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Impedance Matching Networks

Synertia® RFM

As semiconductor manufacturers extend device features from nanometer scale to angstrom and enable new 3D architectures to advance device performance and density, critical plasma processes require more sophisticated and accurate control of RF power delivery.

Synertia® provides unparalleled impedance matching for complex pulsing profiles and multiple pulse states enabling customization of the plasma conditions to achieve best on-wafer results while providing leading class accuracy and repeatability.

With its strong capabilities for data capture and on-board analysis for actionable insights, Synertia RF matching network enables more complex plasma applications than have ever been possible before: a new level of RF control.

Features

- Advanced tuning algorithms for improved tuning speeds and process control
- Advanced customer-accessible metrology data
- Wide-band V/I sensors with high fidelity and sensitivity
- Track and tune when RF fundamental frequency is varied up to $\pm 10\%$
- Powerful programmable logic for signal processing and data collection
- On-board monitoring and diagnostics functions
- Standard and customized capacitor designs
- Intuitive graphical user interface

Benefits

- Ultra-fast, consistent, stable plasma control
- Superior process control and repeatability with fully digital and customizable controls
- Continuous process improvement via real time signal processing and data collection
- Accelerate process development by quick event analysis and post-analyze incidents

Technical data Synertia® RFM

Electrical specifications	
Match types	Single frequency Dual frequency
Available matching topologies	L, T, and Pi match
Frequency range	400 kHz – 60 MHz
Output V/I	max. current (~150 A _{PEAK}) max. voltage (10 kV _{PEAK})
Input power	up to 15 kW
Communication interface	EtherCAT®, RS232, analog, Ethernet
Pulsing	Single, dual and multi-level
Pulsing state time	5 µsec to 1 second
Pulsing capability	0.5 Hz to 100 kHz
External pulse sync	TTL
Advanced features	± 10% frequency range
Optional sensors	V _{pp} , V _{dc} and others
Input voltage	24 VDC
Tune time	< 500 msec depending on pre-set points
Tuning range	Depends on unit frequency and on the tuning coil installed
Mechanical specifications	
Dimensions	Designed per customer's requirements
Weight	
Cooling	Air
RF input connector	Designed per customer's requirements
RF output connector	Various including 7-16, HN, LC, N
DC power input connector	Designed per customer's requirements
Primary output connector	
Interlock requirement	Standard feature
Certification	
Compliance	Semi S2

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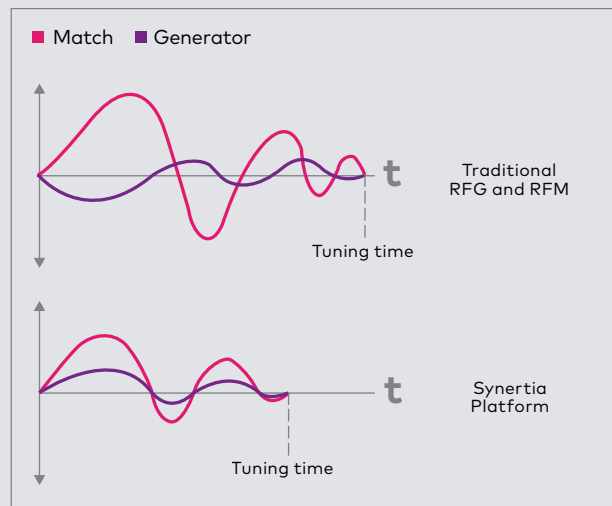
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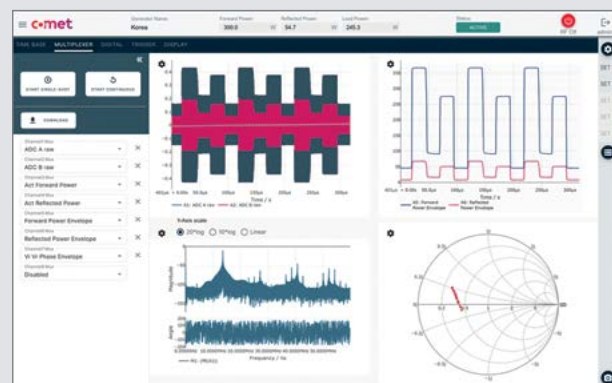
Comet Matching Networks

Improved RFM Tuning time



Integrated measurement studio

- Advanced oscilloscope functions for direct access to crucial process parameters
- Event based trigger and data logging functionality



Vertically integrated



Comet is the only supplier that designs and builds every critical component, from capacitor to matching networks and RF generators

Comet products may be protected by patents in the United States and other countries. For detailed information please consult our website
pct.comet.tech/patents