



# 22V and 40V, 3A to 20A High Density Power Modules

**PRODUCT FAMILY**

|         |          |                  |
|---------|----------|------------------|
| XR79203 | 40V, 3A  | 8 x 8 x 4 (mm)   |
| XR79206 | 40V, 6A  | 10 x 10 x 4 (mm) |
| XR79103 | 22V, 3A  | 6 x 6 x 4 (mm)   |
| XR79106 | 22V, 6A  | 8 x 8 x 4 (mm)   |
| XR79110 | 22V, 10A | 10 x 10 x 4 (mm) |
| XR79115 | 22V, 15A | 12 x 12 x 4 (mm) |
| XR79120 | 22V, 20A | 12 x 14 x 4 (mm) |

**FEATURES**

- Integrated controller, drivers, bootstrap diode / capacitor, MOSFETs, inductors, capacitors
- 22V or 40V maximum input voltage
- 0.6V to 5.5V or 13.2V output voltage range
- High efficiency

**BENEFITS**

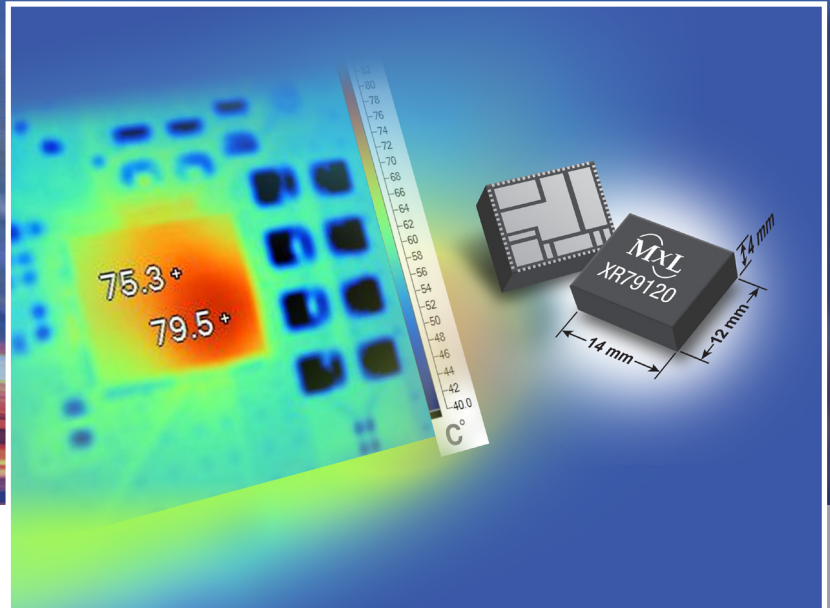
- Complete power stage allows fast time-to-market
- Easy to use
- High density

**MAXLINEAR'S DIFFERENTIATION**

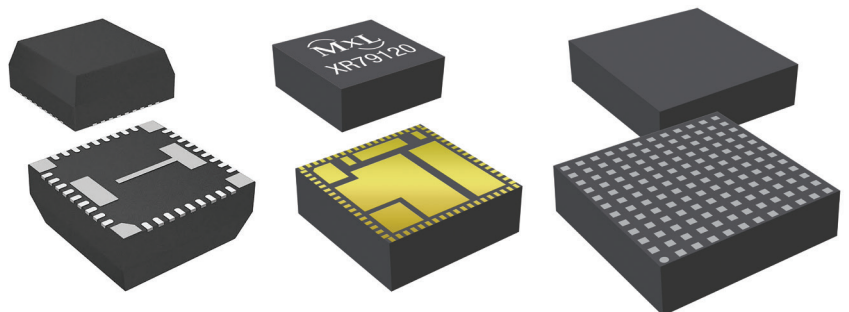
- Industry's smallest 20A power module
- Low profile allows mounting on backside of boards
- Exceptional thermal performance
- Patented COT control
- QFN packaging with all pins accessible allows for easier debugging
- 260° lead solder temperature easier to manufacture

**APPLICATIONS**

- FPGA, DSP and ASIC power systems
- Industrial and embedded systems
- Telecommunications
- Industrial control and automation
- Infrastructure equipment
- Drones and remote vehicles



This family of power modules addresses high-current single-channel solutions for various end applications. These synchronous step-down power modules are complete system-in-package power management solutions with fully integrated power converters including MOSFETs, inductors and internal input and output capacitors. A patented emulated current mode Constant On-Time (COT) control provides exceptional full range 0.1% line regulation and 1% output accuracy over the full temperature range. This COT control loop enables operation with ceramic output capacitors, eliminating loop compensation components. Available in a QFN package, our modules provide superior thermal performance and manufacturability. The QFN package makes visual inspection of solder joints possible and eases electrical debugging.

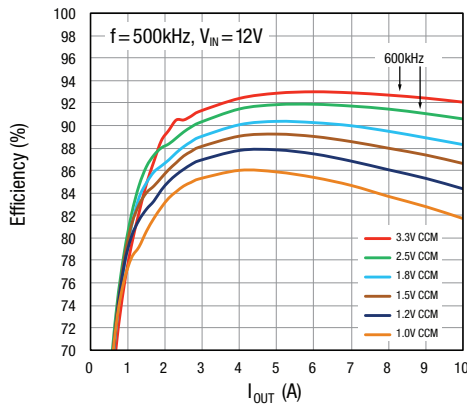
**MaxLinear QFN vs. Competition**


- Large pads provide better thermal performance
- All pins accessible for easier debugging and routing
- 260°C lead solder temperature vs. 245°C (LGA)

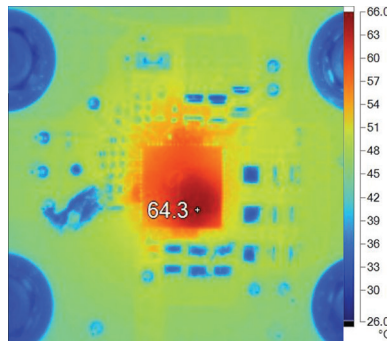
## Power Modules

| Part Number | I <sub>OUT</sub> (A) | V <sub>IN</sub> (V) | V <sub>OUT</sub> (V) | Frequency (kHz) | Efficiency (%) | QFN Dimension (mm) | Features  |
|-------------|----------------------|---------------------|----------------------|-----------------|----------------|--------------------|---|
| XR79203     | 3                    | 3 to 40             | 0.6 to 13.2          | 300 to 500      | 95             | 8 x 8 x 4          | <ul style="list-style-type: none"> <li>▪ UVLO</li> <li>▪ OTP</li> <li>▪ Soft-start</li> <li>▪ Adjustable hiccup current limit</li> <li>▪ Short-circuit protection</li> <li>▪ PGOOD</li> </ul> |
| XR79206     | 6                    | 3 to 40             | 0.6 to 13.2          | 300 to 500      | 95             | 10 x 10 x 4        |   |
| XR79103     | 3                    | 3 to 22             | 0.6 to 5.5           | 600 to 800      | 95             | 6 x 6 x 4          |   |
| XR79106     | 6                    | 3 to 22             | 0.6 to 5.5           | 600 to 800      | 95             | 8 x 8 x 4          |   |
| XR79110     | 10                   | 3 to 22             | 0.6 to 5.5           | 400 to 600      | 95             | 10 x 10 x 4        |   |
| XR79115     | 15                   | 3 to 22             | 0.6 to 5.5           | 400 to 600      | 95             | 12 x 12 x 4        |   |
| XR79120     | 20                   | 3 to 22             | 0.6 to 5.5           | 400 to 600      | 95             | 12 x 14 x 4        |   |

## Efficiency and Thermal Performance



XR79110 Efficiency



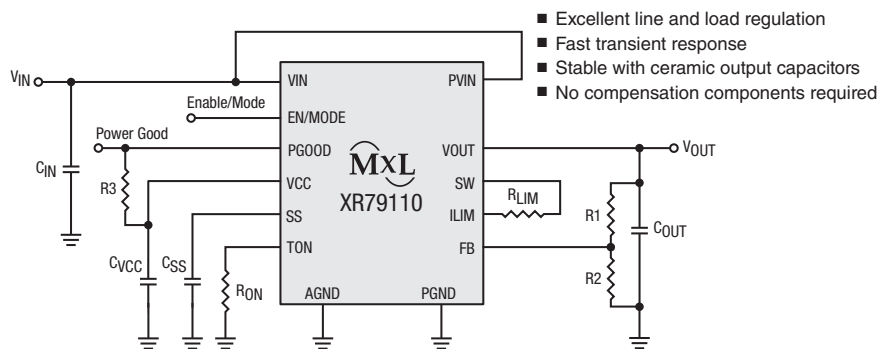
XR79110 Thermal Image



XR79110 Evaluation Board

Thermal performance based on real-world conditions (XR79110EVB – compact 2.5" x 2.5" 6 layer board)

## Typical Schematic



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