EP71xx IVR Series

Single-to-quad output Integrated Voltage Regulator IC

Product Brief

Features

- Single-to-quad output step-down integrated voltage regulator solution in 35mm^2
  - Embedded PCB trace inductors
  - Integrated input/output capacitors
  - No external discrete components required
- 12A total continuous current / 25W output power
  - 0.34A/mm^2 current density
- 3.0V to 3.6V input voltage range
- 0.5V to 2.5V programmable output voltage
  - ± 1.5% output voltage accuracy over PVT
- Ultra-wide bandwidth and ultra-fast transient response
- I2C interface for dynamic power management
  - Programmable soft-start and DVS
  - Multi-time programming (MTP) capability
- 2 multi-function GPIOs
  - Enable, Power OK, fault warnings, and on-demand DVS
- On-board programmable sequencing
- Telemetry for input/output voltage and temperature
- Extensive fault protection and warning
  - Over temperature, over/under input/output voltage and short-circuit protections
- 5 mm x 7 mm x 0.75 mm FcCSP package

Applications

- Embedded systems
- Computer/Systems-on-Modules (CoMs/SoMs)
- Healthcare and medical
- FPGAs, DSPs and ASICs power system

Description

The EP71xx IVR series is a family of single to quad outputs high-performance DC/DC step-down Integrated Voltage Regulators (IVRs) capable of delivering up 12A of current. It is optimized for high power density, footprint and height constrained applications and integrates all required components making it the simplest and fastest time to market power management solution with no additional external components required.

Operating from a nominal 3.3V input supply, the EP71xx offers adjustable output voltages down to 0.5V while an ultra-fast control architecture achieves an ultra-wide bandwidth and industry's fastest transient response to current load steps. A standard I2C interface provides the system with full and dynamic control over all operating parameters: output voltages, soft-start rates, dynamic voltage scaling (DVS) as well as rail sequencing. On-board telemetry and point of load monitoring provide real time operating data and measurement on temperature and input and output voltages.

For seamless system integration, the EP71xx also features two GPIOs that can be configured for multiple user-defined features and functions as well as offering an on-board nonvolatile memory that can store a custom configuration and settings.

Built-in over temperature, over/under input/output voltage and short circuit protections insure safe operations under abnormal operating conditions.

The EP71xx IVR series is offered in a 5 mm x 7 mm x 0.75 mm FcCSP package.

Typical Application

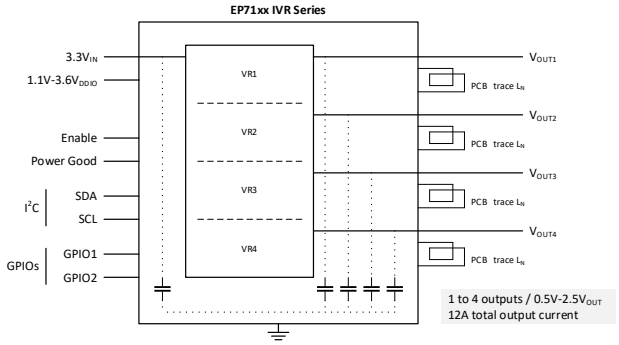


Figure 1: EP71xx Typical Application Schematic

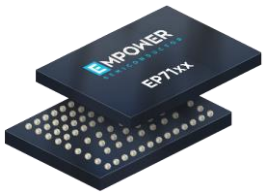


Figure 2: EP71xx IVR Series

EP71xx IVR Series Product Family

Part Number	Description	Maximum current (A)			
		VR1	VR2	VR3	VR4
EP7112	Single Output IVR	12A	-	-	-
EP7124	Dual Output IVR	10.5A	1.5A	-	-
EP7122	Dual Output IVR	9A	3A	-	-
EP7125	Dual Output IVR	7.5A	4.5A	-	-
EP7123	Dual Output IVR	6A	6A	-	-
EP7139	Triple Output IVR	9A	1.5A	1.5A	-
EP7131	Triple Output IVR	6A	4.5A	1.5A	-
EP7136	Triple Output IVR	6A	3A	3A	-
EP7133	Triple Output IVR	3A	3A	3A	-
EP7148	Quad Output IVR	7.5A	1.5A	1.5A	1.5A
EP7144	Quad Output IVR	4.5A	4.5A	1.5A	1.5A
EP7145	Quad Output IVR	4.5A	3A	3A	1.5A
EP7143	Quad Output IVR	3A	3A	3A	3A
EP7142	Quad Output IVR	1.5A	1.5A	1.5A	1.5A

Flexible Design Options

Smallest BOM & Footprint

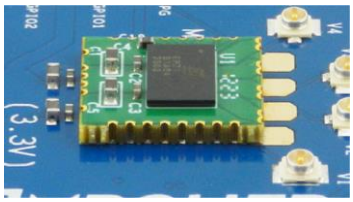
EP71xx + PCB trace inductors

<5 component BOM
35-40 mm^2 topside area
0.75 mm solution height

Fastest Time to Design

EPM51xx Interposer

Single component solution
145 mm^2 top side area
2.4mm solution height



Highest Efficiency

EP71xx with discrete inductors

9-14 component BOM
100 mm^2 top side area
0.8 mm solution height

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