

ChiP™ and VIA™ Packages

DCM™ Family

Isolated, Regulated DC-DC Converter Modules



For use in: Transportation, Industrial and Process Control, Distributed Power, ATE, Communications, Defense/Aerospace, Semiconductor Manufacturing Equipment (SME)

Description

The DCM is DC-DC converter capable of operating from an unregulated and wide input voltage range to generate an isolated and regulated output voltage. With its high-frequency zero-voltage switching (ZVS) topology, the DCM converter consistently delivers high efficiency across the input line range. Modular DCM converters and downstream DC-DC products support efficient power distribution and provide superior power system performance and connectivity from a variety of unregulated power sources to the point-of-load.

Leveraging the thermal and density benefits of Vicor ChiP packaging technology, the DCM ChiP module offers flexible thermal management options with very low top and bottom side thermal impedances. Thermally-adept ChiP-based power components enable customers to quickly and predictably achieve cost-effective power system solutions with previously unattainable system size, weight and efficiency attributes. In addition, the DCM VIA modules provide integrated EMI filtering, tight output voltage regulation, a secondary-referenced control interface and flexible thermal management options while retaining the fundamental design benefits of the conventional brick architecture.

Features & Benefits

- Up to 600W, 43.5A continuous
- 93% peak efficiency
- Up to 1244W/in³ power density
- Up to 4,242V_{DC} isolation
- ZVS high-frequency switching
- Fully operational current limit
- OV, OC, UV, short circuit and thermal protection
- Integrated filtering, remote or local sense, enhanced thermal management and tight output voltage regulation over all lines and load conditions for DCM VIA applications



Family of DCM Products

■ = Also Available in VIA package

| Nominal Input (V) | Package Size | Power (W) by Nominal Output Voltage (V) | | | | | | | | |
|-------------------|-----------------------|---|-----|-----|------|-----|-----|-----|-----|-----|
| | | 3.3 | 5 | 12 | 13.8 | 15 | 24 | 28 | 36 | 48 |
| 300 (180 – 420) | 4623 ChiP or 3714 VIA | | | 400 | 500 | | 600 | 500 | | 500 |
| 290 (160 – 420) | 4623 ChiP | | | | 600 | | | | | |
| 275 (120 – 420) | 4623 ChiP | 110 | 190 | 375 | | 375 | 375 | 375 | | 375 |
| 270 (160 – 420) | 4623 ChiP or 3714 VIA | 150 | 250 | 500 | | 500 | 500 | 500 | | 500 |
| 100 (43 – 154) | 3623 ChiP | 80 | 120 | 240 | | 240 | 240 | 240 | | 240 |
| 48 (36 – 75) | 3623 ChiP or 3414 VIA | | 160 | 320 | | 320 | 320 | 320 | 320 | 320 |
| 42 (9 – 75) | 3623 ChiP | | | 80 | | 80 | 80 | 80 | | 80 |
| 30 (9 – 50) | 3623 ChiP | 80 | 80 | 160 | | 160 | 160 | 160 | | 160 |
| 28 (16 – 50) | 3623 ChiP or 3414 VIA | 120 | 180 | 320 | | 320 | 320 | 320 | | 320 |
| 24 (18 – 36) | 3623 ChiP | | 180 | 320 | | 320 | 320 | 320 | 320 | 320 |

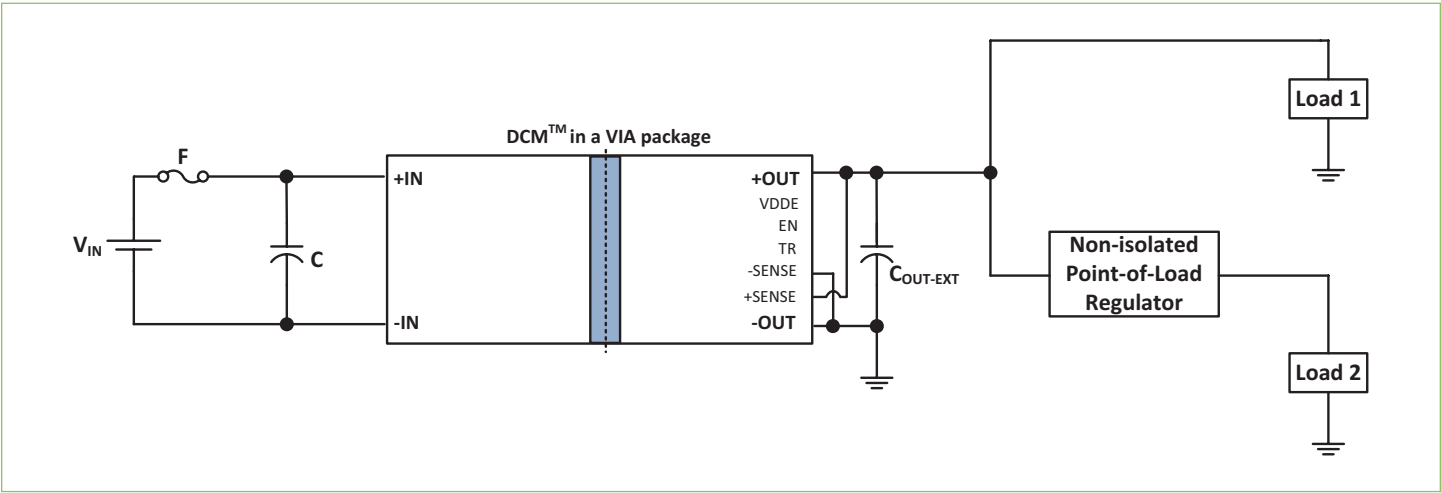
DCM Part Numbering

| Product Function | | | Package Length | Package Width | Package Type | Internal Reference | | | | Product Grade (Case Temperature) | Option Field | |
|--------------------------|---|---|----------------|---------------|----------------------------------|--------------------|---|----|----|--|---|---|
| D | C | M | 37 | 14 | x | D2 | H | 26 | D7 | y | z | z |
| DCM = DC-DC Converter | | | ChiP™ | | T = Through-Hole ChiP | Internal Reference | | | | T = -40 to 125°C M = -55 to 125°C | ChiP 00 = Analog 70 = Enhanced V _{OUT} Regulation [c] | |
| | | | VIA™ | | B = Board VIA V = Chassis VIA | | | | | C = -20 to 100°C [a] T = -40 to 100°C [a] M = -55 to 100°C [a,b] | VIA 01 = Chassis/Analog 05 = Short Pin/Analog 09 = Long Pin/Analog | |

[a] High-temperature power de-rating may apply.
[b] M-Grade available on selected models. Consult vicorpower.com for details.
[c] ±1% output voltage regulation accuracy on selected models. Consult vicorpower.com for details.

Typical Application

Single DCM3714xD2H26D7yzz in Local Sense Operation, to a non-isolated regulator, and direct to load



Block Diagram

Typical 24V input to point of load.

