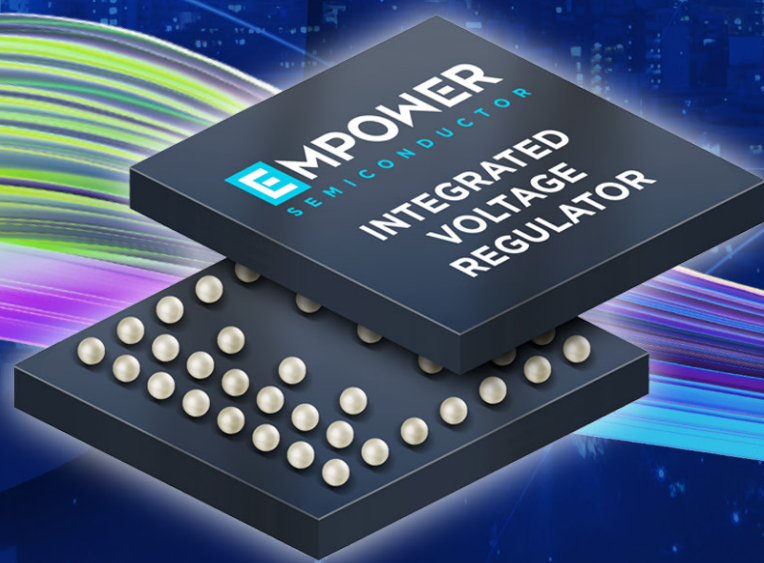


***We Minimize the Energy Footprint  
of the Digital Economy***

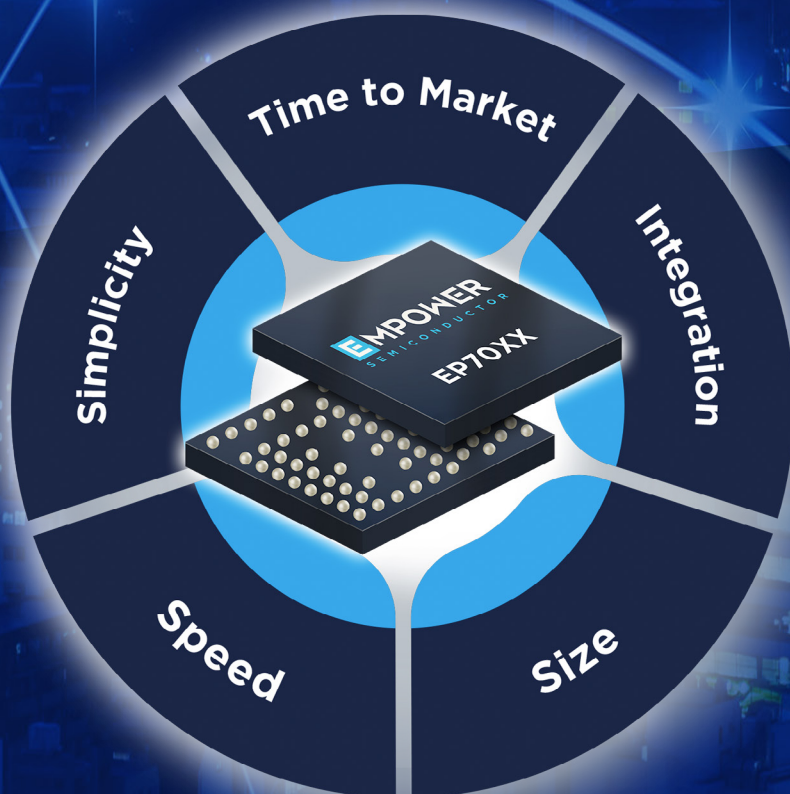


**EMPOWER**  
SEMICONDUCTOR



# ***The First and Only Integrated Voltage Regulator Family***

- Power management startup founded to solve the power density challenges in 5G, data centers, mobile and AI enabling a \$10B+ opportunity
- Located in Milpitas, California with > 40 employees
- More than 40 patents issued or pending
- Launched industry's first fully integrated voltage regulator (IVR) chip family
- Up to 10x smaller & 1,000x faster than existing power solutions
- No discrete components needed!
- In volume production





## Empowering Density

### 10x Smaller...

World's smallest regulator enables more power in the smallest possible space

Enabling best-in-class power management performance in the world's smallest package

## Empowering Performance

### 1000x Faster...

World's fastest regulator delivers voltage accuracy at the highest possible efficiency

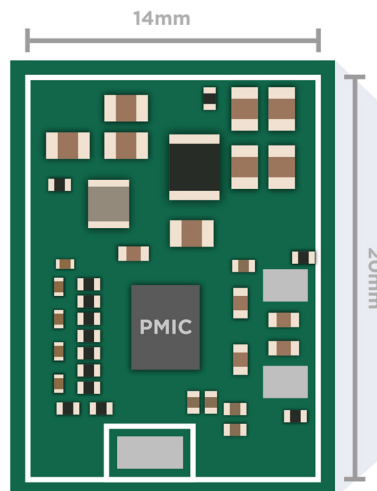
Longer battery life to stay connected



## Empowering Simplicity

### 40x Fewer Components

USB-to-I2C translation circuit, allowing IVR configuration through a Graphical User Interface (GUI). There are also headers and test point.



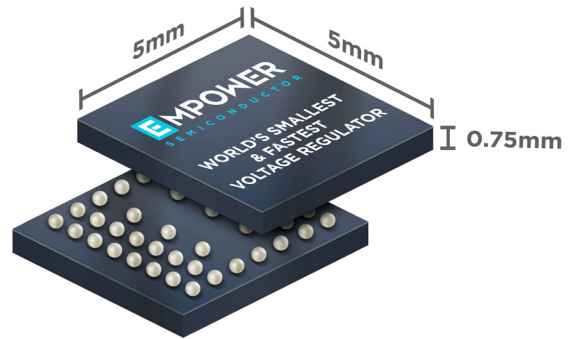
**10x** Size Reduction  
**Zero** Discrete Components





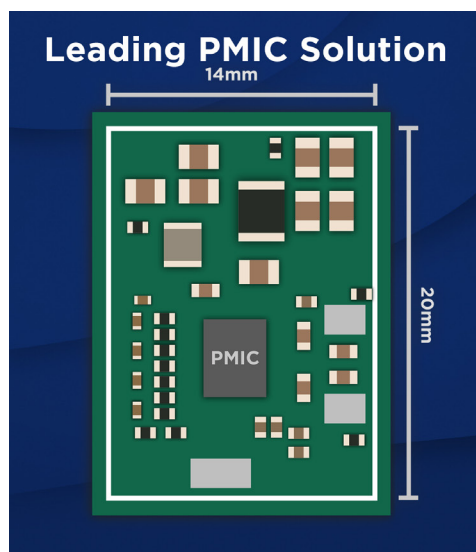
# EMPOWER IVR™

## *World's Smallest and Fastest Voltage Regulator*



Traditional power solutions require dozens of discrete components with big footprints, complex designs and deliver power inefficiently with poor response times and inaccuracies.

Empower's patented IVR technology eliminates dozens of discrete components by using a single IC with greater efficiency and 10x reduction in PCB area. The result is power delivery with unprecedented simplicity, speed, accuracy, and NO discrete components!



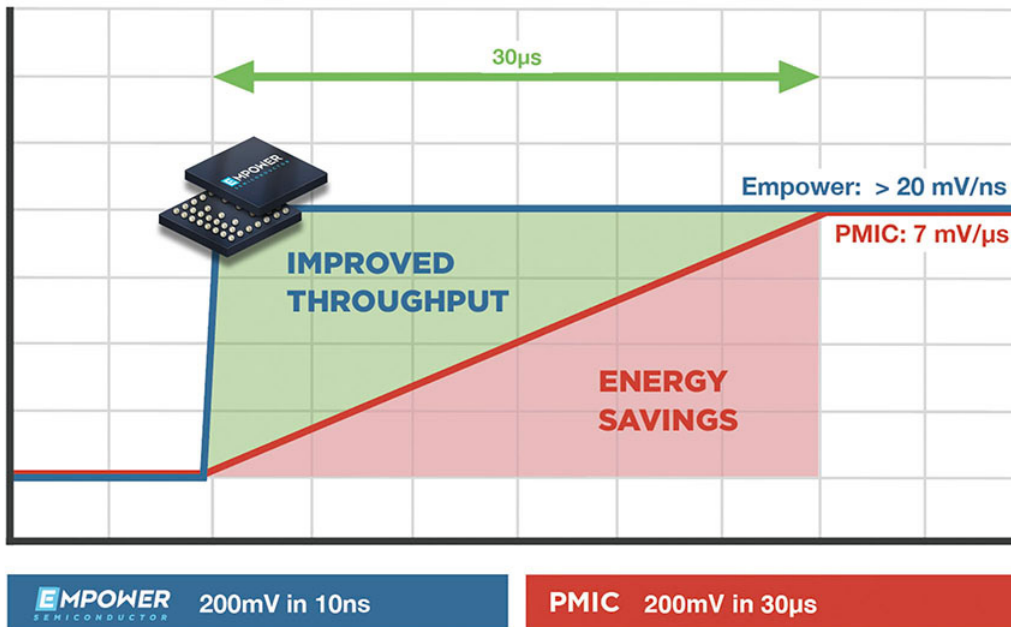
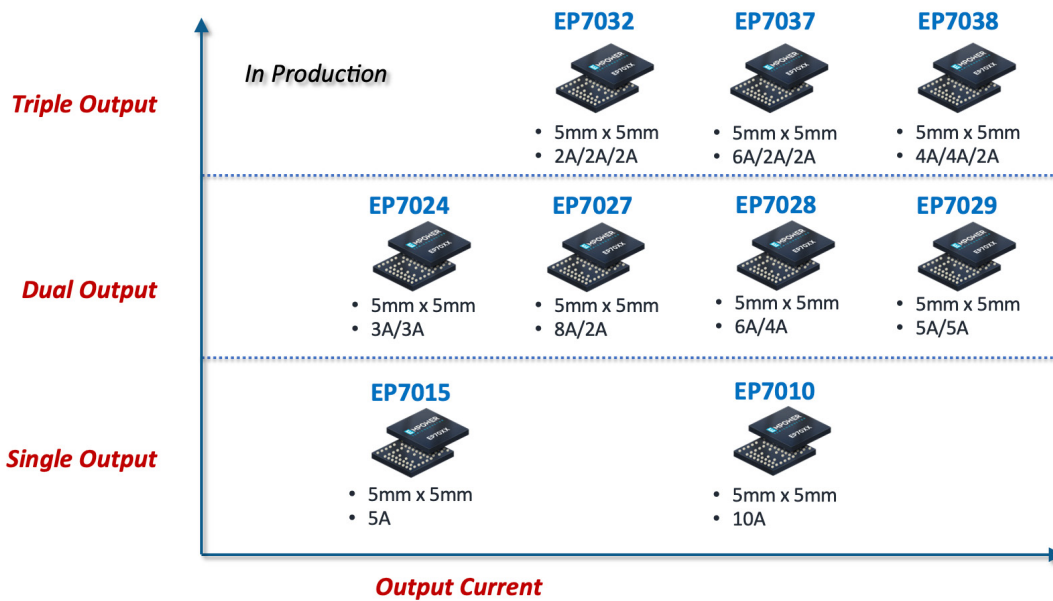
**10x** Size Reduction  
**1,000x** Faster  
**10-50%** Energy Savings  
**Zero** Discrete Components





# Empower IVR™ EP70XX Product Family

Fully integrated power supply on a chip – no discrete components!



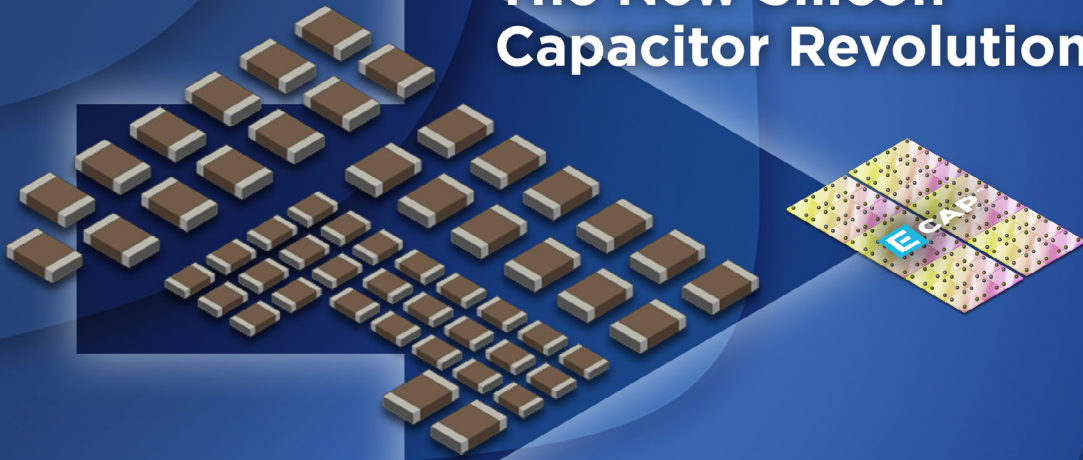
**EXPRESSV™**

Empower IVR products also exhibit ExpressV™ DVS, an ultra-fast and programmable DVS at up to 12mV/ns is over one thousand times faster than that available from conventional technologies. As a result, these devices enable processor power state changes in nanoseconds.





## The New Silicon Capacitor Revolution



## ***The Highest Performance, Smallest Size, and Most Configurable Capacitor Technology Platform Ever!***

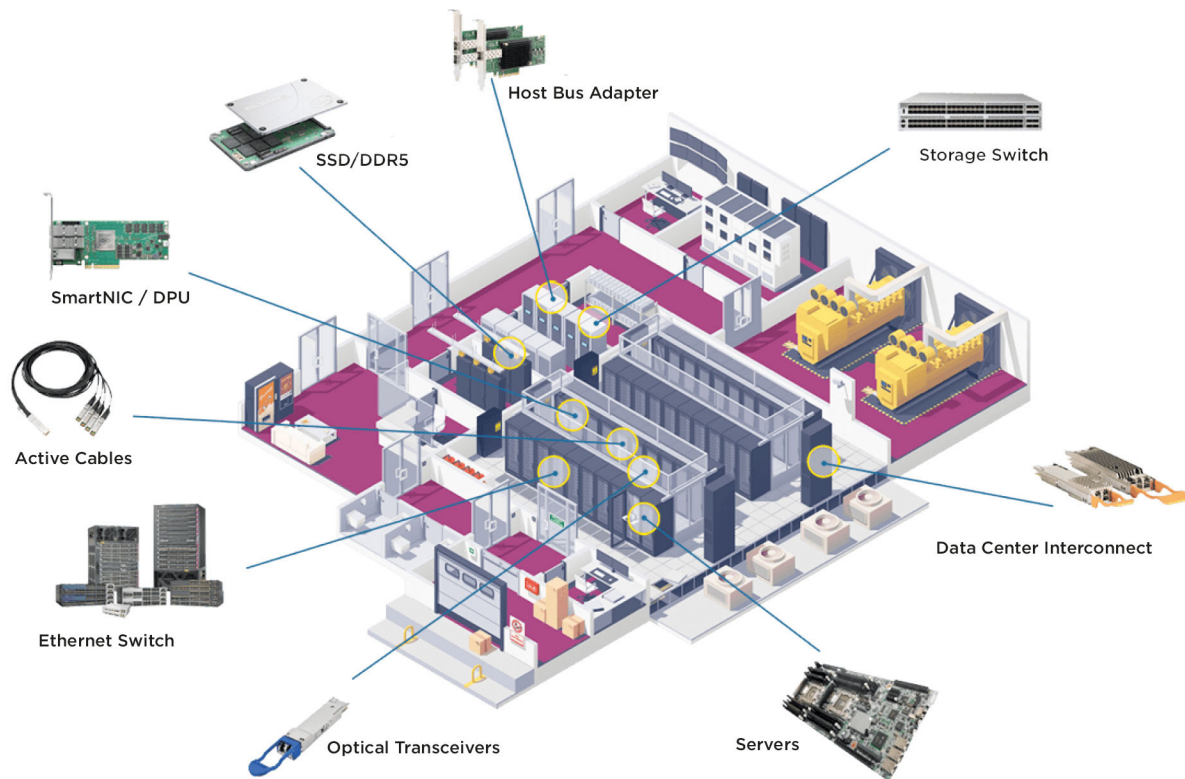
**Empowers E-CAP™ is a Revolutionary New Entry in the Capacitor Industry**

E-CAP™ is a vastly superior performing capacitor, far exceeding the semiconductor industry's previously leading Multi-Layer Ceramic Capacitors (MLCC).

E-CAP™ technology features superior stability with no DC or AC bias de-rating, no temperature de-rating, and no significant effects of aging. Combined with the ultra-low ESL (15pH), E-CAP™ provides a highly simplified and reliable solution to the system designer. This highly differentiated high-performance technology is available in configurations up to 8.4°F.



# Empowering Data Centers



## IVRs and the Data Center - An Example

Image shows the potential energy, CO<sub>2</sub> and cost

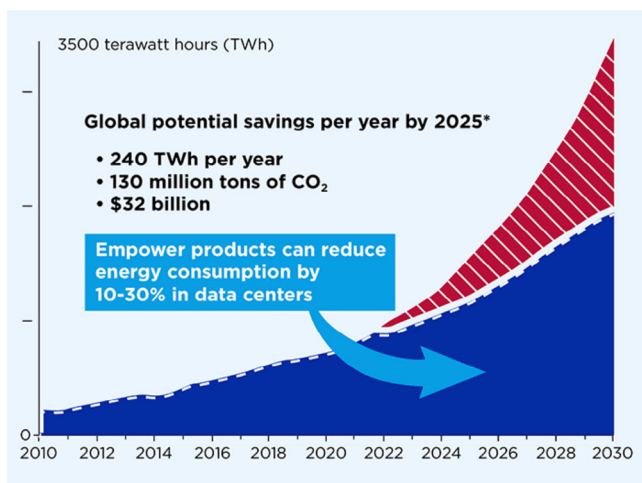


Image shows the potential energy, CO<sub>2</sub> and cost reductions of adopting IVRs in data center applications

A good example of the efficiency improvements that IVRs make possible can be seen by considering their use in data center equipment. Adopting IVRs in the processor and memory power management circuitry of high-end servers and storage devices, for example, can help to reduce data center energy consumption by as much as 30%.

If this power saving were to be achieved across the world's data centers that would equate to an annual power saving of 240 TWh and a reduction in CO<sub>2</sub> emissions of around 130 million tons.





### USA/Global HQ

1164 Cadillac Ct.  
Milpitas, CA 95035

T: +1 408 957 8750



### Asia Pacific

26F Infinitus Tower  
No. 168 Hubin Rd.  
Huangpu District  
Shanghai  
P.R. China  
20021

T: +86 021 6157 7516



### Europe

Via Tiziano, 32  
20145 milano (MI)  
Italy

T: +39 02 00694638

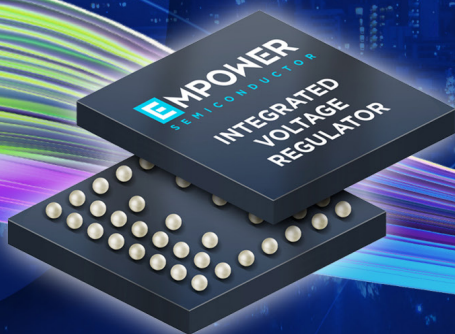
## Distributors



[www.empowersemi.com](http://www.empowersemi.com)



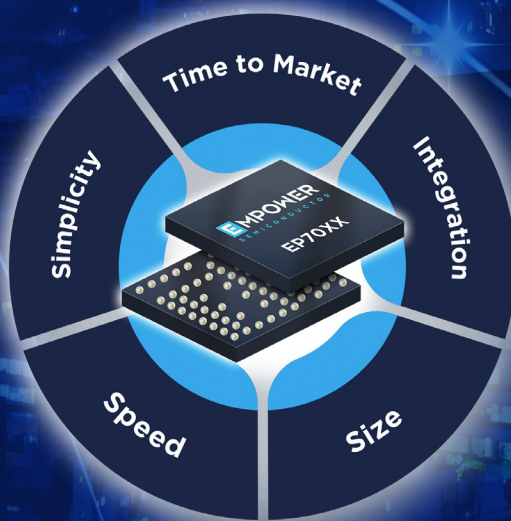
***We Minimize the Energy Footprint  
of the Digital Economy***



**EMPOWER**  
SEMICONDUCTOR

# ***The First and Only Integrated Voltage Regulator Family***

- Power management startup founded to solve the power density challenges in 5G, data centers, mobile and AI enabling a \$10B+ opportunity
- Located in Milpitas, California with > 40 employees
- More than 40 patents issued or pending
- Launched industry's first fully integrated voltage regulator (IVR) chip family
- Up to 10x smaller & 1,000x faster than existing power solutions
- No discrete components needed!
- In volume production







## Empowering Density

### 10x Smaller...

World's smallest regulator enables more power in the smallest possible space

Enabling best-in-class power management performance in the world's smallest package

## Empowering Performance

### 1000x Faster...

World's fastest regulator delivers voltage accuracy at the highest possible efficiency

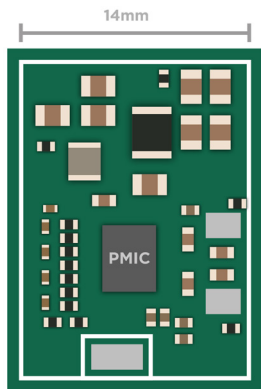
Longer battery life to stay connected



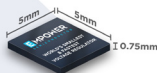
## Empowering Simplicity

### 40x Fewer Components

USB-to-I2C translation circuit, allowing IVR configuration through a Graphical User Interface (GUI). There are also headers and test point.

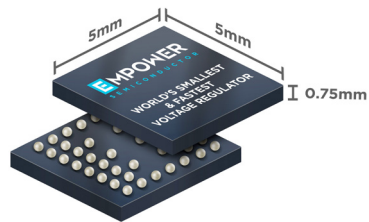


**10x** Size Reduction  
**Zero** Discrete Components



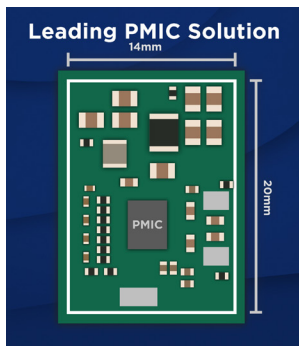
# EMPOWER IVR™

## *World's Smallest and Fastest Voltage Regulator*

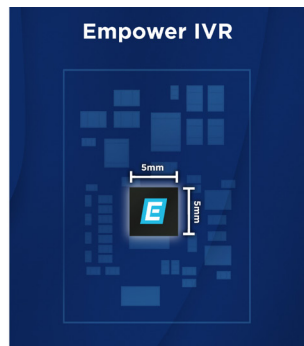


Traditional power solutions require dozens of discrete components with big footprints, complex designs and deliver power inefficiently with poor response times and inaccuracies.

Empower's patented IVR technology eliminates dozens of discrete components by using a single IC with greater efficiency and 10x reduction in PCB area. The result is power delivery with unprecedented simplicity, speed, accuracy, and NO discrete components!



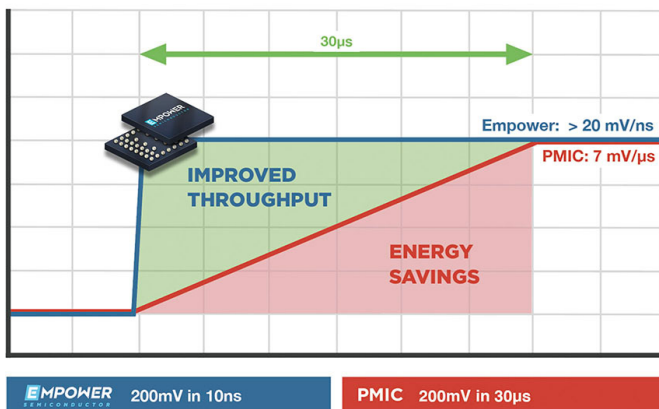
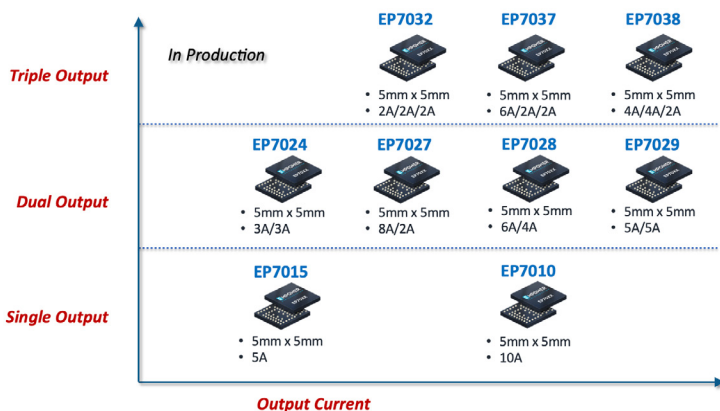
**10x** Size Reduction  
**1,000x** Faster  
**10-50%** Energy Savings  
**Zero** Discrete Components





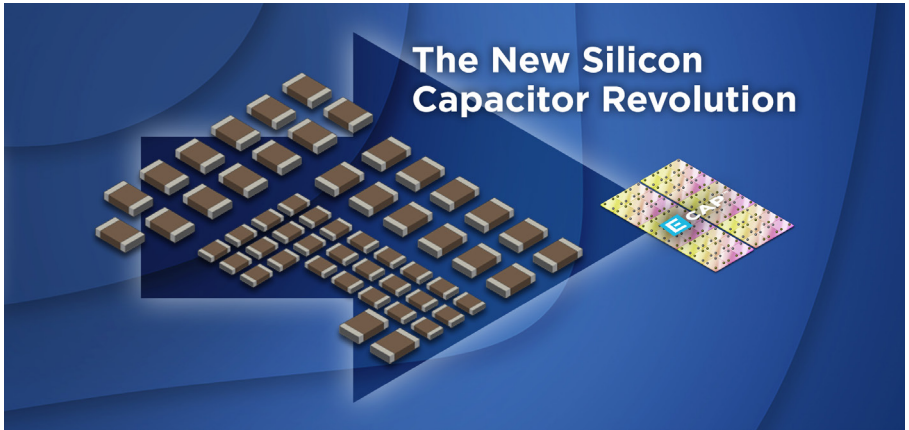
# Empower IVR™ EP70XX Product Family

Fully integrated power supply on a chip – no discrete components!



**EXPRESSV™**

Empower IVR products also exhibit ExpressV™ DVS, an ultra-fast and programmable DVS at up to 12mV/ns is over one thousand times faster than that available from conventional technologies. As a result, these devices enable processor power state changes in nanoseconds.



## ***The Highest Performance, Smallest Size, and Most Configurable Capacitor Technology Platform Ever!***

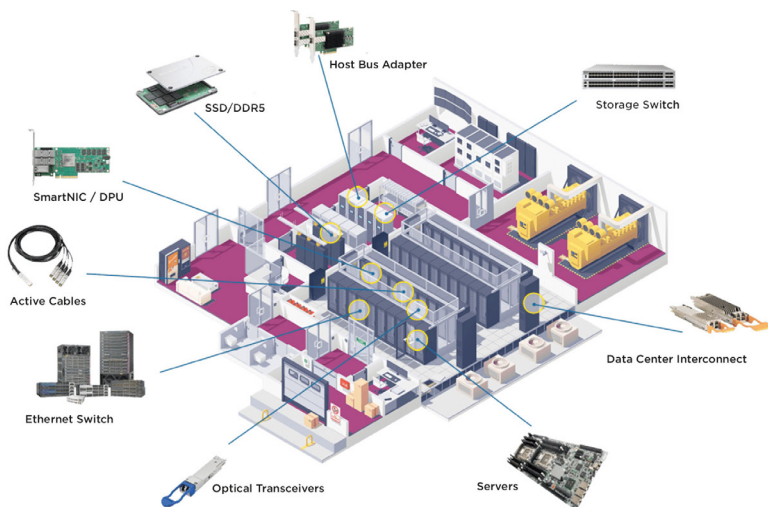
**Empower's E-CAP™ is a Revolutionary New Entry in the Capacitor Industry**

E-CAP™ is a vastly superior performing capacitor, far exceeding the semiconductor industry's previously leading Multi-Layer Ceramic Capacitors (MLCC).

E-CAP™ technology features superior stability with no DC or AC bias de-rating, no temperature de-rating, and no significant effects of aging. Combined with the ultra-low ESL (15pH), E-CAP™ provides a highly simplified and reliable solution to the system designer. This highly differentiated high-performance technology is available in configurations up to 8.4°F.

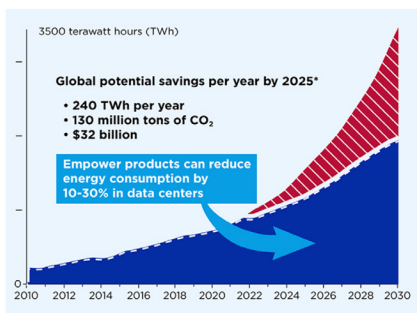


# Empowering Data Centers



## IVRs and the Data Center - An Example

Image shows the potential energy, CO<sub>2</sub> and cost



A good example of the efficiency improvements that IVRs make possible can be seen by considering their use in data center equipment. Adopting IVRs in the processor and memory power management circuitry of high-end servers and storage devices, for example, can help to reduce data center energy consumption by as much as 30%.

If this power saving were to be achieved across the world's data centers that would equate to an annual power saving of 240 TWh and a reduction in CO<sub>2</sub> emissions of around 130 million tons.

**EMPOWER**  
SEMICONDUCTOR

**USA/Global HQ**

2700 Zanker Rd,  
Suite 168  
San Jose, CA 95134

T: +1 408 957 8750

**E 安普沃尔**  
SEMICONDUCTOR

**Asia Pacific**

26F Infinitus Tower  
No. 168 Hubin Rd.  
Huangpu District  
Shanghai  
P.R. China  
20021

T: +86 021 6157 7516

**EMPOWER**  
SEMICONDUCTOR

**Europe**

Via Tiziano, 32  
20145 milano (MI)  
Italy

T: +39 02 00694638

**Distributors**



**MOUSER**  
ELECTRONICS



**COMITECH 科通**



**赛博联电子有限公司**  
EVERUN ELECTRONICS CO.LTD

[www.empowersemi.com](http://www.empowersemi.com)