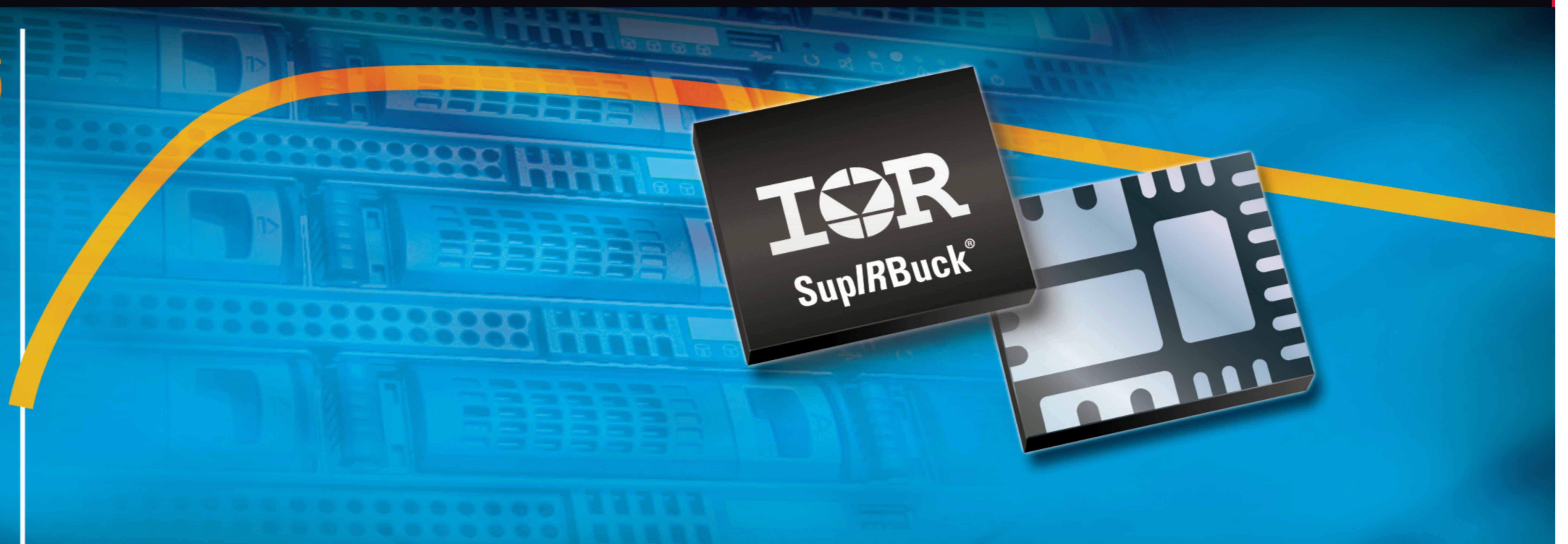


# Integrated POL Voltage Regulator Product Selection Guide

Efficiency (%)

97
<b>96</b>
95
94
93
92
91
90
89



International  
**IOR** Rectifier

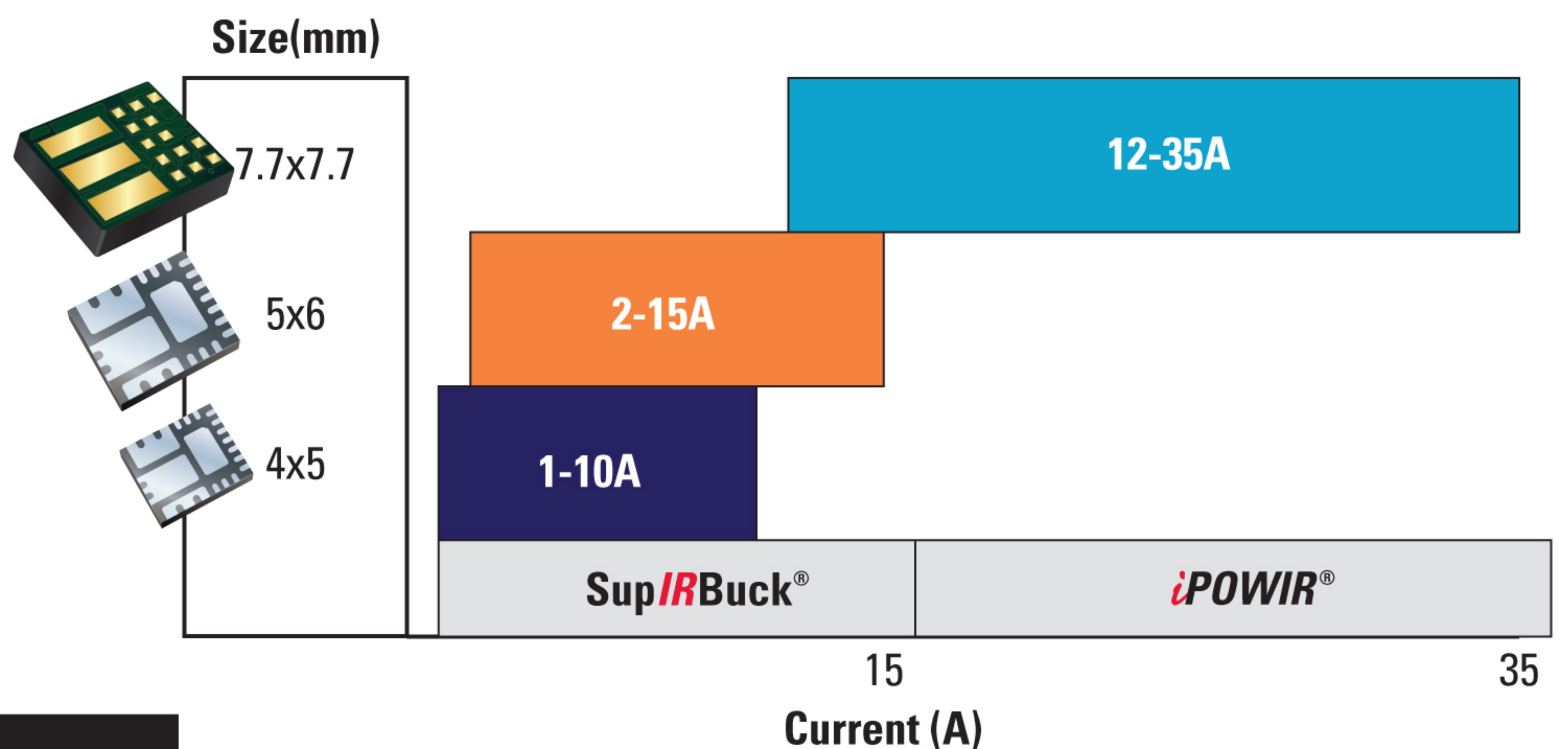
## The IR Advantage

- Best-in-class efficiency over entire load range
- Common series footprint enables “cut and paste” design, and scalability allowing for faster time to market
- Integrated solution offers high power density with reduced component count and improved performance
- Single stage POL conversion saves energy, size and cost by eliminating the need for an intermediate bus
- Low profile and excellent thermal performance allows for back-side board mounting for additional space savings
- Wide input and output voltage range(s) maximizes appeal for broadest range of applications

## Integrated Voltage Regulator Product Offering

	1 - 16V		1.5 - 21V	3 - 27V
	5V bias required	Integrated LDO	5V bias required	
1-4A	<b>IR3843W</b>	<b>IR3897*</b>	<b>IR3853</b>	
4-6A	<b>IR3842</b>	<b>IR3839*</b>	<b>IR3863</b>	<b>IR3473</b>
	<b>IR3842W</b>	<b>IR3898*</b>	<b>IR3856</b>	
	<b>IR3832W*</b>			
6-10A	<b>IR3831W*</b>	<b>IR3838*</b>	<b>IR3859</b>	<b>IR3475</b>
	<b>IR3841</b>	<b>IR3899*</b>	<b>IR3865</b>	
	<b>IR3841W</b>			
10-15A	<b>IR3840</b>	<b>IR3837*</b>		<b>IR3476</b>
	<b>IR3840W</b>			<b>IR3477</b>
15-35A	<b>iP1827</b>			
	<b>iP1837</b>			

\*DDR Tracking



[mypower.irf.com/supirbuck](http://mypower.irf.com/supirbuck)

## SupIRBuck® Online Design Tool Simplifies Design

Comprehensive online design tool featuring parametric search, schematic capture, AC, Steady State, Transient Analysis, Thermal Analysis, BOM creation, and more...

### Design Requirements

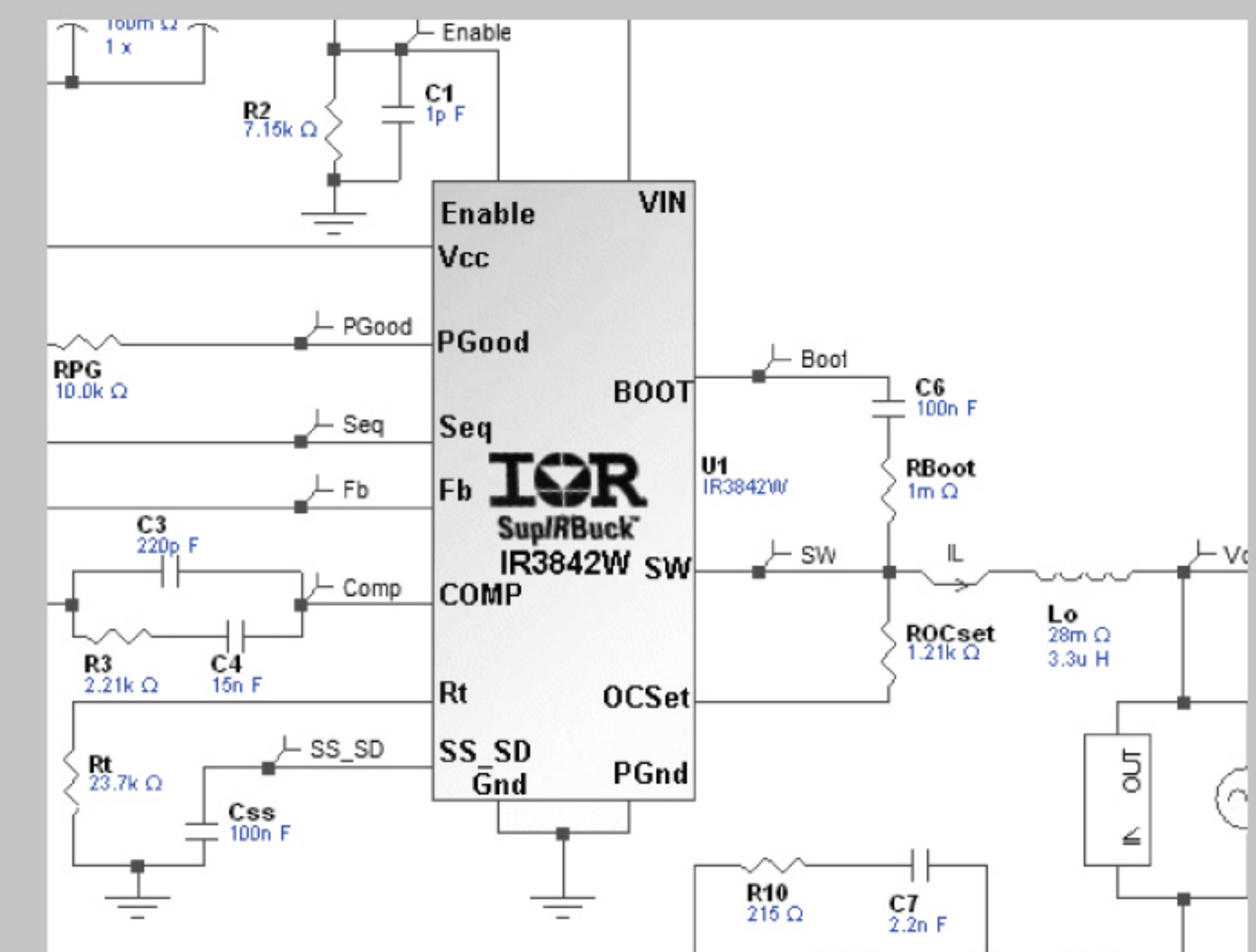
#### Part Selection

#### Design Inputs

Input Voltage	12	V
Output Voltage	1.8	V
Output Current	2	A
Switching Frequency	600	KHz
VCC Bias	5	V

\*Higher frequency reduces solution size, lower frequencies increase solution efficiency.

### Design Configuration



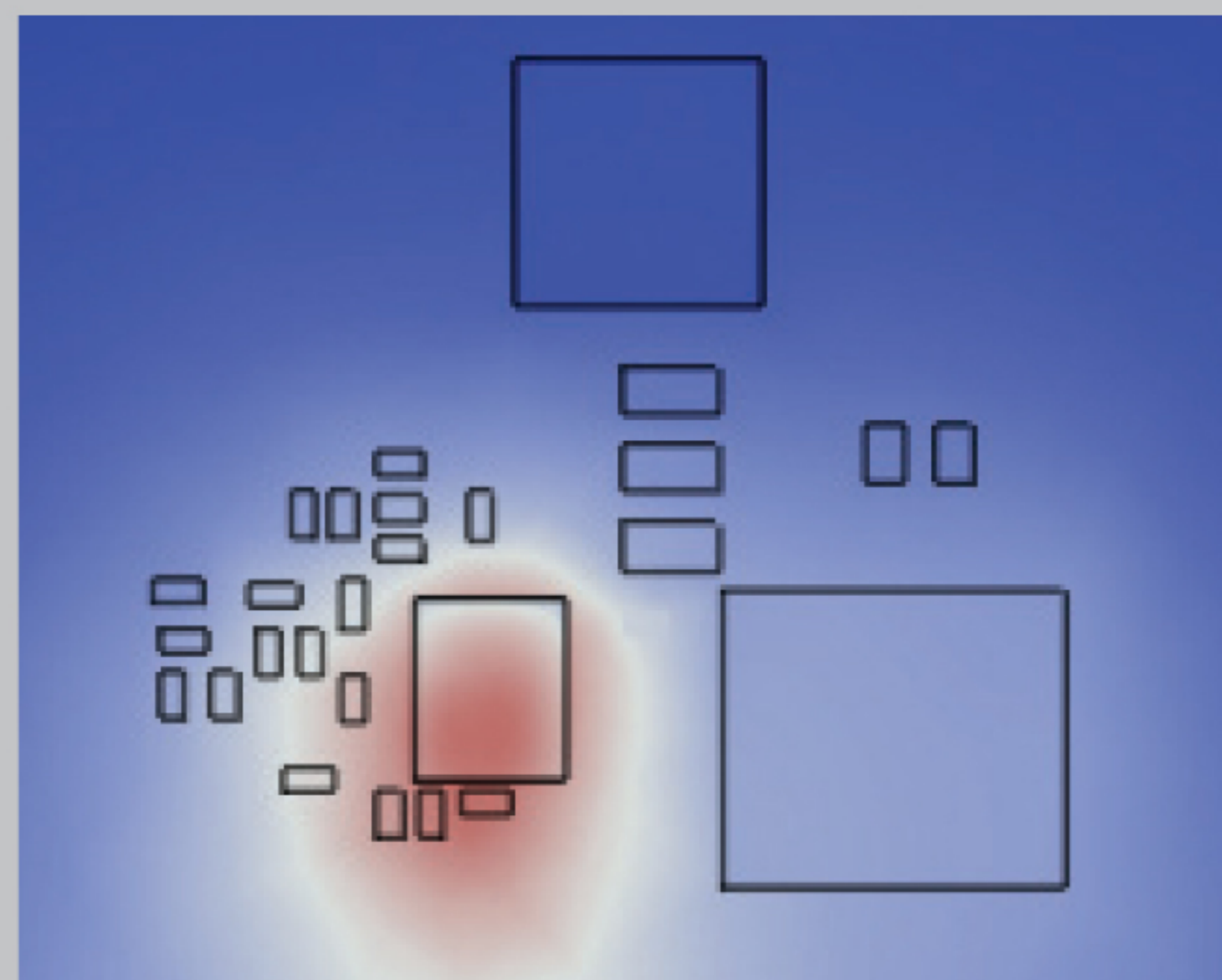
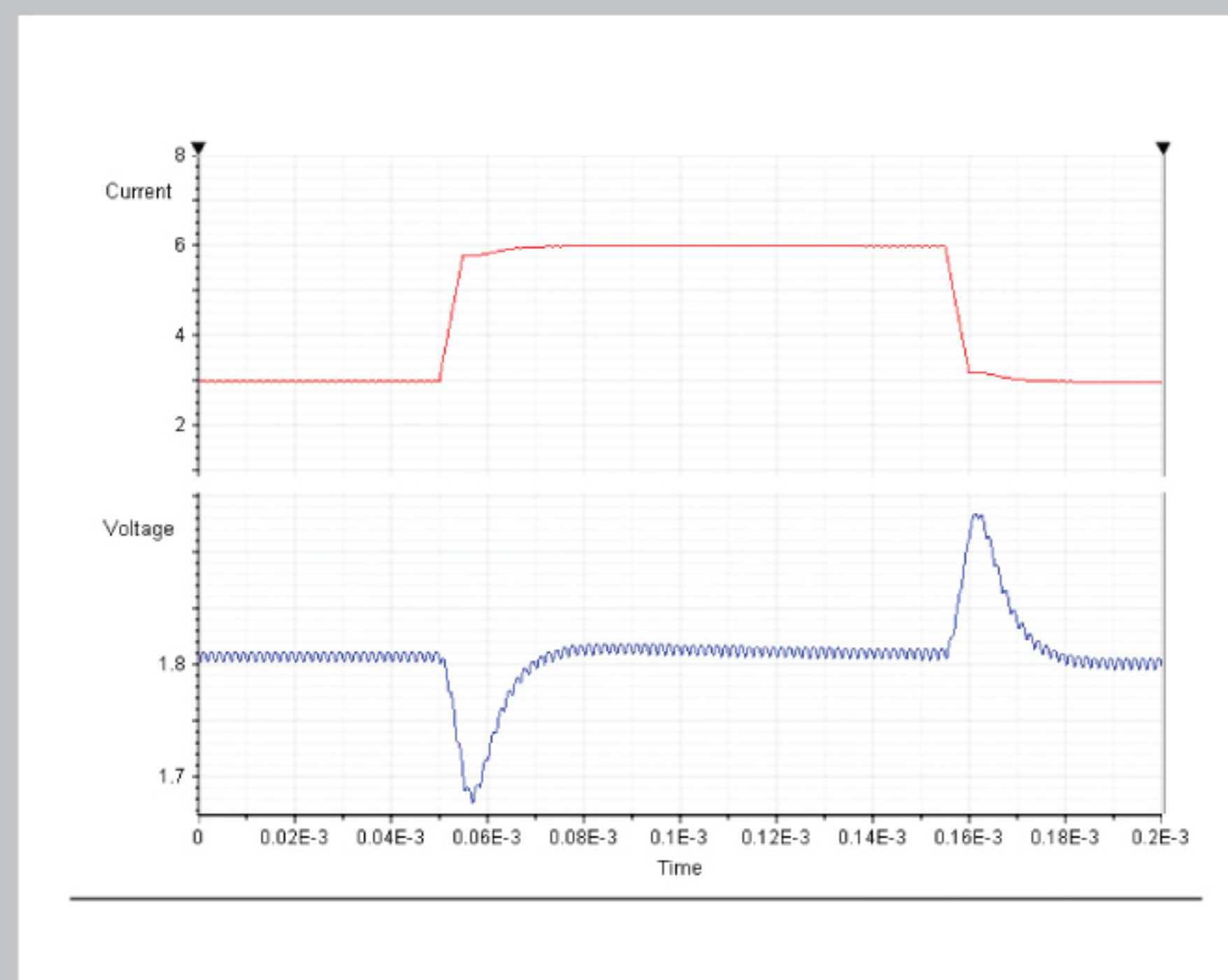
Part Number	Package size	Max Iout [A]	Max Vin [V]	Vbias [V]	Vref [V]	Control Method	Sequencing	Program Soft Start	Sync.	Margining	DDR Tracking	Over Voltage Protection (latch)
IR3840	5x6mm	12	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3841	5x6mm	8	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3842	5x6mm	4	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3840W	5x6mm	12	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3841W	5x6mm	8	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3842W	5x6mm	4	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3843W	5x6mm	2	16	5	0.7	PWM	Y	Y	---	---	---	---
IR3831W	5x6mm	8	16	5	0.7	PWM	---	Y	---	---	Y	---
IR3832W	5x6mm	4	16	5	0.7	PWM	---	Y	---	---	Y	---
IR3837	5x6mm	14	16	4.5 - 16	0.6	PWM	Y	---	Y	Y	Y	---
IR3838	5x6mm	10	16	4.5 - 16	0.6	PWM	Y	---	Y	Y	Y	---
IR3839	5x6mm	6	16	4.5 - 16	0.6	PWM	Y	---	Y	Y	Y	---
IR3859	4x5mm	9	21	5	0.7	PWM	Y	Y	Y	---	---	Y
IR3856	4x5mm	6	21	5	0.7	PWM	Y	Y	Y	---	---	Y
IR3853	4x5mm	4	21	5	0.7	PWM	Y	Y	Y	---	---	Y
IR3899	4x5mm	9	16	4.5 - 16	0.5	PWM	Y	---	Y	Y	Y	Y
IR3898	4x5mm	6	16	4.5 - 16	0.5	PWM	Y	---	Y	Y	Y	Y
IR3897	4x5mm	4	16	4.5 - 16	0.5	PWM	Y	---	Y	Y	Y	Y
iP1837	7.7x7.7mm	35	16	3.3 / 5	0.6	PWM	---	Y	---	---	---	Y
iP1827	7.7x7.7mm	25	16	3.3 / 5	0.6	PWM	---	Y	---	---	---	Y
IR3473	4x5mm	6	27	5	0.5	COT*	---	Y	---	---	---	Y
IR3475	4x5mm	10	27	5	0.5	COT*	---	Y	---	---	---	Y
IR3476	5x6mm	12	27	5	0.5	COT*	---	Y	---	---	---	Y
IR3477	5x6mm	15	27	5	0.5	COT*	---	Y	---	---	---	Y
IR3863	4x5mm	6	21	5	0.5	COT*	---	Y	---	---	---	Y
IR3865	4x5mm	10	21	5	0.5	COT*	---	Y	---	---	---	Y

\* Constant On Time control offers improved light load efficiency

### Simulation

### PCB Layout and Thermal Analysis

### Summary



Product Line	Applications	Key Products
 <p><b>Energy Saving Products</b></p> <p>Integrated design platforms that enable customers to add energy-conserving features that achieve lower operating energy costs and manufacturing Bill of Material (BOM) costs.</p>	<ul style="list-style-type: none"> <li>• Appliances</li> <li>• Audio</li> <li>• Display</li> <li>• Industrial</li> <li>• Lighting</li> <li>• SMPS</li> </ul>	<ul style="list-style-type: none"> <li>• Digital Control ICs</li> <li>• High-Voltage ICs</li> <li>• IGBTs</li> <li>• IRAM Integrated Power Modules</li> <li>• MERs</li> </ul>
 <p><b>Enterprise Power</b></p> <p>Optimized power management system solutions that deliver benchmark power density, efficiency and performance in enterprise power.</p>	<ul style="list-style-type: none"> <li>• Servers</li> <li>• Storage Networks</li> <li>• Switchers &amp; Routers</li> <li>• Workstations</li> <li>• Notebooks</li> <li>• Game Stations</li> <li>• Set-Top Box</li> </ul>	<ul style="list-style-type: none"> <li>• DirectFET<sup>®</sup> <i>plus</i></li> <li>• Low-Voltage ICs</li> <li>• SupIRBuck<sup>®</sup></li> <li>• <i>iPOWIR</i><sup>®</sup></li> <li>• PowIRstage<sup>®</sup></li> <li>• CHiL Digital Controllers</li> </ul>
 <p><b>Automotive</b></p> <p>Automotive grade power management solutions qualified to meet the needs of 12V, 24V and HEV/EV applications with a zero defect goal.</p>	<ul style="list-style-type: none"> <li>• AC and DC Motor Drives</li> <li>• Powertrain / Engine control</li> <li>• Body Electronics</li> <li>• Lighting</li> <li>• Class D Audio</li> <li>• Heavy Loads and Actuators</li> </ul>	<p>Automotive Qualified:</p> <ul style="list-style-type: none"> <li>• HEXFET<sup>®</sup> Power MOSFETs</li> <li>• Intelligent Power Switches</li> <li>• Driver ICs</li> <li>• IGBTs</li> <li>• DirectFET<sup>®</sup> <b>2</b></li> </ul>
 <p><b>Benchmark MOSFETs</b></p> <p>IR continues to lead the industry by offering power MOSFETs with the lowest <math>R_{DS(on)}</math> and widest range of packages up to 250V for a diverse range of applications.</p>	<ul style="list-style-type: none"> <li>• Audio</li> <li>• Computing</li> <li>• Communications</li> <li>• Motor Control</li> <li>• Power Supply</li> <li>• Synchronous Rectification</li> </ul>	<ul style="list-style-type: none"> <li>• Discrete HEXFET<sup>®</sup> MOSFETs</li> <li>• Dual HEXFET<sup>®</sup> MOSFETs</li> <li>• FETKY<sup>®</sup></li> </ul>
 <p><b>HiRel</b></p> <p>Our discrete components, complex hybrid power module assemblies and rugged DC-DC converters utilize leading-edge power technology which, together with demanding environmental specifications help engineers to meet their toughest design challenges.</p>	<ul style="list-style-type: none"> <li>• Space</li> <li>• Military</li> <li>• Commercial Aviation</li> <li>• Rugged Industrial</li> <li>• Medical</li> </ul>	<ul style="list-style-type: none"> <li>• RAD-Hard MOSFETs</li> <li>• Power Modules/Hybrid Solutions</li> <li>• Motor Control Solutions</li> <li>• DC-DC Converters</li> </ul>