

Performance and Functional Specifications	
All specifications are typical unless noted. See Note 1	
Input	
Input Voltage Range	See Ordering Guide.
Recommended External Fuse	2 Amps fast blow
Reverse Polarity Protection (Note 9)	None. Install an external fuse.
Isolation (note 5)	Not isolated. The input and output share a common return.
Start-Up Voltage	NA
Undervoltage Shutdown	NA
Overvoltage Shutdown	None
Internal Input Filter Type	Capacitive
Input Current:	
Full Load Conditions	See Ordering Guide
Inrush Transient	0.16 A ² Sec.
Shutdown Mode (Off, UV, OT)	1 mA
Output in Short Circuit	5 mA
No Load	5 mA
Low Line (Vin=Vmin, Vout=nom)	0.8 Amps (OKI-78SR-3.3/1.5-W36) 1.16 Amps (OKI-78SR-5/1.5-W36)
Reflected (Back) Ripple Current (Note 2)	10 mA pk-pk (OKI-78SR-3.3/1.5-W36) 49 mA pk-pk (OKI-78SR-5/1.5-W36)
Output	
Output Voltage	See Ordering Guide
Output Current Range	0 to 1.5 Amps
Minimum Loading (Note 11)	No minimum load
Maximum Output Power	5.15 Watts (OKI-78SR-3.3/1.5-W36) 7.8 Watts (OKI-78SR-5/1.5-W36)
Accuracy (50% load)	±4 % of Vnom
Overvoltage Protection (Note 7)	None
Temperature Coefficient	±0.02% per °C. of Vout range
Ripple/Noise (20 MHz bandwidth)	See Ordering Guide and note 11
Line/Load Regulation	See Ordering Guide and note 10
Efficiency	See Ordering Guide and performance graphs
Maximum Capacitive Loading	
Cap-ESR=0.001 to 0.01 Ohms	300 µF
Cap-ESR >0.01 Ohms	3300 µF
Current Limit Inception (98% of Vout setting, after warm up)	3.5 Amps
Short Circuit Mode (Notes 6, 11)	
Short Circuit Current Output	10 mA
Protection Method	Hiccup autorecovery upon overload removal. (Note 8)
Short Circuit Duration	Continuous, no damage (output shorted to ground)
Prebias Startup	The converter will start up if the external output voltage is less than Vnominal.
Dynamic Characteristics	
Dynamic Load Response (50% to 100% load step, no external caps)	
di/dt = 1 A/µSec	25 µSec settling time to within ±2% of final value
Peak deviation	100 mV
Switching Frequency	500 KHz

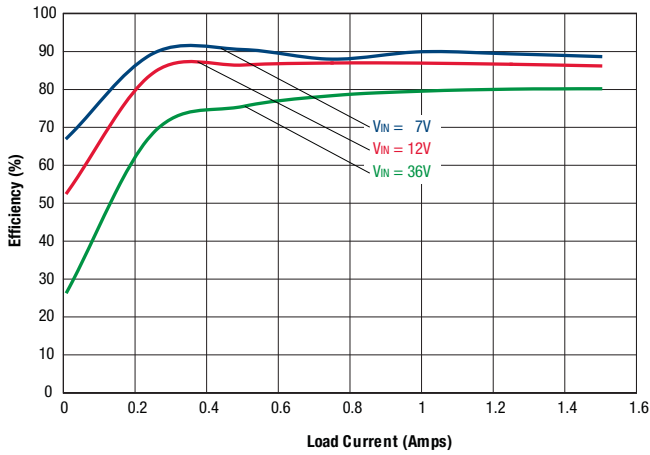
Environmental		
Calculated MTBF (Note 4)	Ambient Temp.	Hours
OKI-78SR-3.3/1.5-W36-C Telecordia method (4a)	+25°C	78,721,000
	+40°C	59,017,000
OKI-78SR-3.3/1.5-W36-C MIL-HDBK-217N2 method (4b)	+25°C	14,587,000
	+40°C	9,814,000
Operating Ambient Temperature Range		
Full power, with derating [3]	-40 to +85°C. see derating curves.	
Storage Temperature Range	-55 to +125 °C.	
Relative Humidity	to 85%/+85 °C.	
Physical		
Outline Dimensions	See Mechanical Specifications [11]	
Weight	0.07 ounces (2 grams)	
Safety	Certified to UL/cUL 60950-1 CSA-C22.2 No. 60950-1 IEC/EN 60950-1, 2nd Edition	
Absolute Maximum Ratings		
Input Voltage, Continuous or transient	36 Volts max.	
Input Reverse Polarity Protection	None. Install external fuse.	
Output Current	Current-limited. Devices can withstand sustained short circuit without damage.	
Storage Temperature	-40 to +125 deg. C.	

Specification Notes:

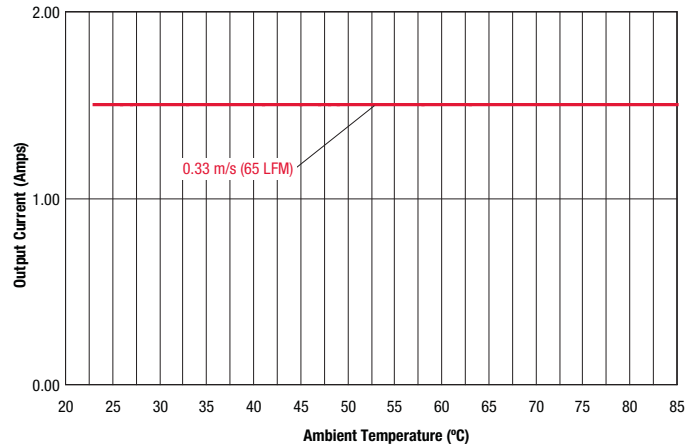
- All specifications are typical unless noted. General conditions for Specifications are +25 deg.C ambient temperature, Vin=nominal, Vout=nominal, full rated load. Adequate airflow must be supplied for extended testing under power. See Derating curves.
All models are tested and specified with no external capacitors. All models are stable and regulate within spec under no-load conditions.
- Input Back Ripple Current is tested and specified over a 5 Hz to 20 MHz bandwidth. Input filtering is Cin=2 x 100 µF, Cbus=1000 µF, Lbus=1 µH. All caps are low ESR types.
- Note that Maximum Power Derating curves indicate an average current at nominal input voltage. At higher temperatures and/or lower airflow, the DC/DC converter will tolerate brief full current outputs if the total RMS current over time does not exceed the Derating curve. All Derating curves are presented near sea level altitude. Be aware of reduced power dissipation with increasing altitude.
- Mean Time Before Failure is calculated using the Telcordia (Belcore) SR-332 Method 1, Case 3, ground fixed conditions, Tpcboard=+25 °C, full output load, natural air convection.
- Mean Time Before Failure is calculated using the MIL-HDBK-217N2 method, ground benign, +25°C., full output load, natural convection.
- The input and output are not isolated. They share a single COMMON power and signal return.
- Short circuit shutdown begins when the output voltage degrades approximately 2% from the selected setting. Output current limit and short circuit protection are non-latching. When the overcurrent fault is removed, the converter will immediately recover.
- The output is not intended to sink appreciable reverse current.
- "Hiccup" overcurrent operation repeatedly attempts to restart the converter with a brief, full-current output. If the overcurrent condition still exists, the restart current will be removed and then tried again. This short current pulse prevents overheating and damaging the converter.
- Input Fusing: If reverse polarity is accidentally applied to the input, to ensure reverse input protection, always connect an external input fast-blow fuse in series with the +Vin input. Use approximately twice the full input current rating with nominal input voltage.
- Regulation specifications describe the deviation as the line input voltage or output load current is varied from a nominal midpoint value to either extreme.
- Output noise may be further reduced by installing an external filter. Do not exceed the maximum output capacitance. At zero output current and no external capacitor, the output may contain low frequency components which exceed the ripple specification. The output may be operated indefinitely with no load.

PERFORMANCE DATA – OKI-78SR-3.3/1.5-W36

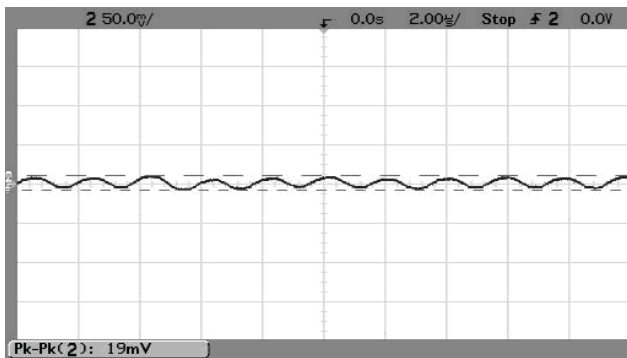
Efficiency vs. Line Voltage and Load Current @ +25°C. (Vout = Vnom.)



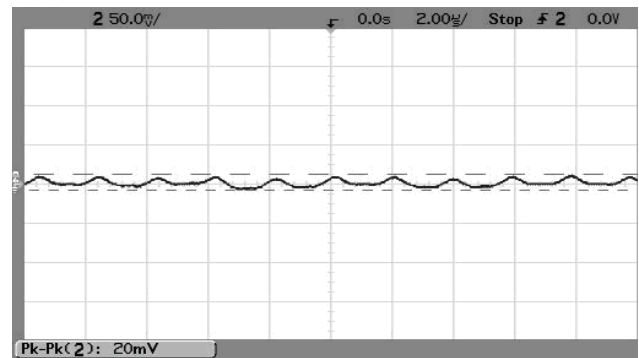
Maximum Current Temperature Derating at sea level (Vin=7V. to 36V)



Output Ripple and Noise (Vin=7V, Vout=nominal, Iout=1.6A, Cload=0, Ta=+25°C., ScopeBW=100MHz)



Output Ripple and Noise (Vin=12V, Vout=nominal, Iout=1.6A, Cload=0, Ta=+25°C., ScopeBW=100MHz)



Output Ripple and Noise (Vin=36V, Vout=nominal, Iout=1.6A, Cload=0, Ta=+25°C., ScopeBW=100MHz)

