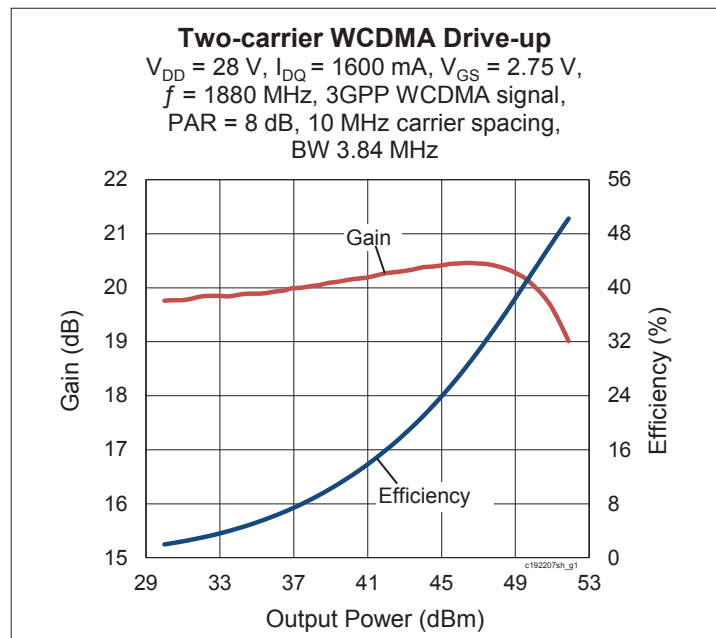
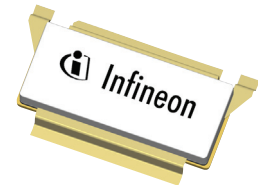


Thermally-Enhanced High Power RF LDMOS FET 220 W, 28 V, 1805 – 1990 MHz

Description

The PXFC192207SH is a 220-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 1805 to 1990 MHz frequency band. Features include input and output matching, high gain and thermally-enhanced package with earless flanges. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PXFC192207SH
Package H-37288G-4/2



Features

- Broadband internal input and output matching
- Typical Pulsed CW performance, 1880 MHz, 28 V, 10 μs pulse width, 10% duty cycle, class AB
 - Output power at $P_{1dB} = 220\text{ W}$
 - Efficiency = 55%
 - Gain = 20 dB
- Typical single-carrier WCDMA performance, 1880 MHz, 28 V, 10 dB PAR @ 0.01% CCDF
 - Output power = 50 W
 - Efficiency = 29%
 - Gain = 20 dB
 - ACPR = -34 dBc @ 5 MHz
- Capable of handling 10:1 VSWR @ 28 V, 200 W (CW) output power
- Integrated ESD protection
- Low thermal resistance
- Pb-free and RoHS compliant

RF Characteristics

Two-carrier WCDMA Specifications (tested in Infineon production test fixture)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 1600\text{ mA}$, $P_{OUT} = 50\text{ W}$ avg, $f_1 = 1880\text{ MHz}$, $f_2 = 1990\text{ MHz}$, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 8 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	19	20	—	dB
Drain Efficiency	η_D	29	30.5	—	%
Intermodulation Distortion	IMD	—	-32	-29	dBc

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

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics

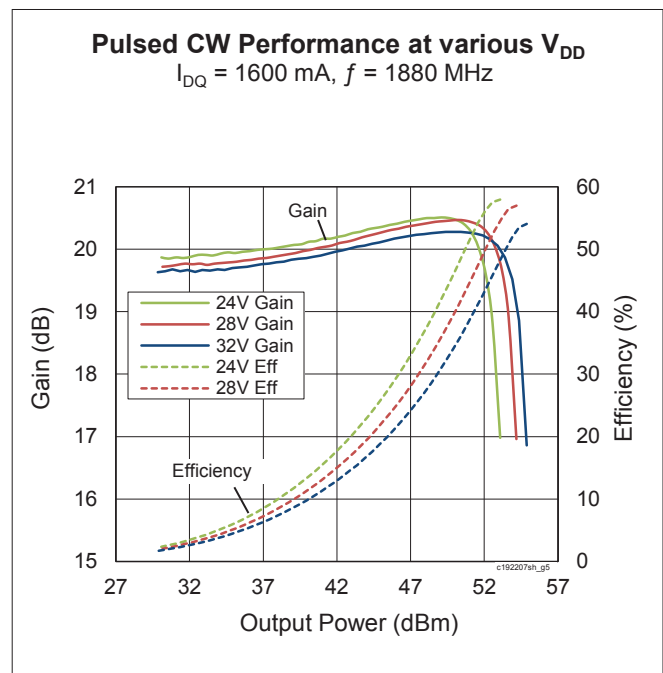
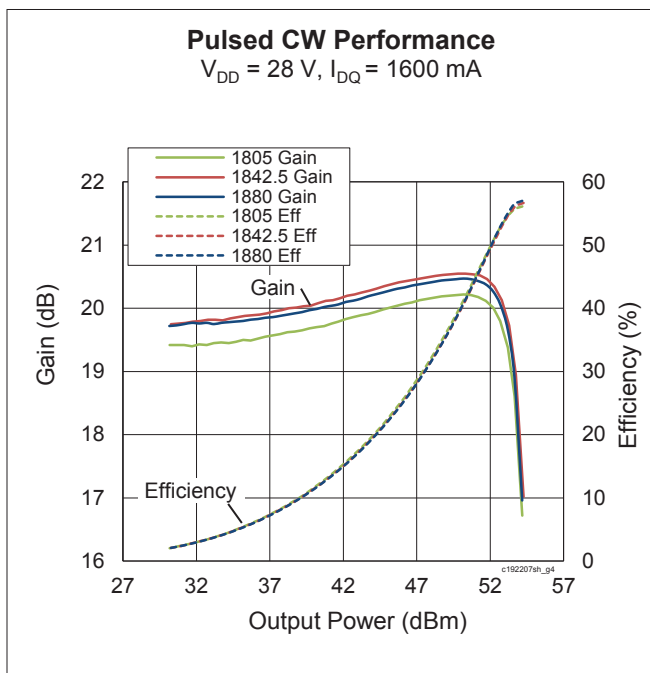
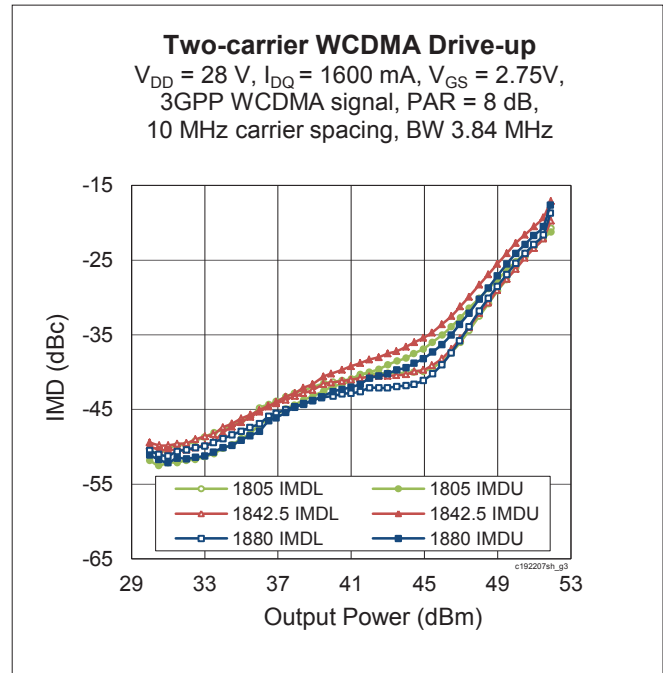
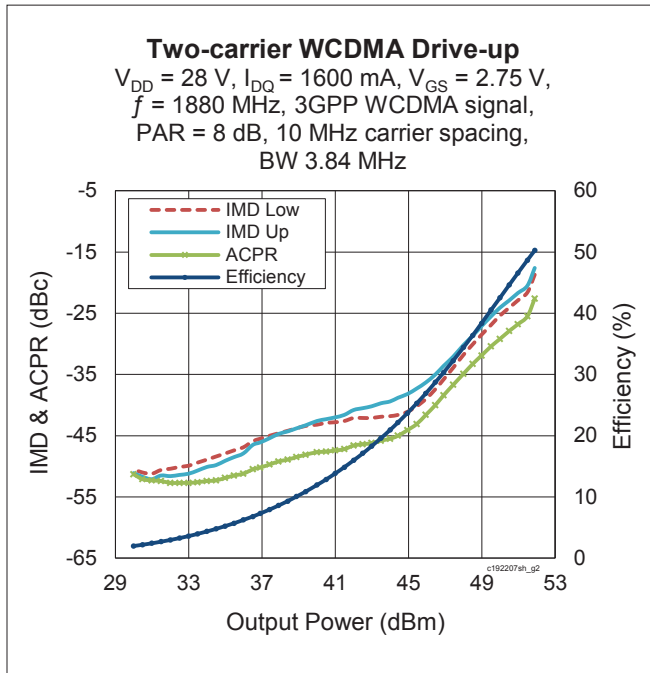
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 10\text{ mA}$	$V_{(BR)DSS}$	65	—	—	V
Drain Leakage Current	$V_{DS} = 28\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1	μA
	$V_{DS} = 63\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	10	μA
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.03	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}$, $I_{DQ} = 1600\text{ mA}$	V_{GS}	2.3	2.6	2.9	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA

Maximum Ratings

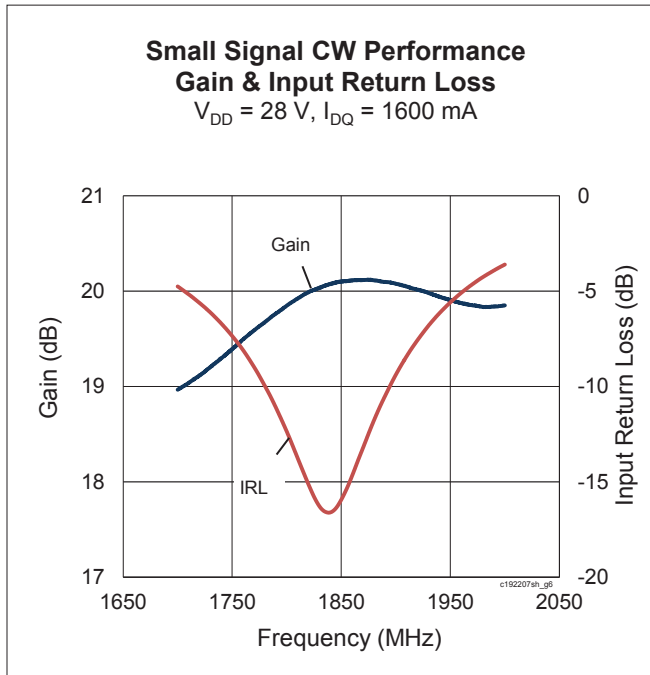
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	−6 to +10	V
Operating Voltage	V_{DD}	0 to +32	V
Junction Temperature	T_J	225	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	−65 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$, 200 W CW)	$R_{\theta JC}$	0.28	$^{\circ}\text{C/W}$

Ordering Information

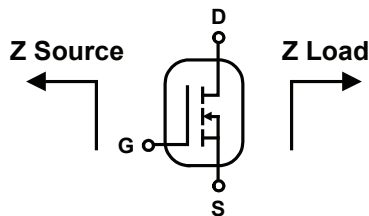
Type and Version	Order Code	Package Description	Shipping
PXFC192207SH V1 R250	PXFC192207SHV1R250XTMA1	H-37288G-4/2, earless flange	Tape & Reel, 250 pcs

Typical Performance (data taken in a production test fixture)


Typical Performance (cont.)



Broadband Circuit Impedance



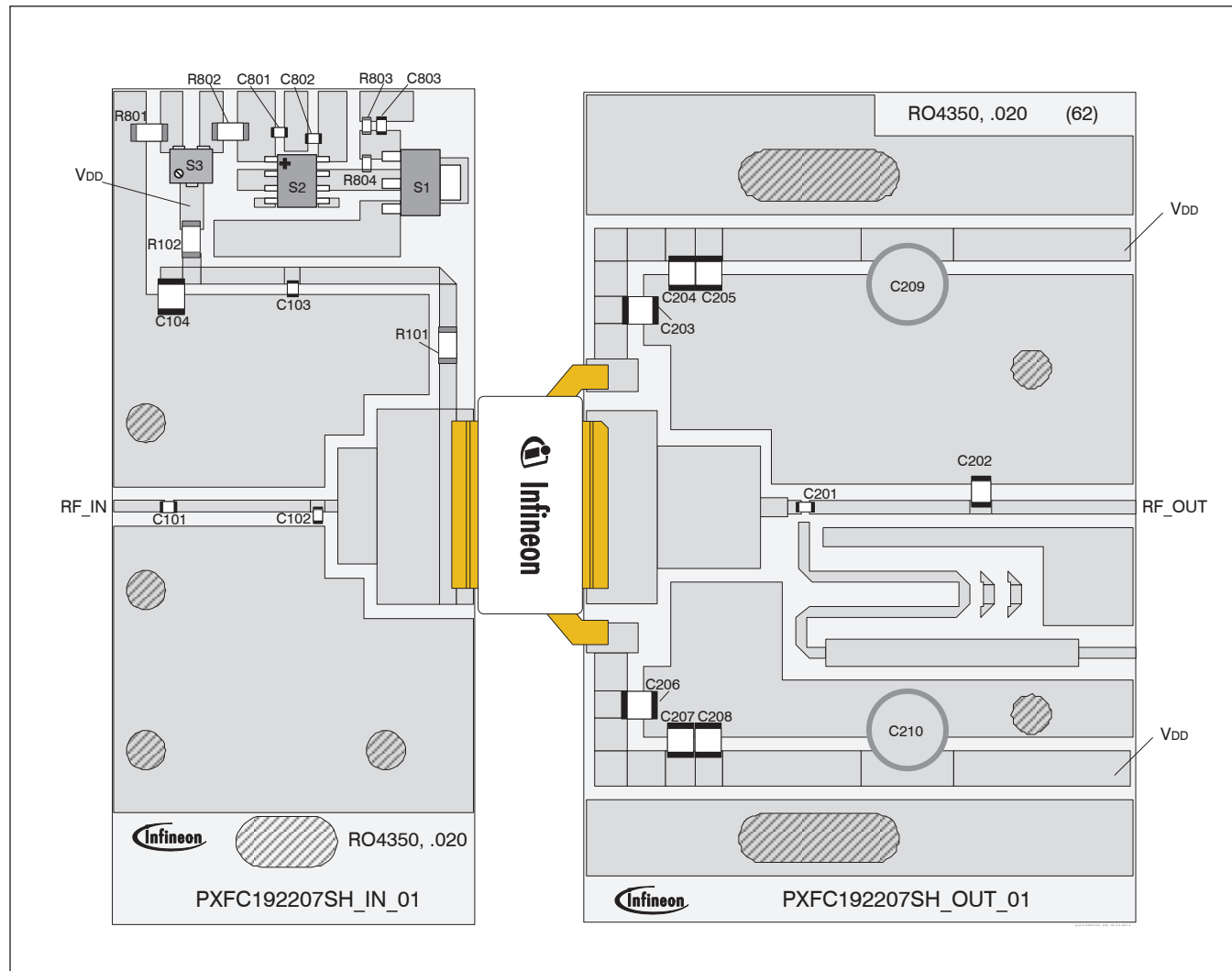
Freq [MHz]	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1805	1.57	-6.18	1.13	-3.50
1843	1.50	-5.97	1.11	-3.32
1880	1.42	-5.76	1.09	-3.18

Load Pull Performance

Main Side Load Pull Performance – Pulsed CW signal: 10 μs , 10% duty cycle, $V_{DD} = 28\text{ V}$, $I_{DQ} = 1600\text{ mA}$

		P_{1dB}									
		Max Output Power					Max PAE				
Freq [MHz]	Zs Ω	Zl Ω	Gain [dB]	POUT [dBm]	POUT [W]	PAE [%]	Zl Ω	Gain [dB]	POUT [dBm]	POUT [W]	PAE [%]
1805	0.62 - j4.61	0.79 - j3.74	19.7	54.30	269	50.8	2.00 - j3.31	22.7	52.30	170	61.7
1880	1.25 - j5.48	0.82 - j3.85	19.9	54.40	275	52.8	1.62 - j3.45	22.1	53.00	200	62.1
1930	1.83 - j6.05	0.79 - j4.00	19.5	54.30	269	51.1	1.60 - j3.33	22.2	52.50	178	61.2
1990	3.23 - j6.50	0.81 - j4.14	20.1	54.10	257	51.4	1.40 - j3.31	22.7	52.00	158	60.1

Reference Circuit , 1805 – 1880 MHz



Reference Circuit (cont.)

Reference Circuit Assembly

DUT	PXFC192207SH V1
Test Fixture Part No.	LTN/PXFC192207SH V1
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$, $f = 1805 - 1880$ MHz
Find Gerber files for this test fixture on the Infineon Web site at http://www.infineon.com/rfpower	

Components Information

Component	Description	Suggested Manufacturer	P/N
Input			
C101, C103	Capacitor, 33 pF	ATC	ATC800A330JT250
C102	Capacitor, 0.9 pF	ATC	ATC800A0R9CT250
C104	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C801, C802, C803	Capacitor, 1000 pF	Panasonic Electronic Components	ECJ-1VB1H102K
R101, R102, R801	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-8GEYJ100V
R802	Resistor, 100 Ω	Panasonic Electronic Components	ERJ-8GEYJ101V
R803	Resistor, 1300 Ω	Panasonic Electronic Components	ERJ-3GEYJ132V
R804	Resistor, 1200 Ω	Panasonic Electronic Components	ERJ-3GEYJ122V
S1	Transistor	Infineon Technologies	BCP56
S2	Voltage Regulator	Texas Instruments	LM78L05ACM
S3	Potentiometer, 2k Ω	Bourns Inc.	3224W-1-202E
Output			
C201	Capacitor, 33 pF	ATC	ATC800A330JT250
C202	Capacitor, 0.5 pF	ATC	ATC800B0R5CW500
C203, C204, C205, C206, C207, C208	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C209, C210	Capacitor, 220 μ F	Panasonic Electronic Components	EEE-FP1V221AP

Package Outline Specifications

Package H-37288G-4/2

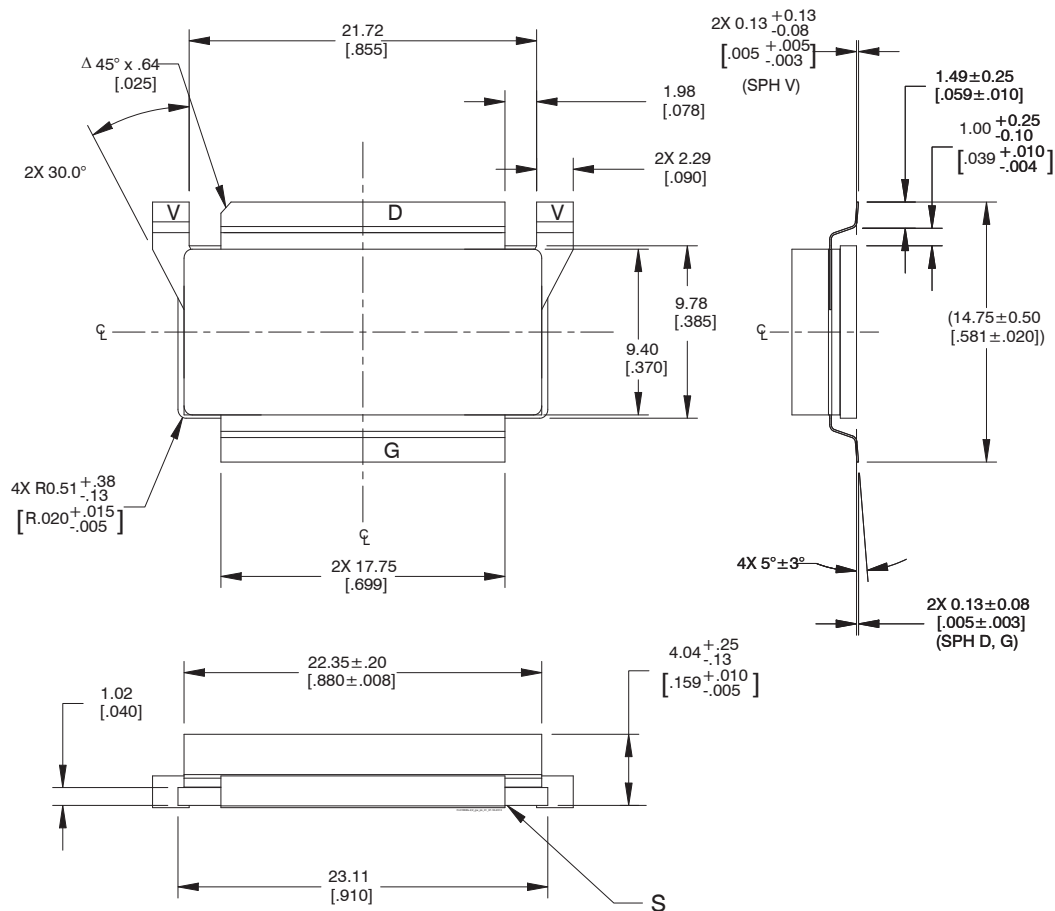


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm. Alternate dimensions are inches.
3. All tolerances ± 0.127 [0.005] unless specified otherwise.
4. Pins: D – drain; G – gate; S – source; V – V_{DD}.
5. Lead thickness: 0.10 + 0.051/-0.025 mm [0.004 + 0.002/-0.001 inch].
6. Gold plating thickness: 1.14 ± 0.38 micron [45 ± 15 microinch].

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

Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2014-07-24	Advance	All	Data Sheet reflects advance specification for product development
02	2014-10-31	Production	All	Data Sheet reflects released product specification

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