International
IOR Rectifier Hi-Rel Products

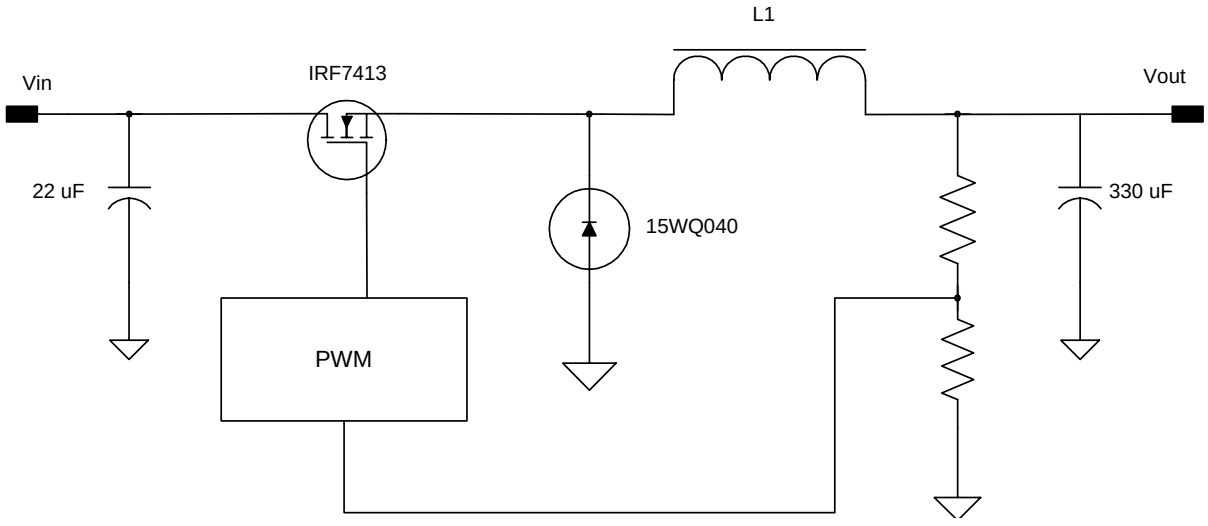
Non-Isolated, 3A, Single-Output Switching Regulators
OM955X Series

Features

- **Very low cost**
- **High Reliability**
- **High Efficiency, 89%**
- **0.80" x 0.75" x 0.50" SIP**
- **33W/in^3 Power density**
- **Complete; No external components**
- **Outputs: 1.5V/3A, 1.8V/3A, 2.5V/3A, 3.3V/3A**
- **40µs Transient response**

The new OM955XSPP series of open-frame, single-output, switching regulator modules each deliver up to 3A of output current from a 5V supply. Available output voltages are 3.3V, 2.5V, 1.8V and 1.5V. These low-cost, high-efficiency DC-DC converters provide point-of-use power to ASIC, DSP, PLD, PGA and CPU chips in systems utilizing distributed power architectures. The versatile OM955XSPP's are easy to use devices, in a SIP configuration, that require no external filtering (input and output capacitors are on board). They provide the user with a "complete" solution for point-of-load regulation power conversion applications.

These DC-DC converters utilize chip-on-board technology thereby allowing them to be the smallest (highest power density) 10W, non-isolated devices available in the market today. These switching regulators can be used in a wide range of military, industrial and commercial applications including telecommunications, datacom, radar, control systems, aircraft display panels, high-density data storage and test equipment. These devices overall cost effectiveness, performance, long-term reliability and small size are attributes that collectively could prove to be beneficial in your next power system design. Evaluate a sample today … and see for yourself.



Simplified Schematic

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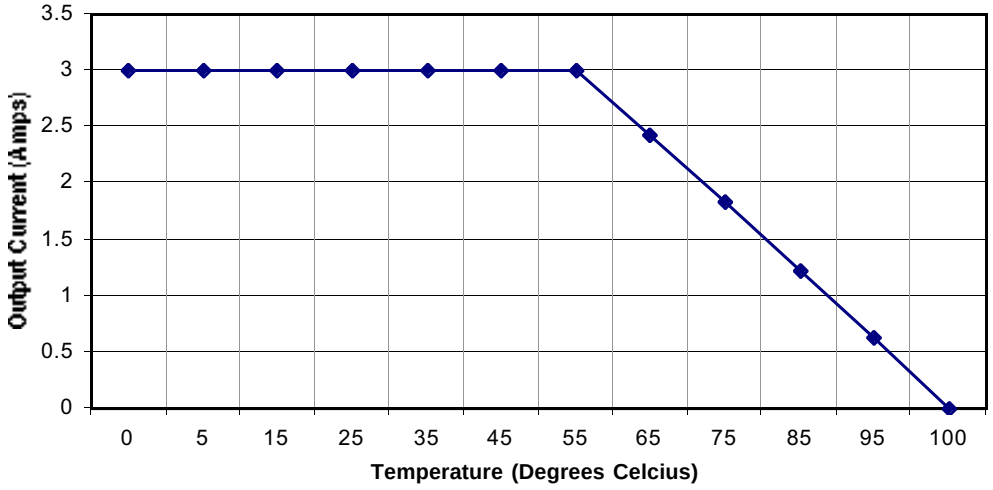
Ordering Guide and Performance

(Ta = +25°C)

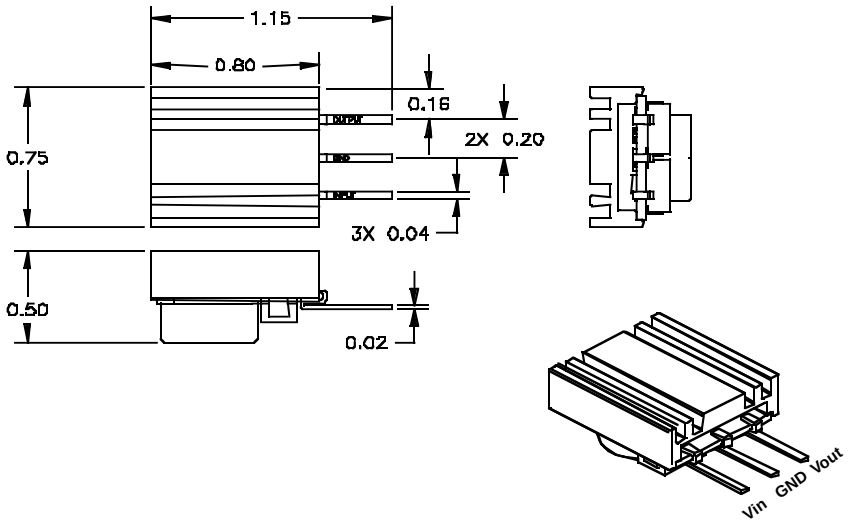
Model	Output						Input		Efficiency		Package Case (Pinout)
	Vout (Volts)	Iout (Amps)	R/N (mVp-p) Typ.	R/N (mVp-p) Max.	Regulation (Max.) Line	Regulation (Max.) Load	Vin Nom. (Volts)	Range (Volts)	Min.	Typ.	
OM9551SP	+3.3	3.0	80	100	0.3	0.5	5.0	4.5-7.0		89	See Mechanical Outline
OM9552SP	2.5	3.0	80	100	0.3	0.5	5.0	4.5-7.0		85	
OM9553SP	+1.8	3.0	80	100	0.3	0.5	5.0	4.5-7.0		79	
OM9554SP	+1.5	3.0	80	100	0.3	0.5	5.0	4.5-7.0		75	

Temperature Derating



Mechanical Outline

(Top View)



Performance/Functional Specifications

Ta=+25°C, Vin=5V, Io=3A, and no external filtering unless noted otherwise in the Conditions column of the table.

Input

Parameter	Conditions	Min	Typ	Max	Units
Input Voltage Range	(All Models)	4.5	5	7	V
Input Current	Vin=5V, Io=2A, Vo=+3.3V		1.48		A
	Vin=5V, Io=2A, Vo=+2.5V		1.18		A
	Vin=5V, Io=2A, Vo=+1.8V		0.91		A
	Vin=5V, Io=2A, Vo=+1.5V		0.8		A
Input Filtering	(Capacitive - All Models)		22		uF

Output

Parameter	Conditions	Min	Typ	Max	Units
Vout Accuracy	(All Models)		0.8	1	%
Load Regulation	Vin=5V, Io=0.1A to 3A		0.3	0.5	%
Line Regulation	Vin=4.5V to 5V, Io=2A	-0.5		0.5	%
Output Ripple/Noise	Vin=5V, Io=3A, (All Models)		80	100	mVp-p
Efficiency	Vin=5V, Io=2A, Vo=+3.3V		89		%
	Vin=5V, Io=2A, Vo=+2.5V		85		%
	Vin=5V, Io=2A, Vo=+1.8V		79		%
	Vin=5V, Io=2A, Vo=+1.5V		75		%
Output Current	Vin=5V (All Models)	0.1		3	A
Current Limiting	Vin=5V, Short Circuit		4		A
Output Filter	(Capacitive - All Models)		330		uF

Dynamic

Parameter	Conditions	Min	Typ	Max	Units
Transient Response	Vin=5V, 50% Step (Io from 1.5A to 3A)		40		us
Switching Frequency	Vin=5V, Ta=0°C to +85°C	175	200	225	kHz

Environmental

Parameter	Conditions	Min	Typ	Max	Units
Operating Temperature	(Without Derating -All Models)	-40		50	°C
	(With Derating -see Derating Curve)	-40		100	°C
Storage Temperature		-40		125	°C
Flammability	(All Models) UL94VO				

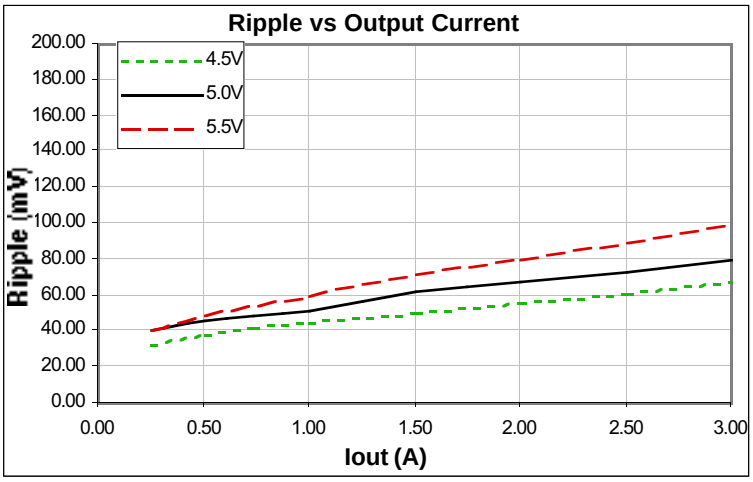
Absolute Maximum Ratings [1]

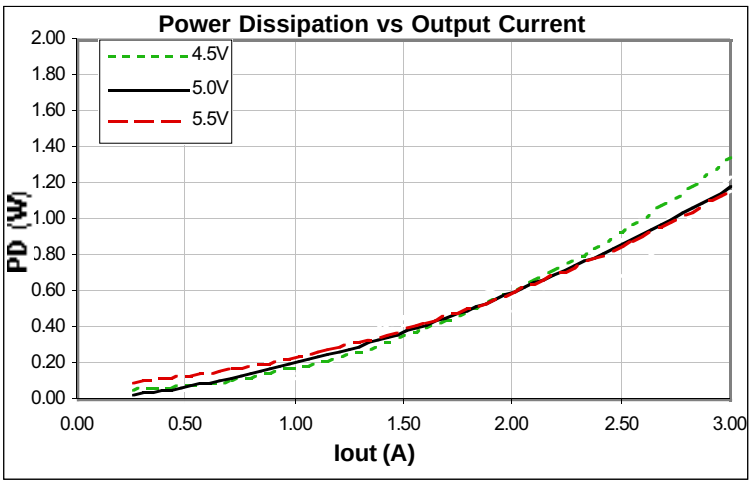
Parameter	Conditions	Min	Typ	Max	Units
Input Voltage	Vo=3.3V, Io=0.1A			8	V
Output Current	Short Circuit			4.2	A
Lead Temperature	(Soldering, 10 sec)			300	°C
Output Overvoltage Protection	None				
Input Reverse Polarity Protection	None				

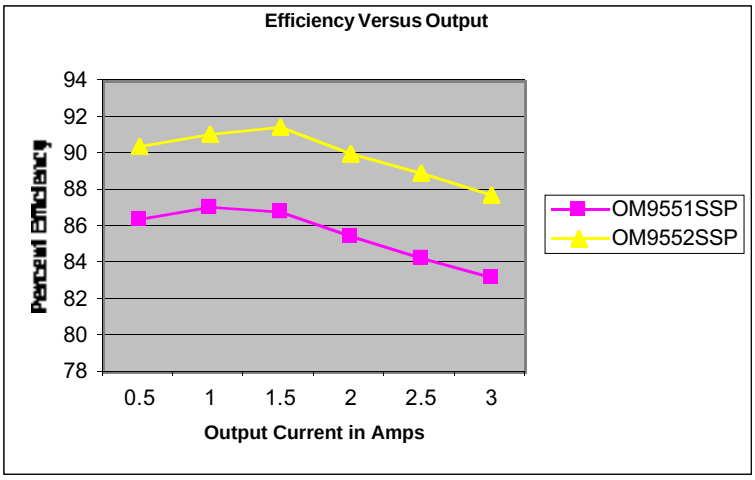
1. These are maximum or stress ratings. Exposure of these devices to any of the above conditions could affect long-term reliability. Normal operation under any conditions other than those referenced in the performance tables is not implied.

Physical

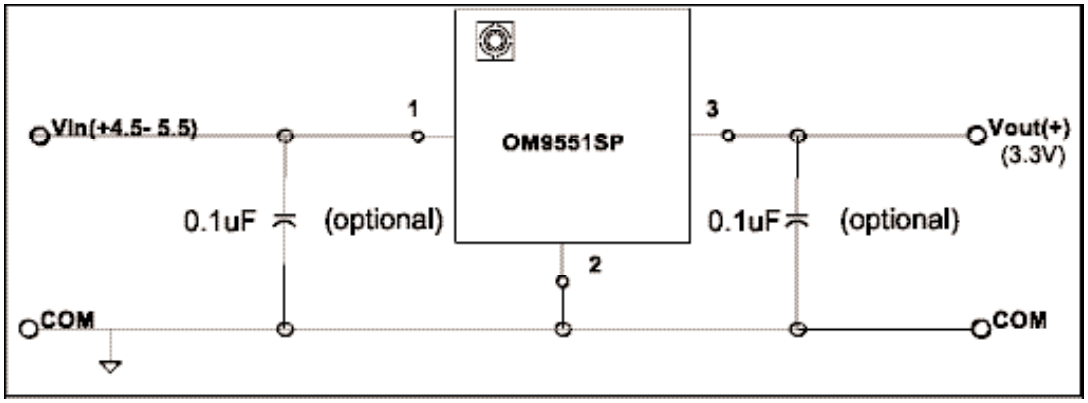
Dimensions	0.80" x 0.75" x 0.50"
Shielding	None
Case Connection	None
Pin Material	Bronze
Weight	8.4g (0.3 oz)







APPLICATION CIRCUIT



TECHNICAL NOTES

The OM955X Series design includes on-board input and output filtering (22uF input capacitor and a 330uF output capacitor are included in the design). However some applications could require a further reduction in ripple/noise parameters. The optional by-pass capacitors shown above can be used if an improvement in switching noise is necessary in your application. If ripple reduction is also necessary, additional tantalum capacitors may be added to the output. Capacitors should be low ESR and have a voltage rating of 10V minimum.