

60A, 5-60V or 80A, 3.3-30V ORing MOSFET Module

<https://product.tdk.com/en/power/i1r>
www.emea.lambda.tdk.com/i1r



Industrial



Test



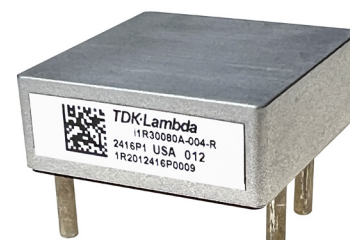
COMM



Broadcast



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The i1R Series ORing FET Modules are high-efficiency, low-loss power devices designed to replace traditional diodes in applications that require OR-ing functionality for redundancy and parallel operation. Utilizing advanced MOSFET-based circuitry, the i1R series minimizes reverse current transients and conduction losses, achieving up to 99.5% efficiency. This addresses critical challenges in thermal management and power density, especially in high-current systems. The compact, shielded form factor (26.3mm × 26.3mm × 10.1mm, ≤20g) supports up to 80A output current with minimal derating, enabling reliable performance in space-constrained environments. Features such as wide input voltage range, fast turn-off during fault conditions, and industry-standard packaging ensure seamless integration into demanding power designs.

Features

- Integrated MOSFET-Based ORing Module
- 500 ns (typ) Fast Turn-Off Response
- Low On Resistance, High Efficiency
- Compact 1" x 1" Shielded Metal Package
- Wide Input Voltage Range
- Supports Up to 80A Output

Benefits

- Simplifies Design, No External Components or Biasing Required
- Blocks Reverse Current Transients During Faults For Better Protection
- Reduces Power Loss and Heat, Easing Thermal Design
- Saves Board Space, Supports Efficient Cooling
- Works Across Varied Power Systems
- Reliable in High-Current, Space Limited Designs

Model Selector

Type	Input Voltage (V)	Max O/P Current (A)	Max O/P Power (W)	Efficiency	Pin Length (mm/in)
i1R60060A-000-R	5 - 60	60	3600	99.5%	3.68 / 0.145
i1R60060A-004-R	5 - 60	60	3600	99.5%	5.59 / 0.220
i1R30080A-000-R	3.3 - 30	80	2400	99.5%	3.68 / 0.145
i1R30080A-004-R	3.3 - 30	80	2400	99.5%	5.59 / 0.220

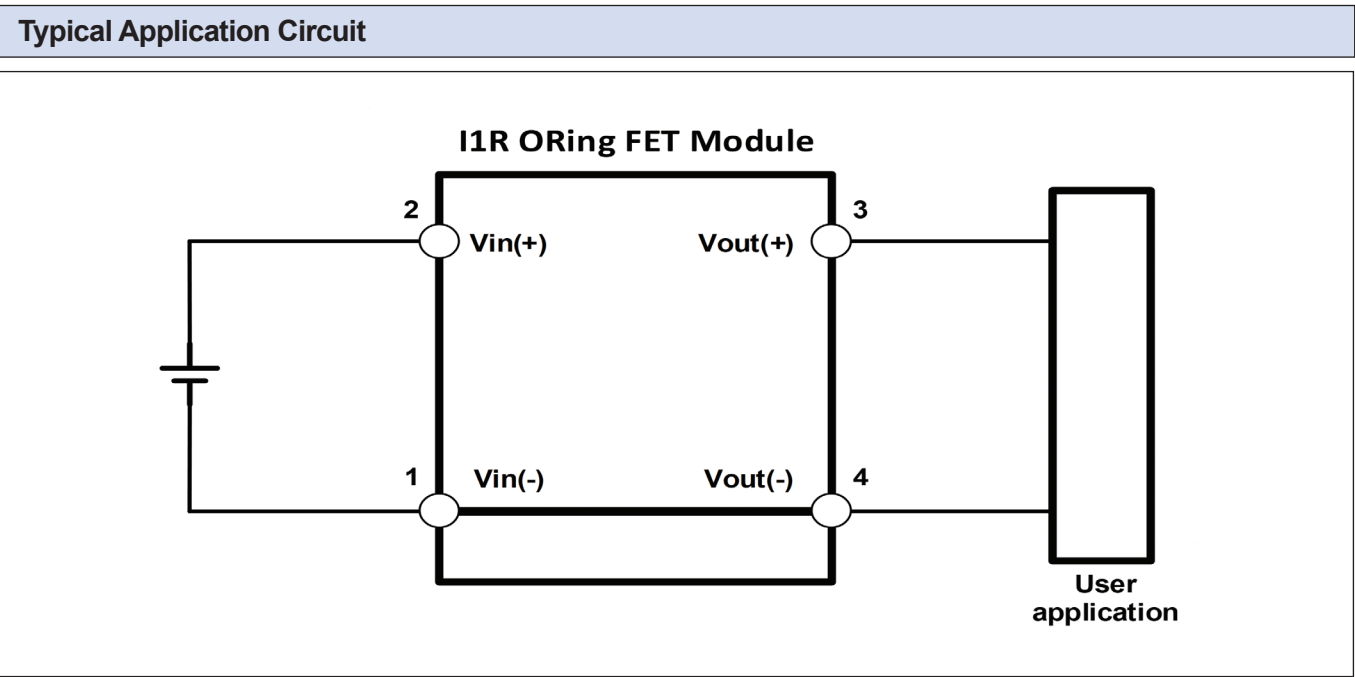
Preferred Model

Related Products

Type	Part Number	Description
DC-DC Buck Converter	i3A	100W, Input 9-53V, Output 5-30V 4.5A or 3.3-16.5V 8A
DC-DC Buck Converter	i6A4W	250W, Input 9-53V, Output 3.3-40V 10A or 3.3-15V 20A
DC-DC Buck Converter	i7A	400-1000W, Input 9 to 18V or 18 up to 60V, Output 0.8 to 8V or 3.3 up to 32V
DC-DC Buck-Boost Converter	i1C	200W, Input 9-36V or 18-75V, Output 9.6-28V, 1x1 inch Footprint
DC-DC Buck-Boost Converter	i7C	300W, Input 9-53V or 9-36V, Output 9.6-48V 8A, 5-28V 12.5A or 8-24V 20A
DC-DC Buck Converter	RGA	250W, Input 9 up to 53V, Output 3.3 up to 40V, Rugged Modules
DC-DC Buck Converter	RGB	400-750W, Input 9 to 18V or 18 up to 60V, Output 0.8 to 8V or 3.3 up to 24V, Rugged Modules
DC-DC Buck-Boost Converter	RGC	300W, Input 9-53V, Output 9.6-48V 8A or 5-28V 12.5A, Rugged Modules
Isolated DC-DC	GQA	120W, Input 9-36V, Single Output from 5V to 48V, Quarter Brick
EMI Filter Module	RGE	80V, 20A or 40A Differential Mode Filter Module

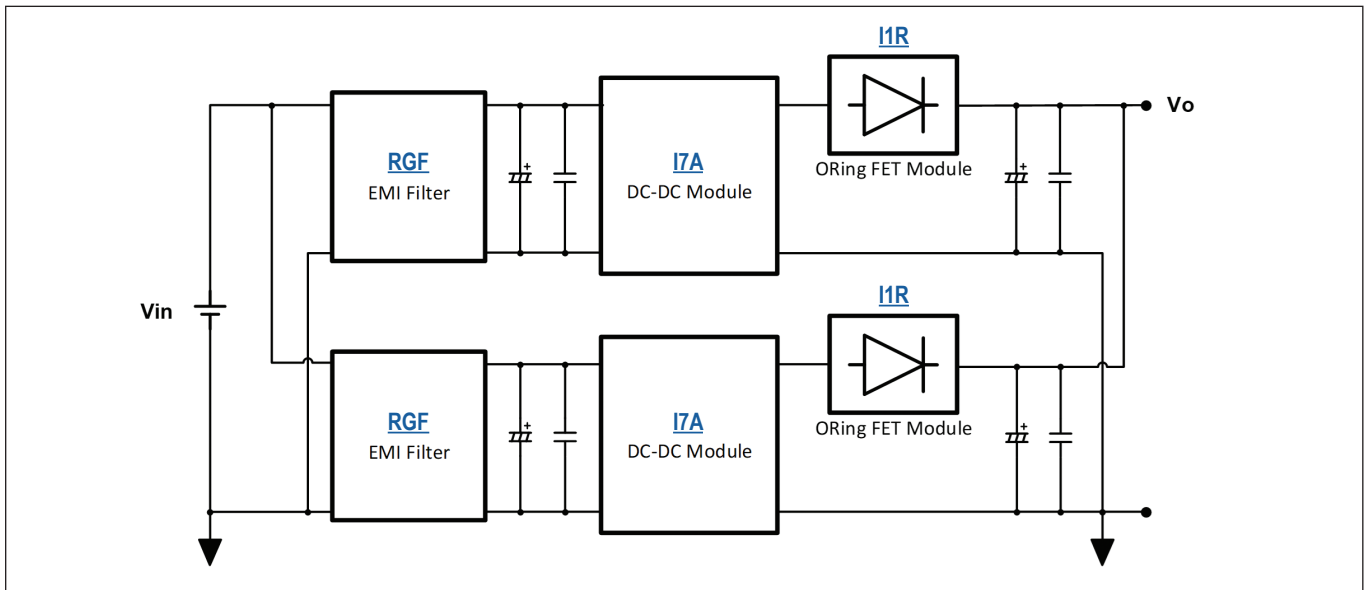
Specifications			
Model		i1R60060A	i1R30080A
Electrical Characteristics			
Input Voltage Range	Vdc	5 - 60	3.3 - 30
Input Transient (<100 ms)	Vdc	-24 to 66	-24 to 36
Output Current (max)	A	60	80
Typical ON Resistance (Tc = 25°)	mΩ	2.5	1.5
Turn-Off Time	ns	500 typ (Vin +50mV) < Vo	
Safety Certifications and Markings	-	CE Mark and UKCA Mark	
Environmental			
Operating Temperature (Tc)	°C	-40 to 120 (For derating, see i1R Specification)	
Storage Temperature	°C	-55 to 125	
Humidity (non condensing)	%RH	5 - 95 (Operating & Storage)	
Cooling	-	Convection, conduction (baseplate) or forced air	
Random Vibration (Operating)	IEC	60068-2-64 / IPC9592B: 2.40 Grms, 10-500Hz, 30 min per x, y, z axis	
Shock (Operating)	-	IEC 60068-2-27 / IPC9592B: 30G, 11 ms per x, y, z axis	
Other			
Weight (Typ)	g	20	
Size (LxWxH)	mm	26.3 x 26.3 x 10.1	
Size (LxWxH)	Inches	1.03 x 1.03 x 0.40	
MTBF - Telcordia SR-332	-	> 50 MHrs; 100% Load; Ta = 40 °C	
Warranty	yrs	3 years	

Notes
(1) See website for detailed [Specification](#).

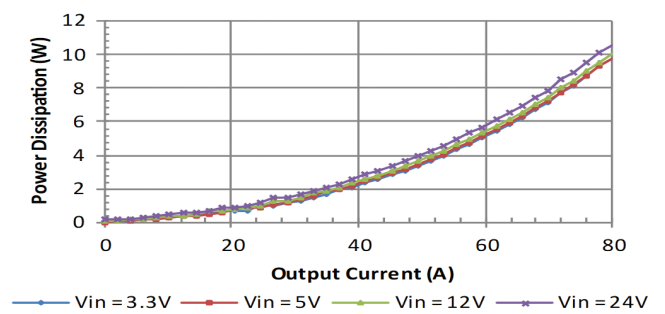
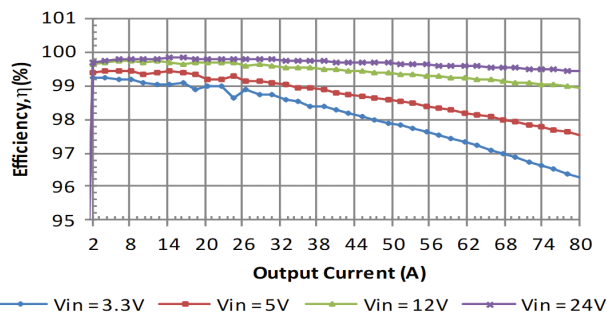


Note
1. Connect Vin(-) and Vout(-) to PCB copper ground plane underneath the i1R ORing FET module.

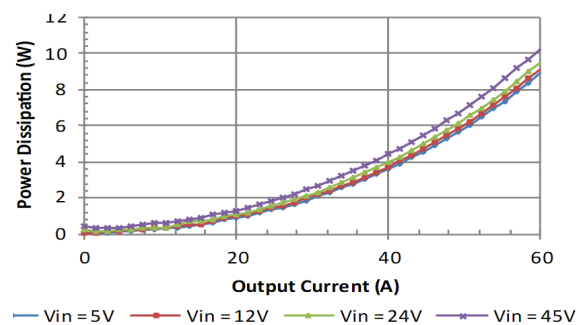
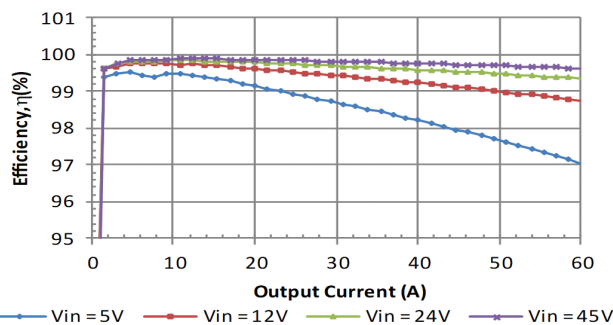
Simplified Building Block Diagram for Redundant / Parallel Configuration (supporting accessory products shown)



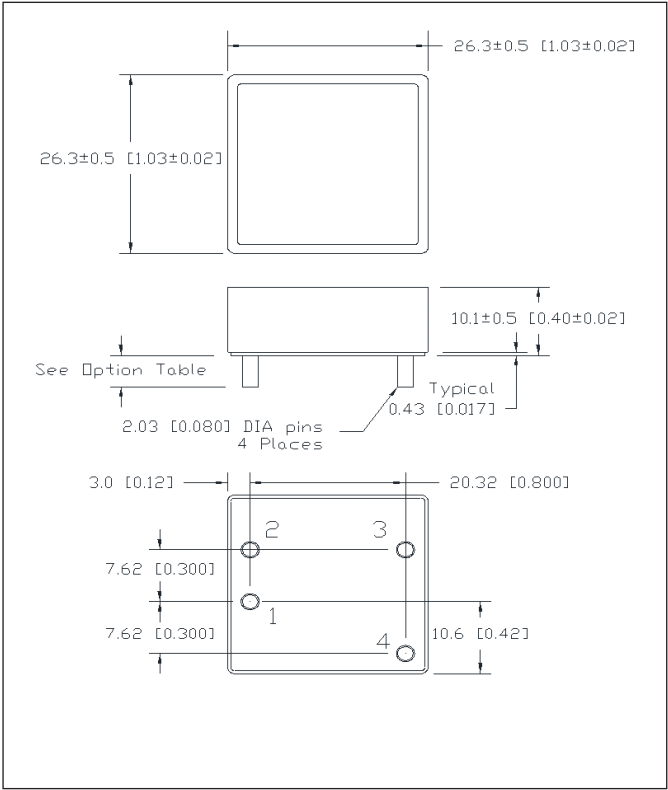
Typical Operating Efficiency and Power Dissipation: i1R30080A



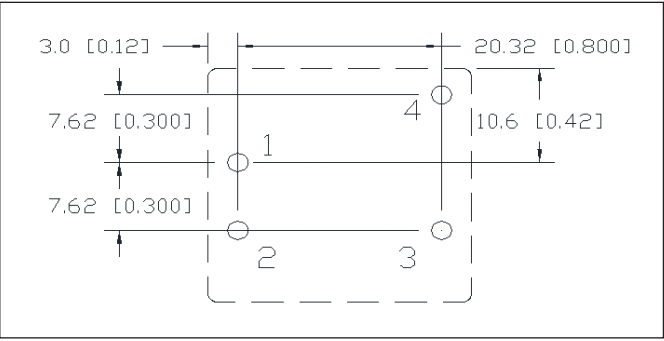
Typical Operating Efficiency and Power Dissipation: i1R60060A



Mechanical Specification



Recommended PCB Hole Pattern



Pinout

PIN	Function	PIN	Function
1	Vin (-) / GND	3	Vout (+)
2	Vin (+)	4	Vout (-) / GND

Pin base material is brass or copper with tin over nickel plating.



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