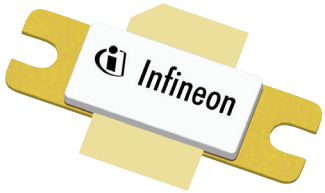
green Product

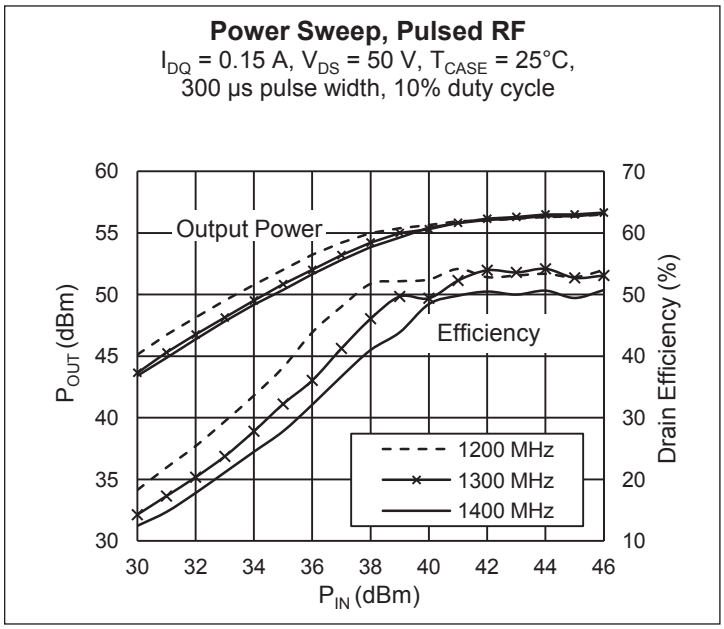
Thermally-Enhanced High Power RF LDMOS FET
350 W, 50 V, 1200 – 1400 MHz

Description

The PTVA123501EC LDMOS FET is designed for use in power amplifier applications in the 1200 MHz to 1400 MHz frequency band. Features include high gain and thermally-enhanced package with bolt-down flange. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PTVA123501EC
Package H-36248-2



Features

- Broadband internal matching
- High gain and efficiency
- Integrated ESD protection
- Low thermal resistance
- Excellent ruggedness
- Pb-free and RoHS compliant
- Capable of withstanding a 10:1 load mismatch (all phase angles) at 55.5 dBm under pulsed conditions: 300 µs pulse width, 10% duty cycle, V_{DD} = 50 V

RF Characteristics

Typical RF Performance (not subject to production test, verified by design/characterization in Infineon test fixture)
V_{DD} = 50 V, I_{DQ} = 0.15 A, Input signal (t_r = 5 ns, t_f = 6.5 ns), 300 µs pulse width, 10% duty cycle, class AB test

Mode of operation	f	IRL	P_{1dB}			P_{3dB}			$P_{droop(pulse)}$	t_r	t_f
	(MHz)	(dB)	Gain (dB)	Eff (%)	P_{OUT} (W)	Gain (dB)	Eff (%)	P_{OUT} (W)	dB @ 400 W	(ns)	(ns)
Pulsed RF	1200	14	16.2	52	355	14.2	53	410	0.3	6	7
Pulsed RF	1300	8.5	15.2	49	370	13.2	54	430	0.25	6	7
Pulsed RF	1400	10	15	49	350	13	50	410	0.3	6	7

All published data at T_{CASE} = 25°C unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

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RF Characteristics

Pulsed RF Performance (tested in Infineon test fixture)

V_{DD} = 50 V, I_{DQ} = 0.15 A, P_{OUT} = 350 W, f_1 = 1200 MHz, f_2 = 1300 MHz, f_3 = 1400 MHz, 300 µs pulse width, 10% duty cycle

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	13	14	—	dB
Drain Efficiency	η_D	48	52	—	%
Gain Flatness	ΔG	0	0.5	1	dB
Return Loss	IRL	–20	9	–7	dB

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 10 mA	$V_{(BR)DSS}$	105	—	—	V
Drain Leakage Current	V_{DS} = 50 V, V_{GS} = 0 V	I_{DSS}	—	—	1.0	µA
	V_{DS} = 105 V, V_{GS} = 0 V	I_{DSS}	—	—	10.0	µA
On-State Resistance	V_{GS} = 10 V, V_{DS} = 0.1 V	$R_{DS(on)}$	—	0.1	—	Ω
Operating Gate Voltage	V_{DS} = 50 V, I_{DQ} = 150 mA	V_{GS}	3	3.35	4	V
Gate Leakage Current	V_{GS} = 10 V, V_{DS} = 0 V	I_{GSS}	—	—	1.0	µA

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	105	V
Gate-Source Voltage	V_{GS}	–6 to +12	V
Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{STG}	–65 to +150	°C
Thermal Resistance (T_{CASE} = 70°C, 400 W, 1 ms, 10% duty cycle)	$R_{\theta JC}$	0.36	°C/W

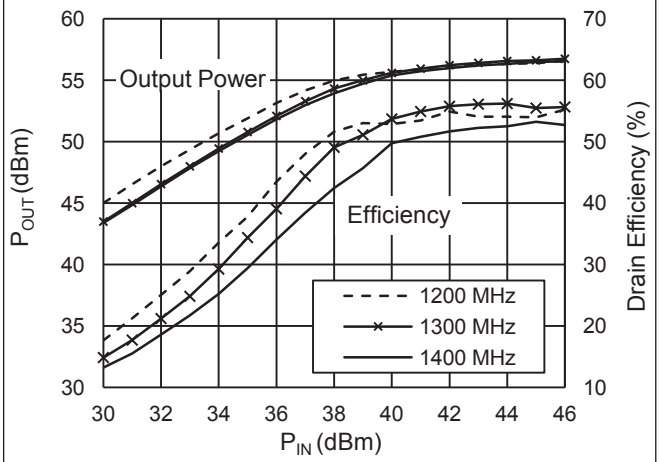
Ordering Information

Type and Version	Order Code	Package	Package Description	Shipping
PTVA123501EC V1	PTVA123501ECV1XWSA1	H-36248-2	Slotted flange, single ended	Tray
PTVA123501EC V1 R250	PTVA123501ECV1R250XTMA1	H-36248-2	Slotted flange, single ended	Tape & Reel, 250pcs

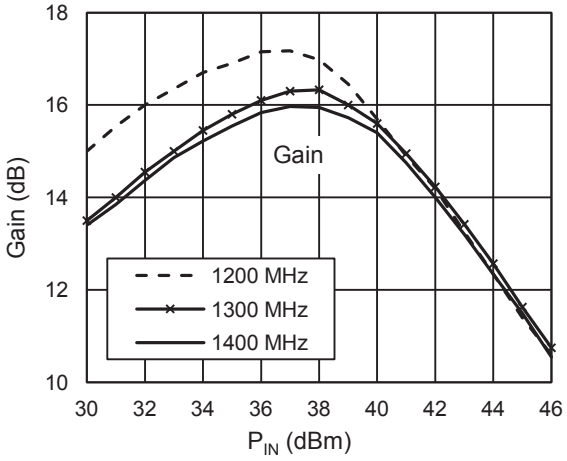
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Typical RF Performance (data taken in production test fixture)

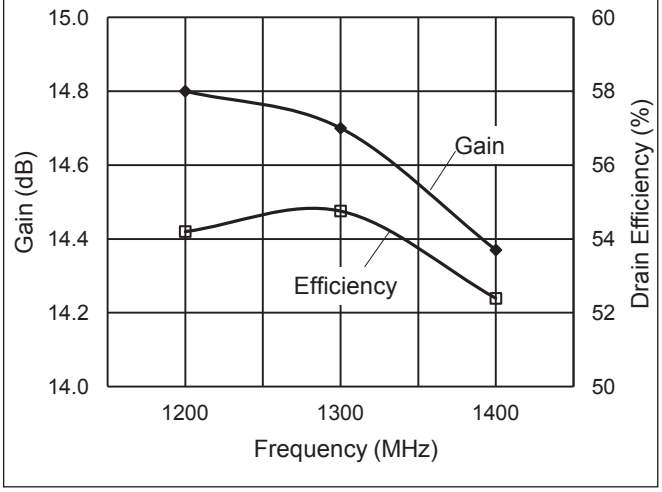
Power Sweep, Pulsed RF
I_{DQ} = 0.15 A, V_{DS} = 50 V, T_{CASE} = 25°C,
100 µs pulse width, 10% duty cycle



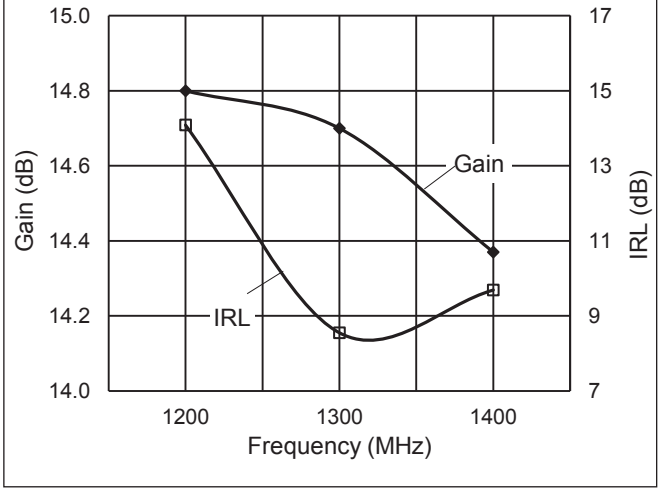
Power Sweep, Pulsed RF
I_{DQ} = 0.15 A, V_{DS} = 50 V, T_{CASE} = 25°C,
100 µs pulse width, 10% duty cycle



Pulsed RF Performance
I_{DQ} = 0.15 A, V_{DS} = 50 V, P_{OUT} = 400 W,
T_{CASE} = 25°C, 100 µs pulse width,
10% duty cycle



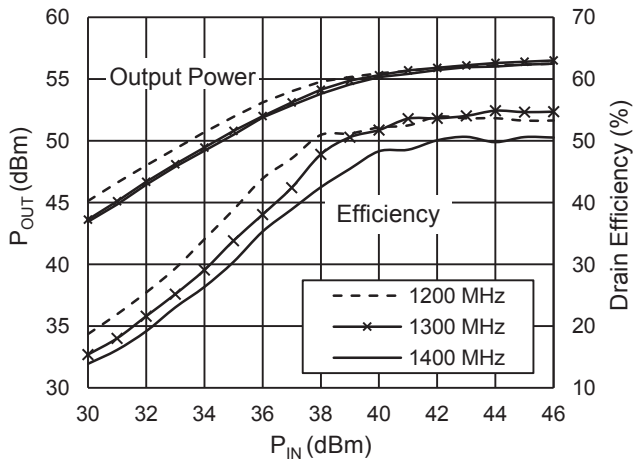
Pulsed RF Performance
I_{DQ} = 0.15 A, V_{DS} = 50 V, P_{OUT} = 400 W,
T_{CASE} = 25°C, 100 µs pulse width,
10% duty cycle



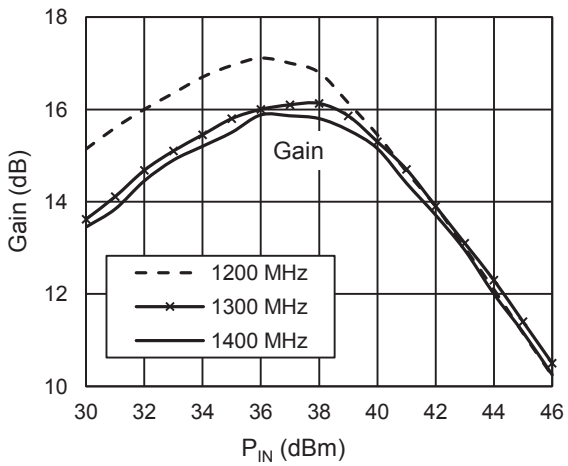
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Typical RF Performance (cont.)

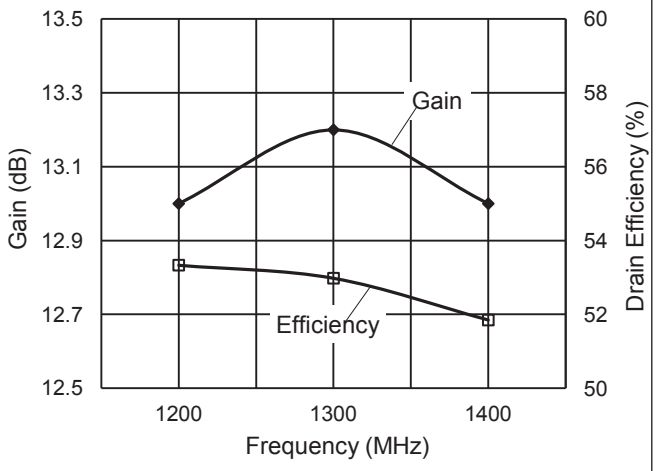
Power Sweep, Pulsed RF
I_{DQ} = 0.15 A, V_{DS} = 50 V, T_{CASE} = 25°C,
1 ms pulse width, 10% duty cycle



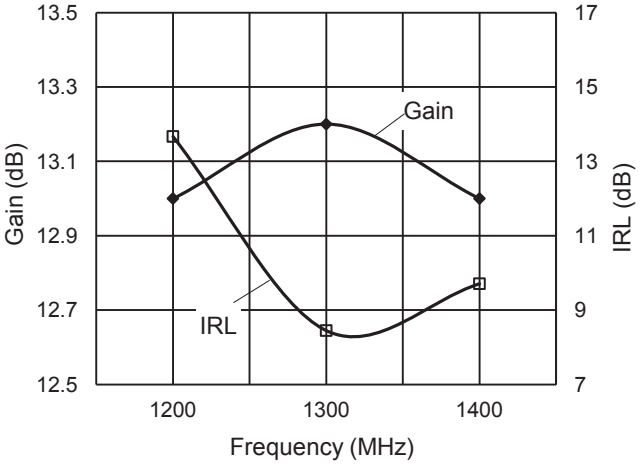
Power Sweep, Pulsed RF
I_{DQ} = 0.15 A, V_{DS} = 50 V, T_{CASE} = 25°C,
1 ms pulse width, 10% duty cycle



Pulsed RF Performance
I_{DQ} = 0.15 A, V_{DS} = 50 V, P_{OUT} = 400 W,
T_{CASE} = 25°C, 1 ms pulse width,
10% duty cycle



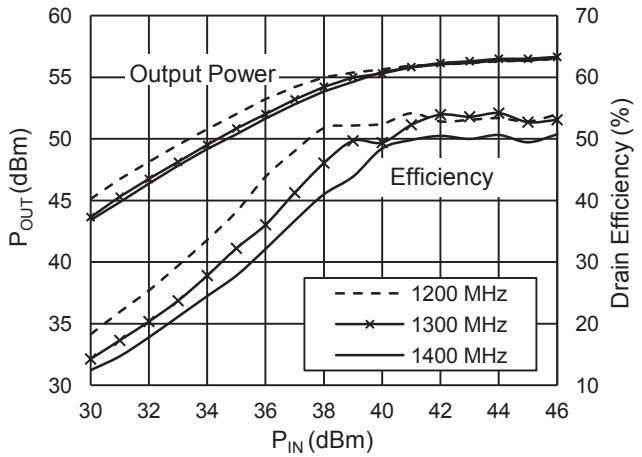
Pulsed RF Performance
I_{DQ} = 0.15 A, V_{DS} = 50 V, P_{OUT} = 400 W,
T_{CASE} = 25°C, 1 ms pulse width,
10% duty cycle



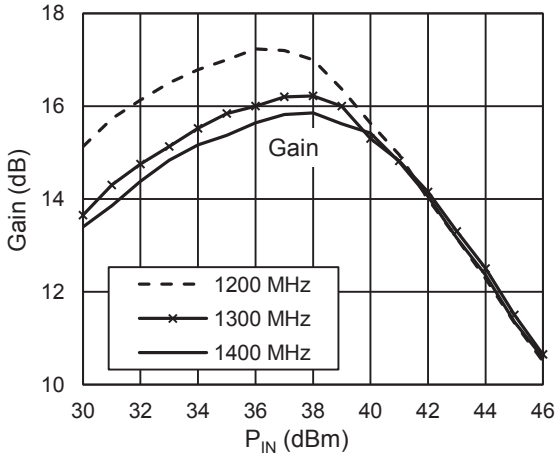
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Typical RF Performance (cont.)

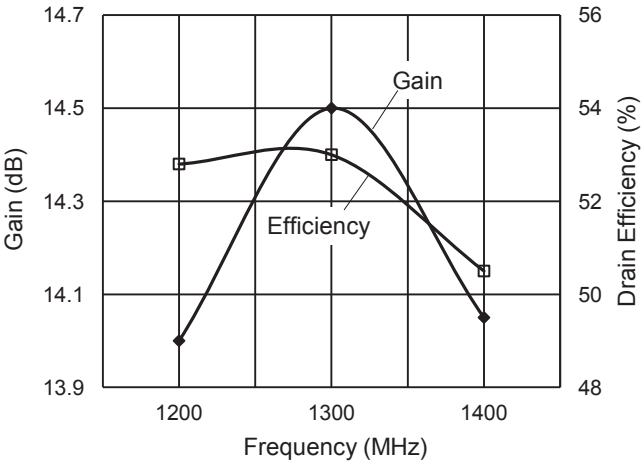
Power Sweep, Pulsed RF
I_{DQ} = 0.15 A, V_{DS} = 50 V, T_{CASE} = 25°C,
300 µs pulse width, 10% duty cycle



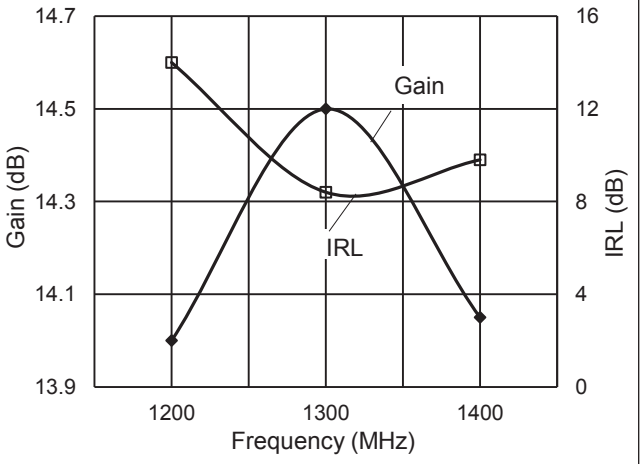
Power Sweep, Pulsed RF
I_{DQ} = 0.15 A, V_{DS} = 50 V, T_{CASE} = 25°C,
300 µs pulse width, 10% duty cycle



Pulsed RF Performance
I_{DQ} = 0.15 A, V_{DS} = 50 V, P_{OUT} = 400 W,
T_{CASE} = 25°C, 300 µs pulse width,
10% duty cycle

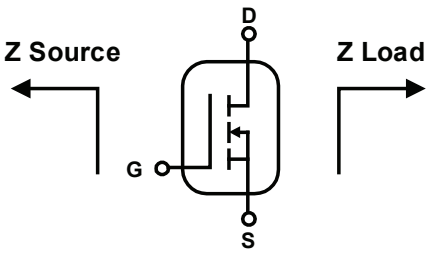


Pulsed RF Performance
I_{DQ} = 0.15 A, V_{DS} = 50 V, P_{OUT} = 400 W,
T_{CASE} = 25°C, 300 µs pulse width,
10% duty cycle



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Broadband Circuit Impedance



Frequency	Z Source Ω		Z Load Ω	
MHz	R	jX	R	jX
1200	1.49	–0.99	2.17	–1.64
1300	1.85	–0.61	1.67	–1.22
1400	1.62	–0.62	1.27	–0.71

See next page for Package Outline Specifications

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Package Outline Specifications

Package H-36248-2

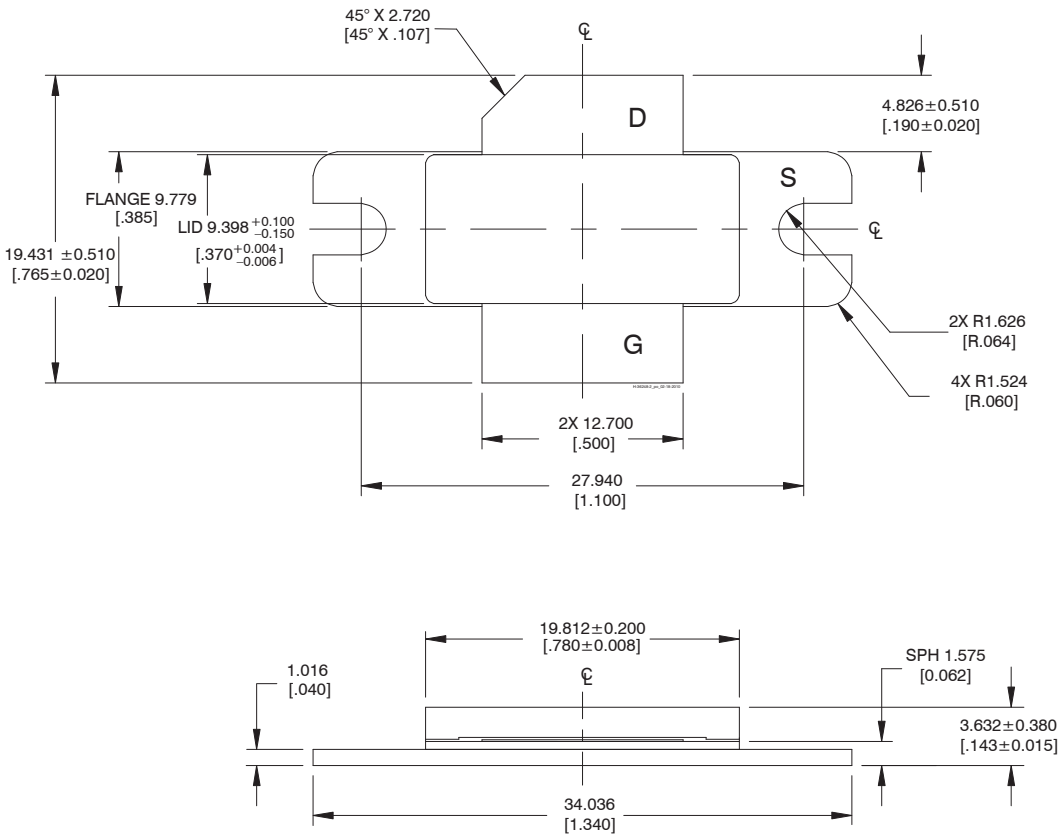


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm. Alternate dimensions are inches.
3. All tolerances ± 0.127 [.005] unless specified otherwise.
4. Pins: D – drain; S – source; G – gate; V – V_{DD}
5. Lead thickness: 0.10 + 0.051/-0.025 mm [.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

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Revision History:	2012-06-05	Preliminary Data Sheet
Previous Version:	None	

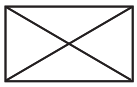
Page	Subjects (major changes since last revision)

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Edition 2012-06-05

Published by
Infineon Technologies AG
81726 Munich, Germany

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