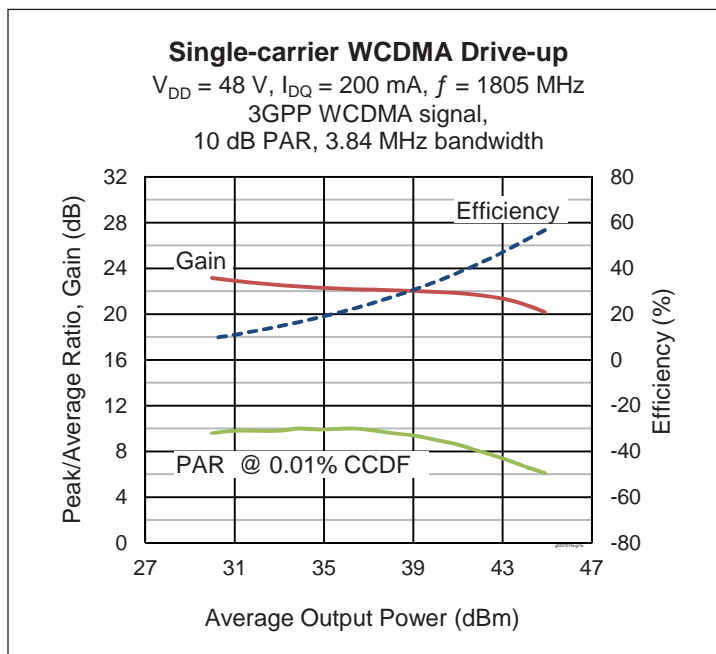


Thermally-Enhanced High Power RF GaN HEMT 70 W, 50 V, 1805 – 2170 MHz

Description

The GTVA220701FA is a 70-watt (P_{3dB}) GaN high electron mobility transistor (HEMT) for use in multi-standard cellular power amplifier applications. It features input matching, high efficiency, and a thermally-enhanced package with earless flange.

GTVA220701FA
Package H-37265J-2



Features

- GaN HEMT technology
- Input matched
- Typical CW performance, 1880 MHz, 48 V
 - Output power at $P_{3dB} = 45\text{ W}$
 - Efficiency = 60.7%
 - Gain = 21.6 dB
- Integrated ESD protection
- ESD: Human Body Model, Class 1A (per ANSI/ESDA/JEDEC JS-001)
- Capable of handling 10:1 VSWR @48 V, 40 W (CW) output power
- RoHS-compliant

RF Characteristics

Single-carrier LTE Specifications (tested in Infineon test fixture)

$V_{DD} = 48\text{ V}$, $I_{DQ} = 200\text{ mA}$, $P_{OUT} = 6.3\text{ W avg}$, $f = 2170\text{ MHz}$, 3GPP signal, 3.84 channel bandwidth, peak/average = 10.6 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	20.75	22	—	dB
Drain Efficiency	η_D	24.5	27	—	%
Adjacent Channel Power Ratio	ACPR	—	-36.5	-33	dBc

All published data at $T_{CASE} = 25^\circ\text{C}$ unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	$V_{GS} = -8\text{ V}$, $I_D = 7.2\text{ mA}$	$V_{(BR)DSS}$	150	—	—	V
Gate Threshold Voltage	$V_{DS} = 10\text{ V}$, $I_D = 7.2\text{ mA}$	$V_{GS(th)}$	-3.8	-3.0	-2.3	V
Gate Quiescent Voltage	$V_{DS} = 40\text{ V}$, $I_D = 0.2\text{ A}$	$V_{GS(Q)}$	—	-2.8	—	V
Drain-source Leakage Current	$V_{GS} = 8\text{ V}$, $V_{DS} = 10\text{ V}$	I_{DSS}	—	—	5	mA

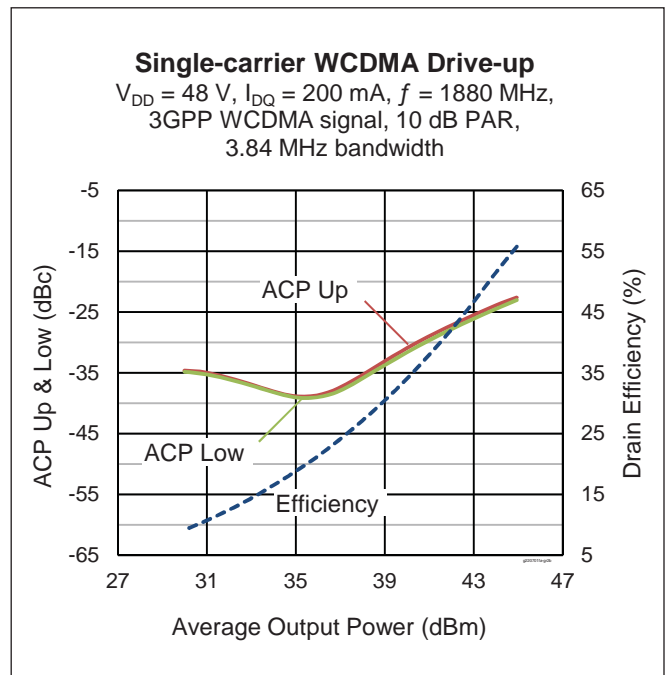
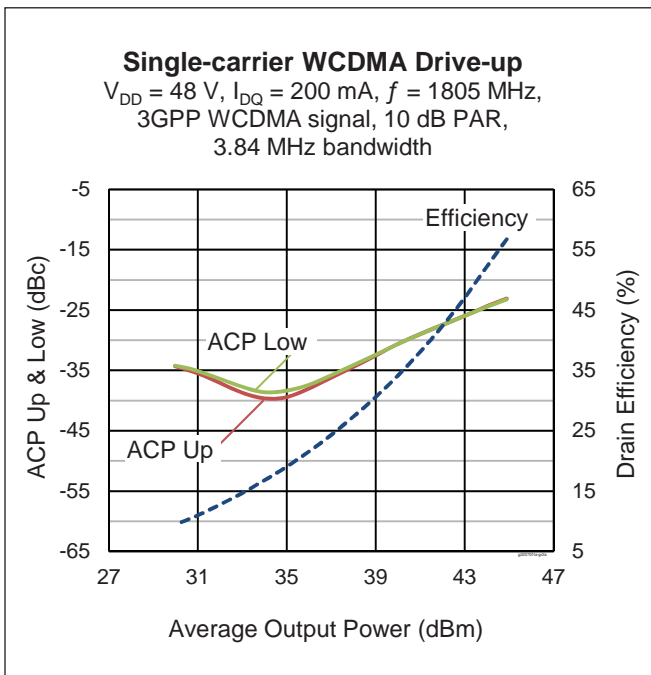
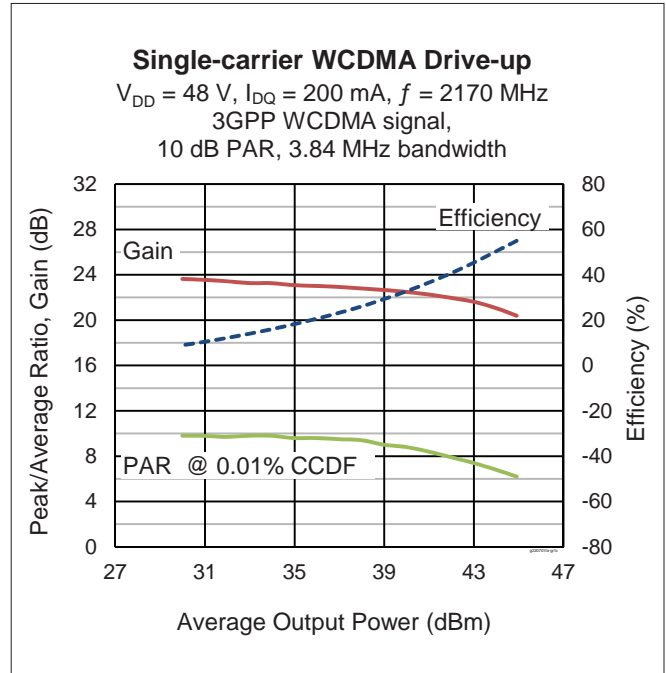
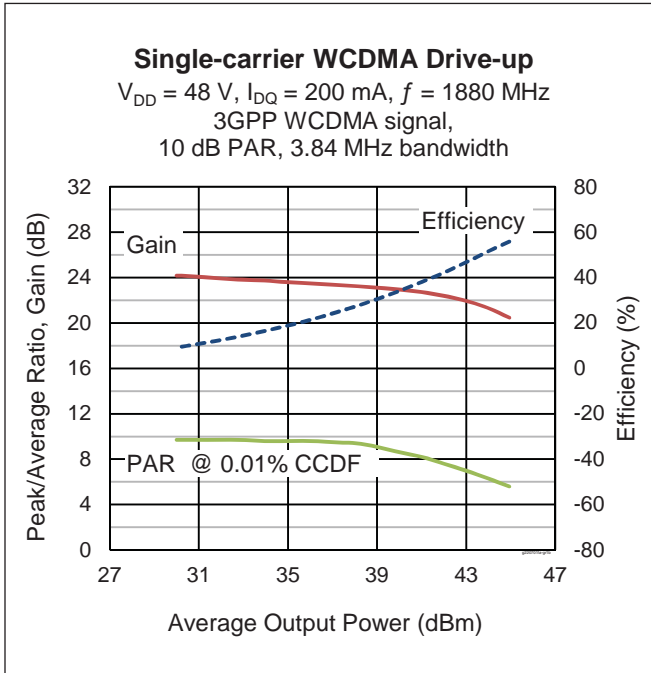
Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source Voltage	V_{DSS}	125	V
Gate-source Voltage	V_{GS}	-10 to +2	V
Operating Voltage	V_{DD}	0 to +50	V
Gate Current	I_G	20	mA
Drain Current	I_D	13.5	A
Junction Temperature	T_J	225	°C
Storage Temperature Range	T_{STG}	-65 to +150	°C
Thermal Resistance ($T_{CASE} = 70^\circ\text{C}$, 48 V, 55 W CW, 2170 MHz)	$R_{\theta JC}$	2.36	°C/W

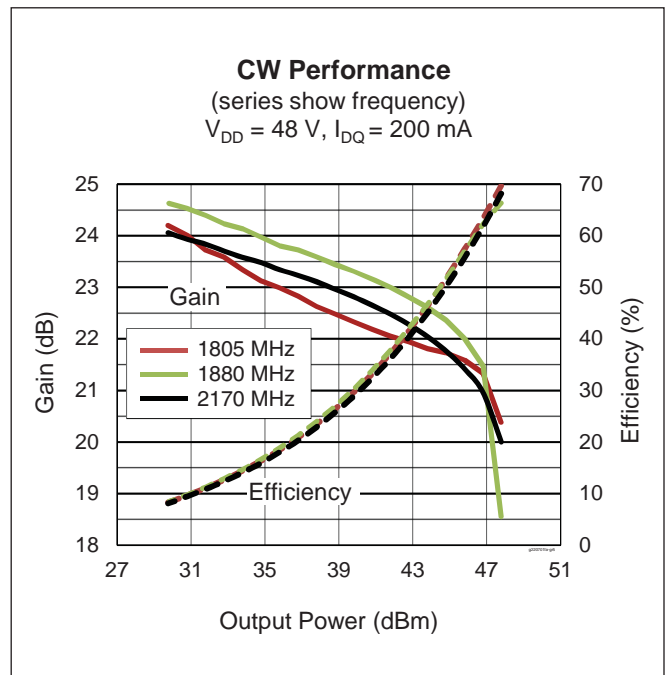
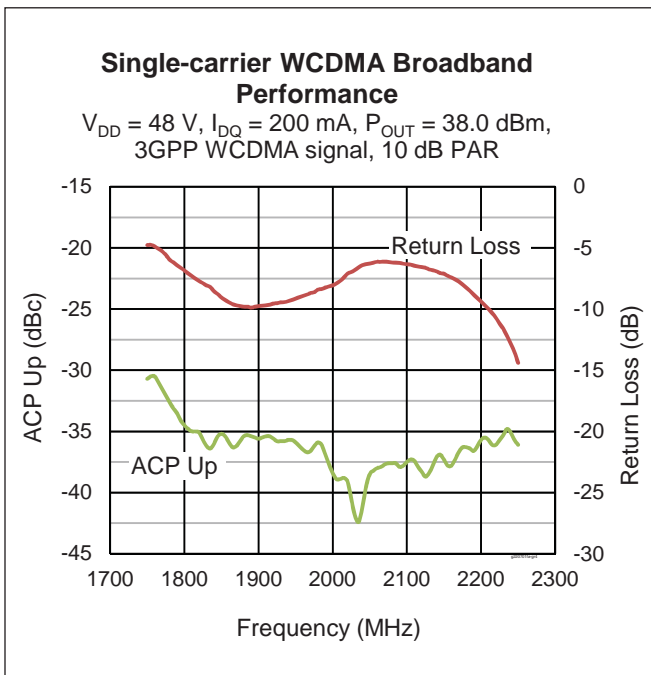
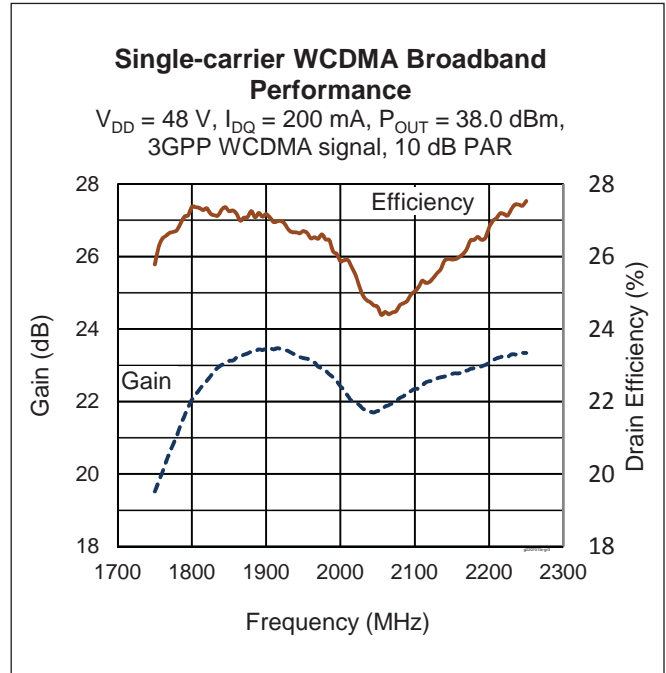
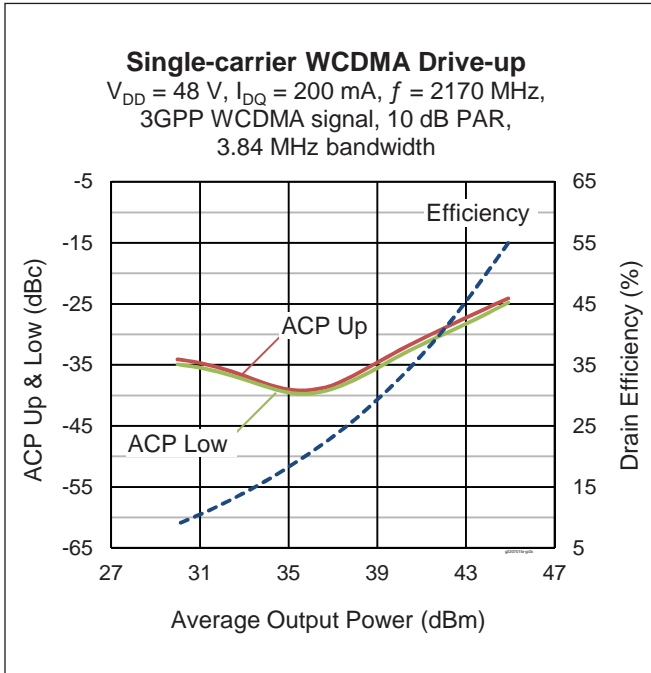
Ordering Information

Type and Version	Order Code	Package and Description	Shipping
GTVA220701FA V1 R0	GTVA220701FAV1R0XTMA1	H-37265J-2, earless flange	Tape & Reel, 50 pcs
GTVA220701FA V1 R2	GTVA220701FAV1R2XTMA1	H-37265J-2, earless flange	Tape & Reel, 250 pcs

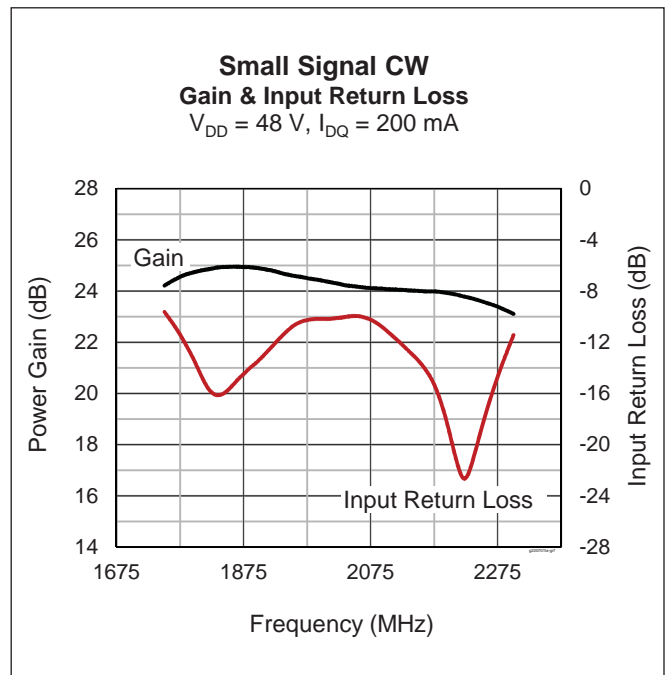
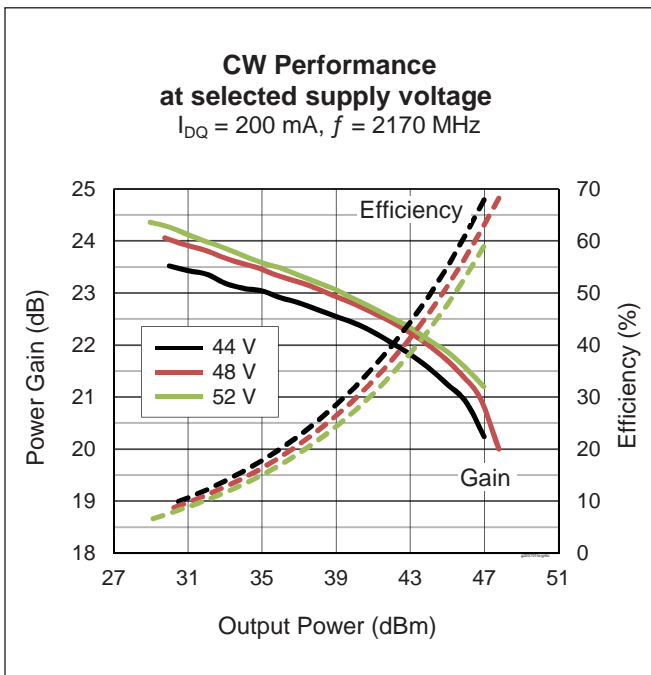
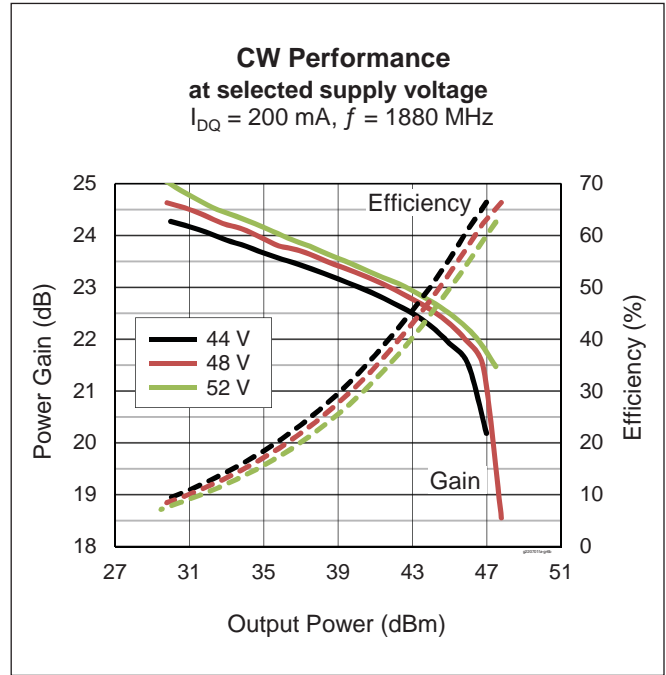
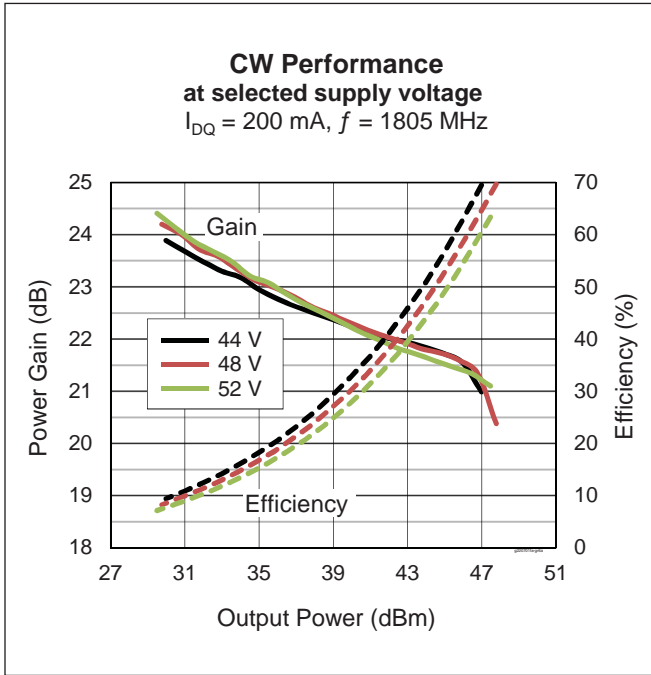
Typical Performance (data taken in an Infineon production test fixture)



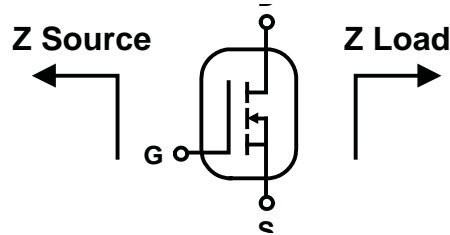
Typical Performance (cont.)



Typical Performance (cont.)



Broadband Circuit Impedance (combined leads)

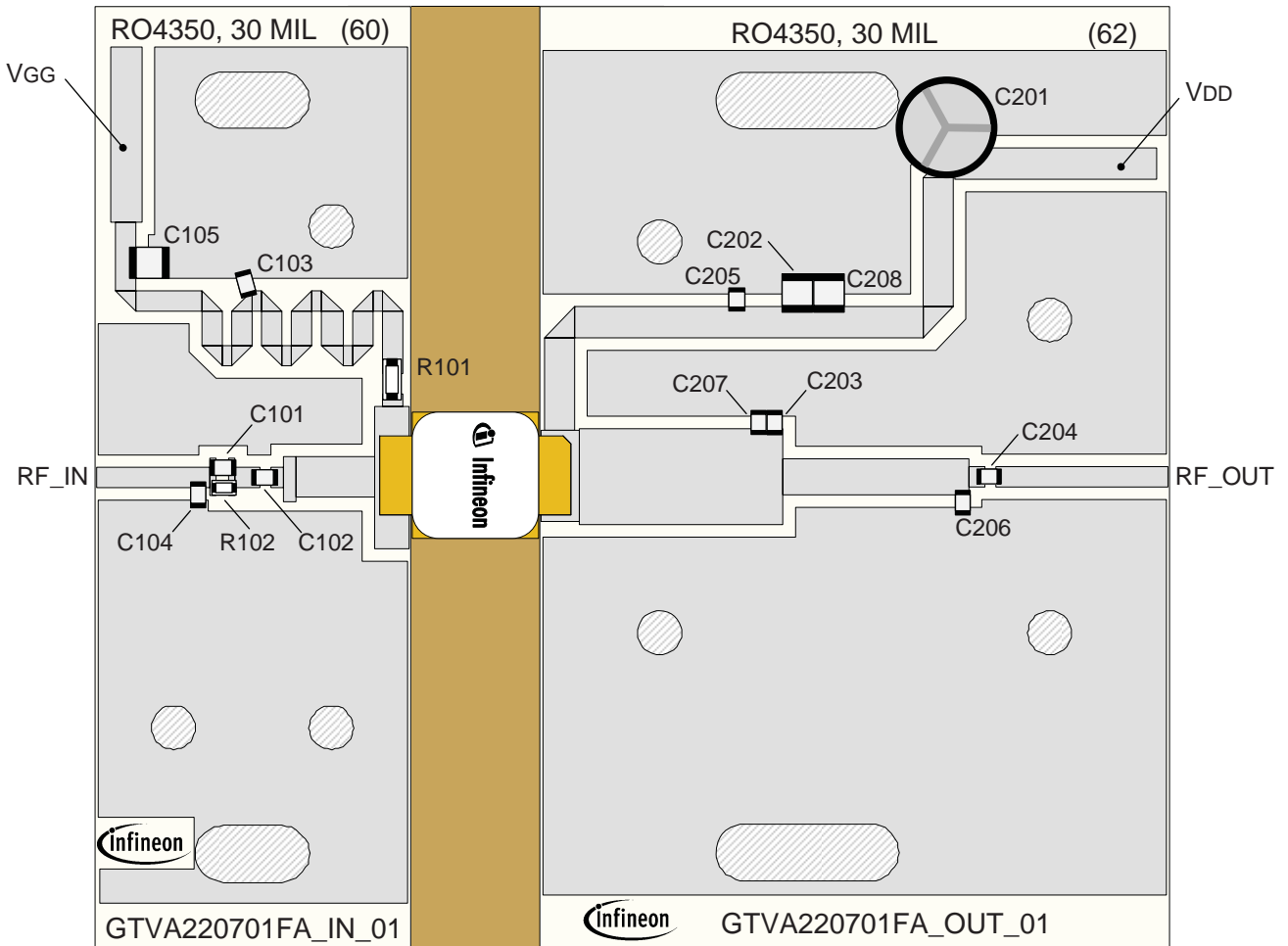


Freq [MHz]	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1805	1.95	-5.67	12.02	5.87
1840	2.01	-6.27	11.94	3.94
1880	2.43	-7.17	11.33	3.15
2100	9.95	-9.38	10.39	0.02
2140	11.40	-8.40	10.31	-0.75
2170	11.61	-9.07	10.50	-2.23

Reference Circuit, tuned for 1805 MHz to 2170 MHz

DUT	GTVA220701FA V1
Test Fixture Part No.	LTN/GTVA220701FA V1
PCB	Rogers 4350, 0.762 mm [.030"] thick, 2 oz. copper, $\epsilon_r = 3.66$
Find Gerber files for this test fixture on the Infineon Web site at http://www.infineon.com/rfpower	

Reference Circuit (cont.)



Reference circuit assembly diagram (not to scale)

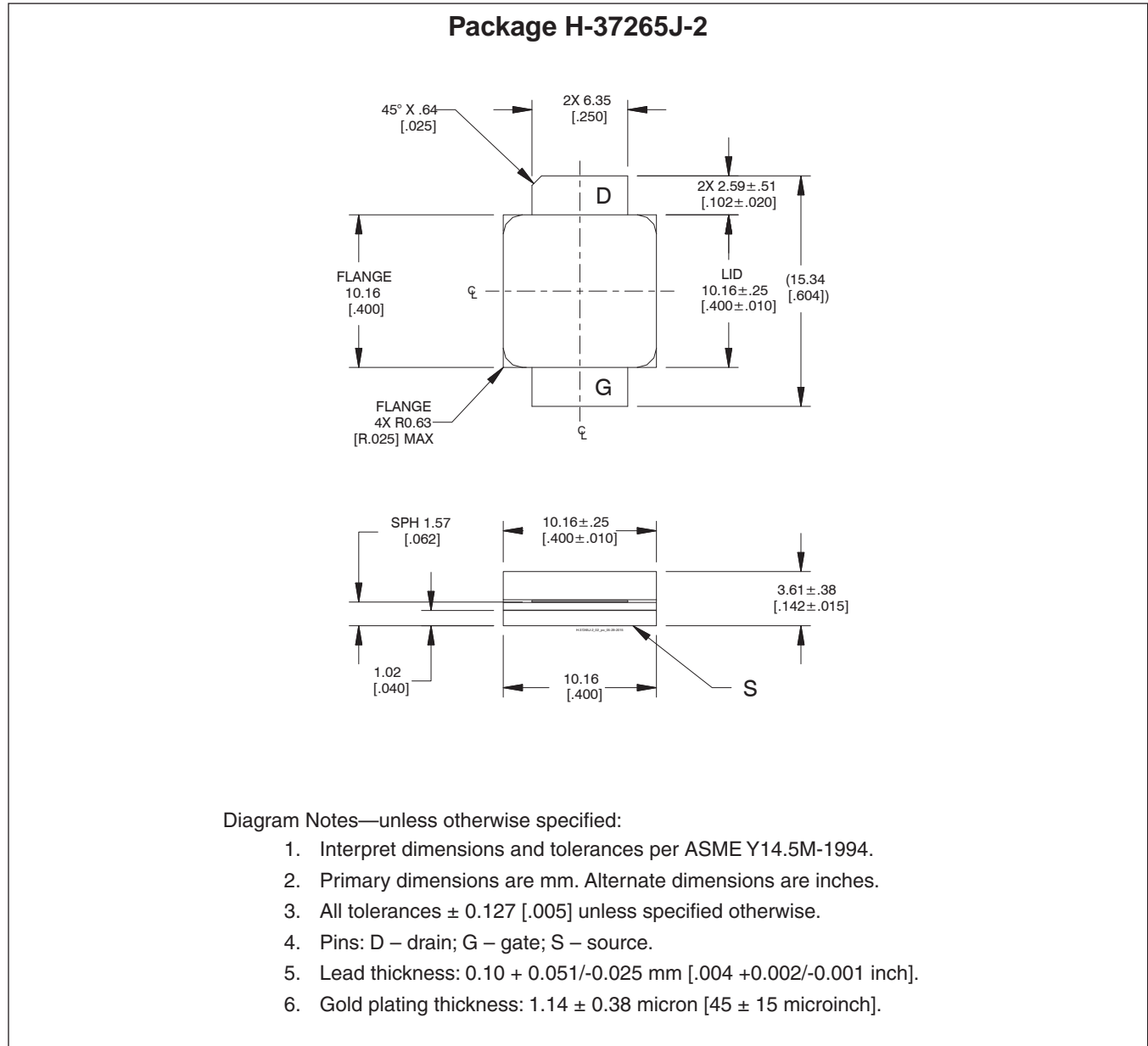
Reference Circuit (cont.)

Components Information

Component	Description	Manufacturer	P/N
In			
C101	Capacitor, 2.4 pF	ATC	ATC600F2R4JT250XT
C102, C103	Capacitor, 20 pF	ATC	ATC600F200JT250XT
C104	Capacitor, 1 pF	ATC	ATC600F1R0JT250XT
C105	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
R101	Resistor, 10 ohms	Panasonic Electronic Components	ERJ-8GEYJ100V
R102	Resistor, 330 ohms	Panasonic Electronic Components	ERJ-3GEYJ331V
Out			
C201	Capacitor, 47 μ F	Cornell Dubilier Electronics (CDE)	SEK470M100ST
C202, C208	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C203	Capacitor, 1 pF	ATC	ATC600F1R0JT250XT
C204, C205	Capacitor, 20 pF	ATC	ATC600F200JT250XT
C206	Capacitor, 0.7 pF	ATC	ATC600F0R7JT250XT
C207	Capacitor, 0.3 pF	ATC	ATC600F0R3JT250XT

Package Outline Specifications, next page

Package Outline Specifications



Find the latest and most complete information about products and packaging at the Infineon Internet page <http://www.infineon.com/rfpower>

Customer

Revision History

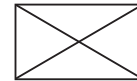
Revision	Date	Data Sheet	Page	Subjects (major changes at each revision)
01	2015-08-18	Advance	all	Data Sheet reflects advance specification for product development
02	2016-03-29	Production	all	Product released to production. Add firm specifications, performance information, and reference circuit information,

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Edition 2016-03-29

Published by
Infineon Technologies AG
85579 Neubiberg, Germany

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