



## 13.56 MHz, 1500 / 2500 / 5000 W RF Generator

# Synertia® RFG

**Synertia®, Comet's integrated RF Power Delivery Platform, enables the unprecedented power delivery control required by plasma process tools for the next generation of microchips.**

Synertia® is the RF Power System that ensures powerful command and control of plasma conditions at the highest speeds. The system allows the user to manage the complexities of multi-layer next-generation memory and atomic-scale plasma processes.

In Synertia®, the Generator and Matching Network controls interact at extremely fast speed, creating a powerful synergy. Synertia® RFG is able to react in microseconds to data it receives from the Matching Network. Users fully control the unique performance accelerators of Synertia® RFG, including repeatability, multi-level pulsing and high-speed communication. This responsiveness provides actionable insights and enables more complex plasma applications than have ever been possible before: a new level of deep control.

### Features

- Power accuracy and repeatability
- Multi-level pulsing (four user definable levels)
- Customizable frequency tuning
- Digital metrology and intuitive graphical user interface
- Digital system control for advanced manufacturing technologies

### Benefits

- Seamless integration into process systems
- Ultra-fast plasma process control
- Tighter repeatability delivers improved yield
- Fast configurable rise/fall time of pulsing
- Consistent process and wafer level uniformity



## Synertia® RFG 15/13 and 50/13

Synertia RFG 15/13    Synertia RFG 50/13

<b>Frequency</b>	13.56 MHz	
<b>Frequency stability and accuracy</b>	± 25 ppm	
<b>Output power</b>	1.5 W to 1500 W	5 W to 5000 W
<b>RF accuracy into 50 Ω</b>	± 1 % of setpoint or ± 0.3 W whichever is greater	± 1 % of setpoint or ± 1 W whichever is greater
<b>Spurious and harmonics</b>		
Harmonics into 50 Ω	- 40 dBc	
Spurious into 50 Ω	- 50 dBc	
<b>RF pulsing</b>		
Pulse rate	0.01 Hz to 100 kHz	
Pulse rise/fall time	300 ns	150 ns
Multilevel pulsing	up to 4 individual levels	
<b>Options</b>		
CEX	Master or slave ± 10 % of nominal frequency	
Frequency tuning	within ± 10 % of nominal frequency	
Arc management	various detection and management options	
Interfaces	EtherCAT®, RS232, RS485, analog (ProfiNet®, DeviceNet® etc.)	
<b>Power rating and coolant requirements</b>		
A/C input	208 VAC to 240 VAC, 1-, ±10 % tolerant	200/400/480 VAC, 3-, ±10 % tolerant
AC to RF efficiency	typically 73 %	
Operating temperature	+5 °C to +35 °C	+5 °C to +40 °C
Cooling	Forced air	Water-cooled
<b>Configuration</b>		
Form factor	3U, 19" half-rack	
Dimensions excl. connectors (w x h x d)	216 x 129 x 461 mm	216 x 129 x 608 mm
Weight	< 14 kg	< 24 kg
RF output connector types	default: N-type optional: HN, 7/16 (QRM, QDS on demand)	default: 7/16 optional: HN, LC, SQS (QRM on demand)
<b>Compliance</b>		
<b>Applicable compliance directives and industrial standards</b>	2014 / 35 / EU low voltage directive 2014 / 30 / EU EMC directive RoHS 2011/65/EU and 2015/863/EU EN 55011, EN 61000-3-2 (RFG 15/13), EN 61000-3-3, EN 61000-6-2, EN 61010-1, EN 61326-1, SEMI S2, S8, S14, S22, F47, ISTA 1G, ISTA 3A	

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### Korea

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### Malaysia

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### Taiwan

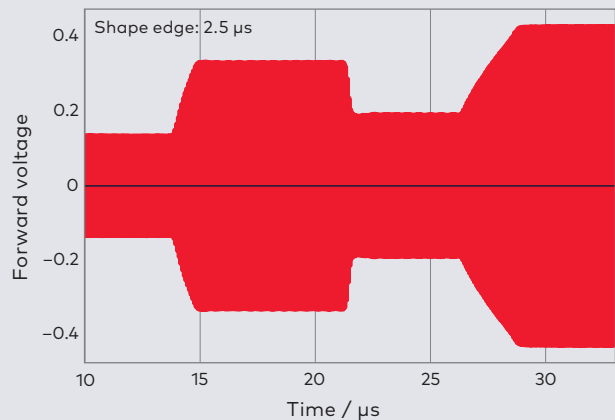
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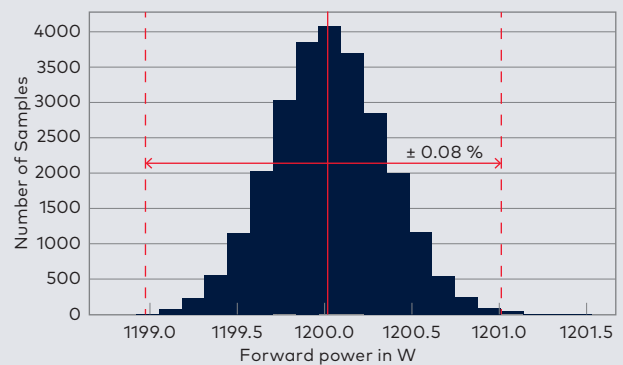
Specifications are subject to change without notice.  
Comet can not be made responsible for errors or omissions.

## Advanced Multilevel Pulsing

- Up to four individual levels
- Edge shaping per level 0.3 – 200 μs
- Internal and external sequence trigger



## Repeatability



Power delivery distribution from 25,000 cycles

## Adaptive graphical user interface

- Web-based – no special software required
- Advanced oscilloscope functions for direct access to crucial process parameters

## User-configurable display

