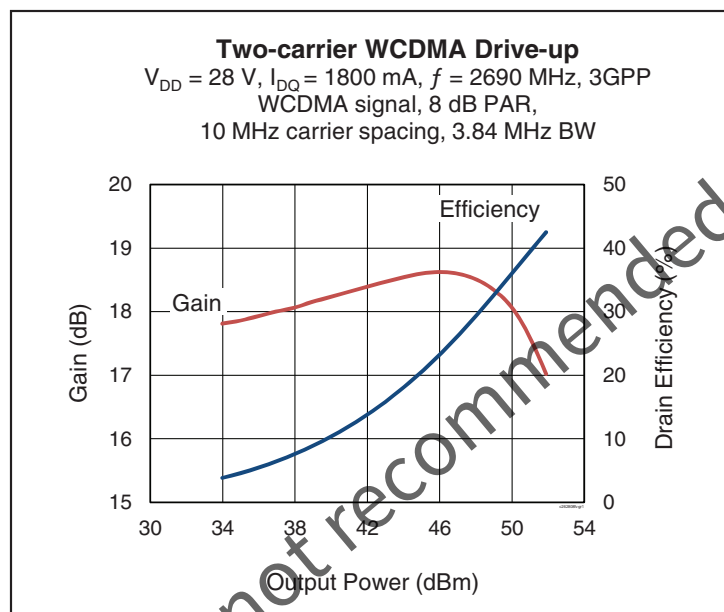


PTFC262808FV

Thermally-Enhanced High Power RF LDMOS FET 280 W, 28 V, 2620 – 2690 MHz

Description

The PTFC262808FV is a 280-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 2620 to 2690 MHz frequency band. Features include input and output matching, high gain and thermally-enhanced package. Manufactured with Wolfspeed's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PTFC262808FV

Package H-37275G-6/2

Features

- Broadband internal matching
- Typical 1-carrier WCDMA performance, 2655 MHz, 28 V, 10 dB PAR
 - Output power at $P_{1dB} = 56\text{ W}$ avg.
 - Efficiency = 24%
 - Gain = 18 dB
 - ACPR = -33 dBc @ 3.84 MHz
- Integrated ESD protection: Human Body Model, Class 1C (per JESD22-A114)
- Low thermal resistance
- RoHS-compliant
- Capable of handling 10:1 VSWR at 28 V, 280 W (CW) output power

RF Characteristics

Single-carrier WCDMA Specifications (tested in Wolfspeed production test fixture)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 1800\text{ mA}$, $P_{OUT} = 56\text{ W}$ average, $f = 2655\text{ MHz}$, 3GPP WCDMA signal, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	16.5	18.0	—	dB
Drain Efficiency	η_D	22	24	—	%
Adjacent Channel Power Ratio	ACPR	—	-33	-30	dBc

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

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics (single side)

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}	—	—	1.0	μA
	$V_{DS} = 63\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	10.0	μA
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.05	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}$, $I_{DQ} = 1800\text{ mA}$	V_{GS}	—	2.6	—	V

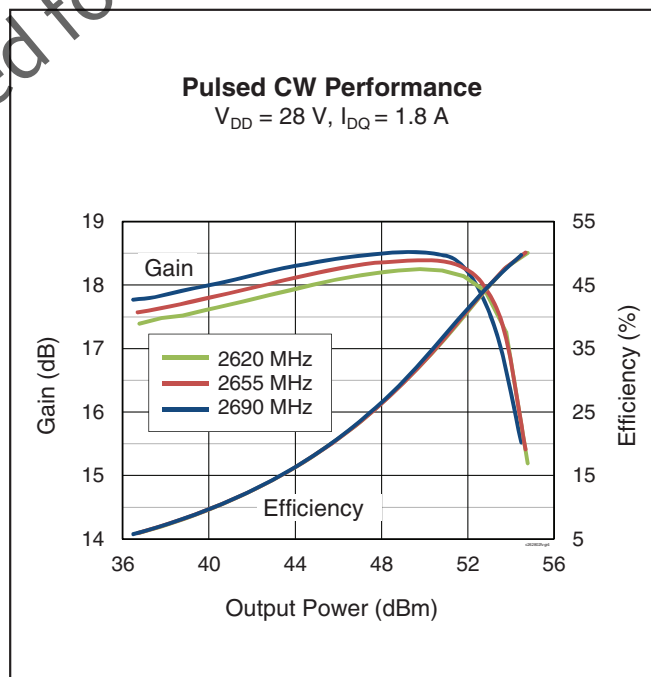
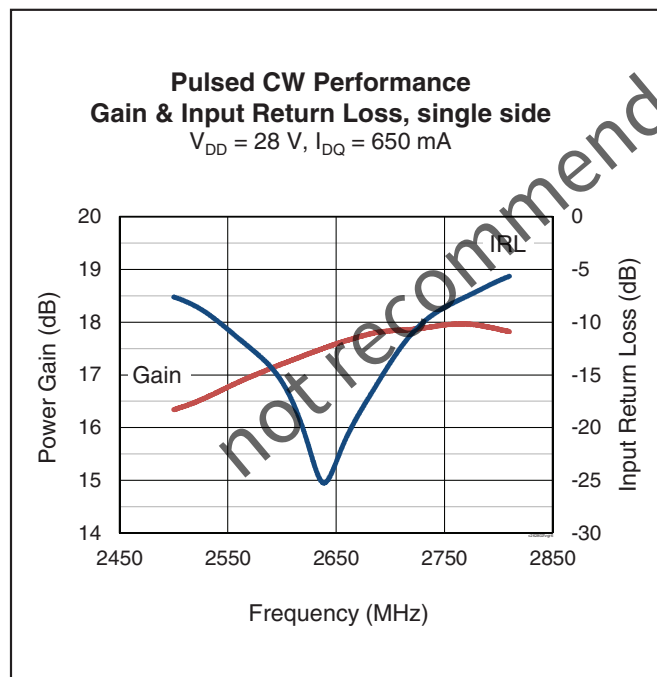
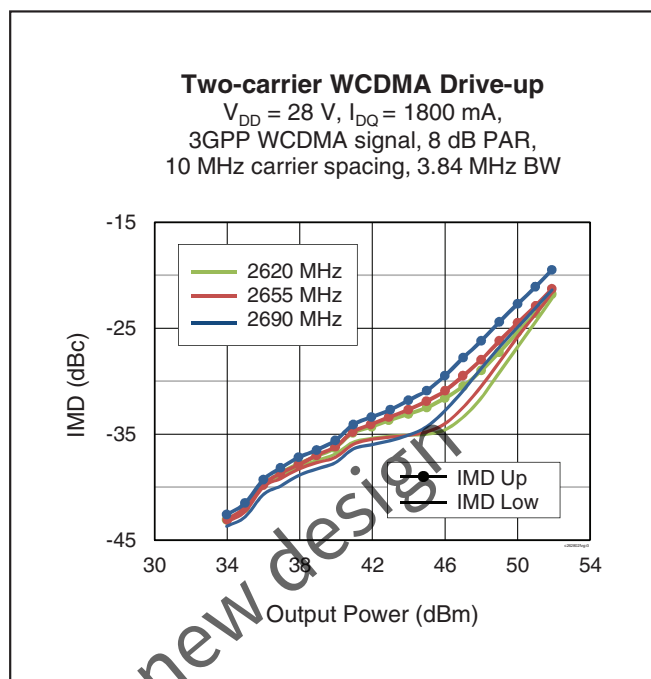
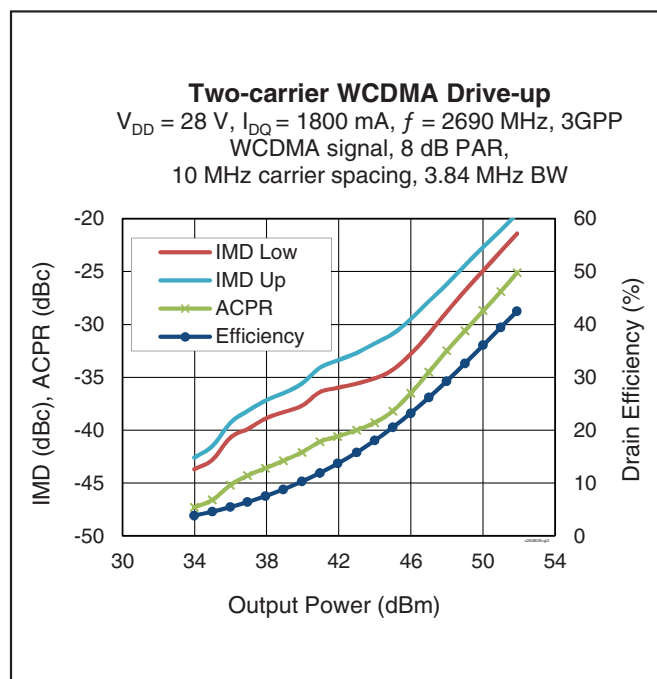
Maximum Ratings

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)	$R_{\theta JC}$	0.20	$^{\circ}\text{C/W}$

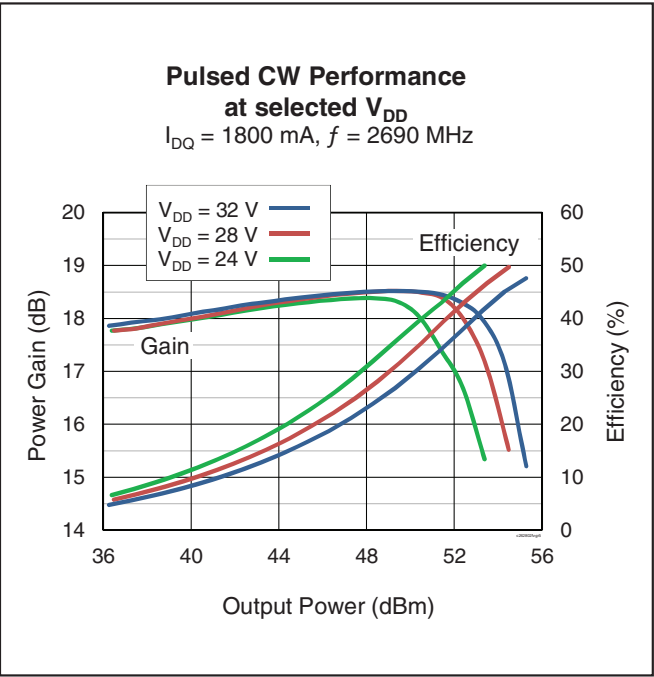
Ordering Information

Type and Version	Order Code	Package and Description	Shipping
PTFC262808FV V1 R0	PTFC262808FV-V1-R0	H-37275G-6/2, ceramic open-cavity, earless	Tape & Reel, 50 pcs
PTFC262808FV V1 R250	PTFC262808FV-V1-R250	H-37275G-6/2, ceramic open-cavity, earless	Tape & Reel, 250 pcs

Typical Performance (data taken in Wolfspeed production test fixture)

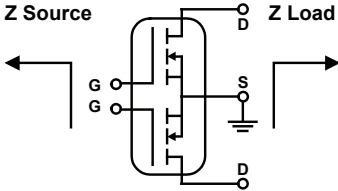


Typical Performance (cont.)



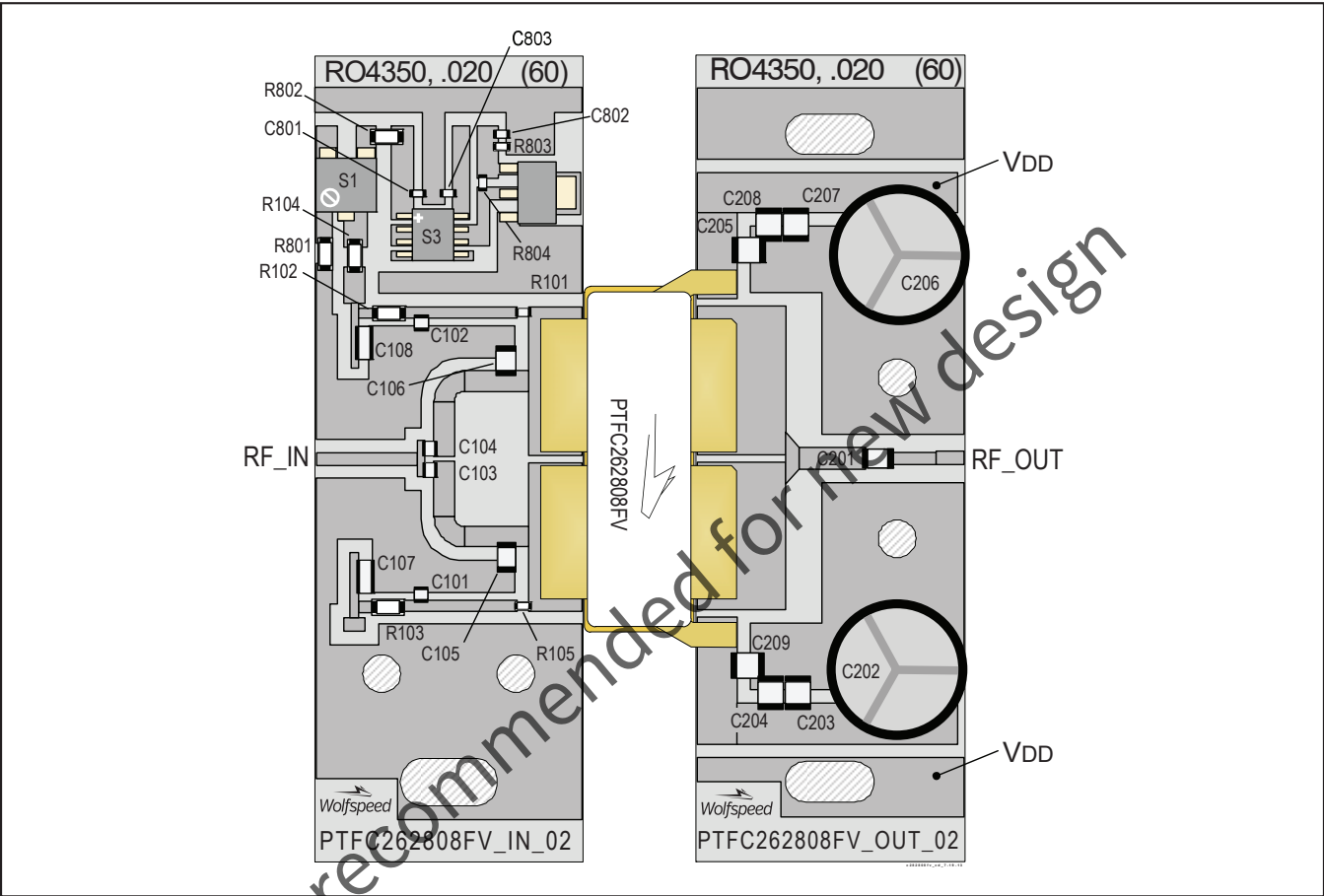
Broadband Circuit Impedance

Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
2620	2.88	-1.58	0.55	-2.45
2655	2.99	-1.55	0.53	-2.39
2690	3.10	-1.52	0.52	-2.33



Reference Circuit, tuned for 2620 – 2690 MHz

DUT	PTFC262808FV
Test Fixture Part No.	LTN/PTFC262808FV V1
PCB	Rogers 4350, 0.508 mm [.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$
Find Gerber files for this test fixture on the Wolfspeed Web site at (www.wolfspeed.com/RF)	



Reference circuit assembly diagram (not to scale)

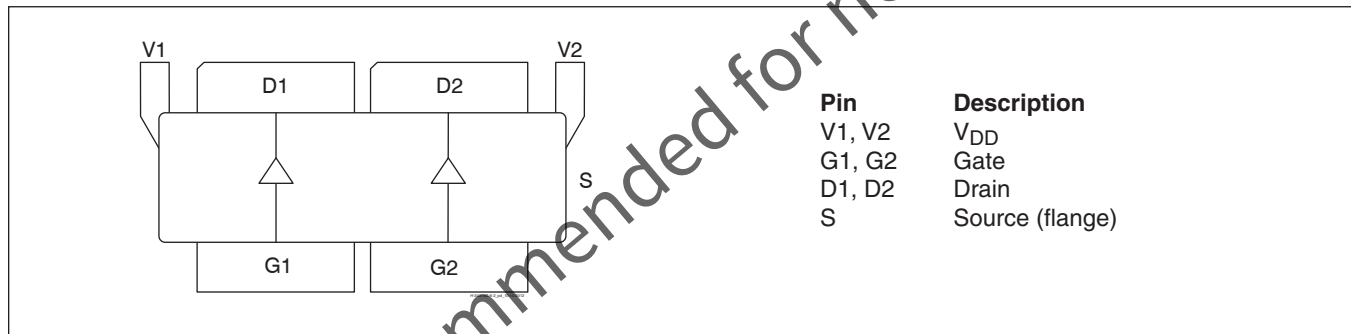
Component Information

Component	Description	Suggested Manufacturer	P/N
Input			
C101, C102	Chip capacitor, 10 pF	ATC	ATC100A100JW500XB
C103, C104	Chip capacitor, 18 pF	ATC	ATC100A180JW150XB
C105, C106	Chip capacitor, 0.4 pF	ATC	ATC100B0R4CW500XB
C107, C108	Capacitor, 10 μ F	Murata Electronics North America	LLL31BC70G106MA01L
C801, C802, C803	Chip capacitor, 1,000 pF	Panasonic	ECJ-1VB1H102K
R101, R102	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-3GEYJ100V

(table cont. next page)

Reference Circuit (cont.)**Component Information** (cont.)

Component	Description	Suggested Manufacturer	P/N
Input (cont.)			
R102, R103, R104, R801, R802	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-8GEYJ100V
R803	Resistor, 1.3k Ω	Panasonic Electronic Components	ERJ-3GEYJ132V
R804	Resistor, 1.2k Ω	Panasonic Electronic Components	ERJ-3GEYJ122V
S1	Potentiometer, 2k Ω	Bourns Inc.	3224W-1-202E
S2	Transistor	Infineon Technologies	BCP56-10
S3	Voltage regulator	Fairchild Semiconductor	LM7805
Output			
C201	Chip capacitor, 18 pF	ATC	ATC100B180KW500XB
C202, C206	Capacitor, 470 μ F, 50 V	Cornell Dubilier Electronics (CDE)	SEK471M050ST
C203, C204, C205, C207, C208, C209	Capacitor, 10 μ F	Taiyo Yuden	UMK925C7106MM-T

Pinout Diagram (top view)

Lead connections for PTFC262808FV

Package Outline Specifications

Package H-37275G-6/2

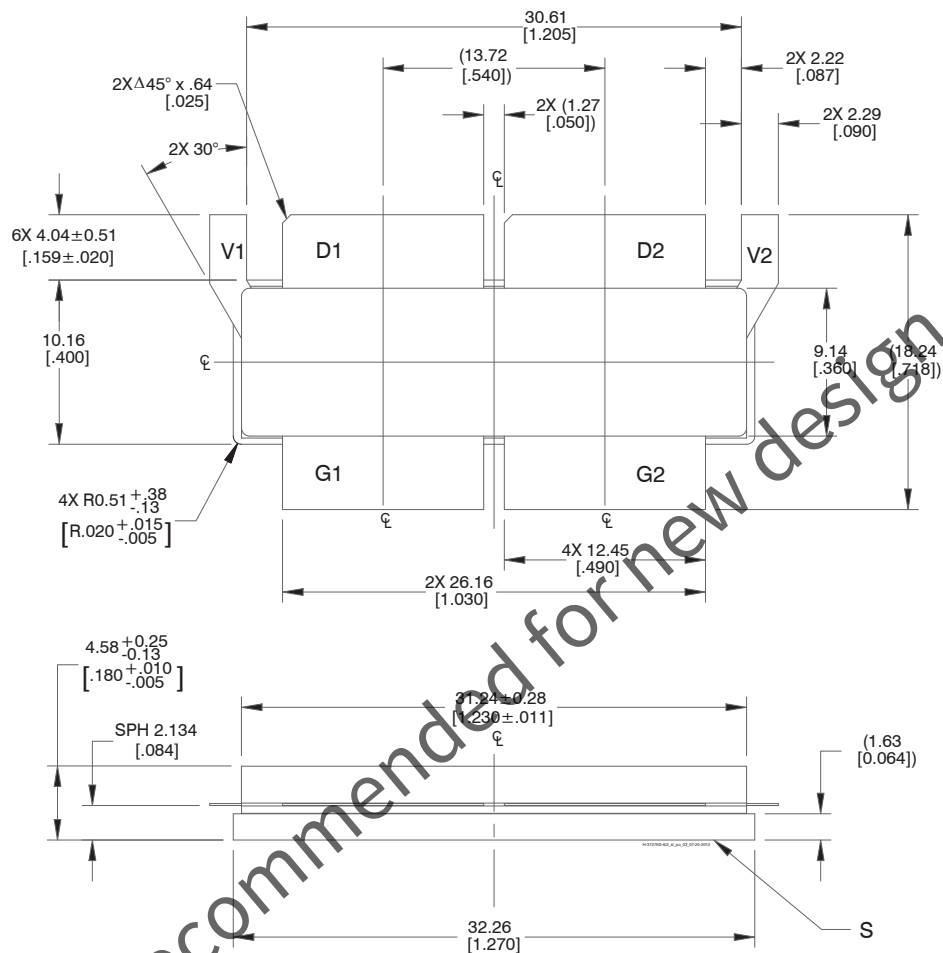


Diagram Notes—unless otherwise specified:

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].
4. Pins: D1, D2 – drain; G1, G2 – gate; S – source; V1, V2 – V_{DD}.
5. Lead thickness: 0.13 + 0.051 / - 0.025 [0.005 + 0.002 / - 0.001].
6. Gold plating thickness: 1.14 ± 0.38 micron [45 ± 15 microinch] max.

Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2012-09-14	Advance	All	New product, proposed only.
02	2013-07-24	Data Sheet	All	Product released to production. All information updated.
02.1	2013-08-02	Data Sheet	2	Order Code for Tape and Reel corrected.
02.2	2013-08-06	Data Sheet	2	Order Code for Tray corrected.
03	2016-06-22	Data Sheet	2	Operating Gate Voltage conditions corrected, maximum junction temperature raised to 225 °C, update ordering information
04	2018-07-03	Production	All	Converted to Wolfspeed Data Sheet. Not recommended for new design

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Notes

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