FUNCTIONAL SPECIFICATIONS – OKI-78SR-3.3/1.5-W36E-C

ABSOLUTE MAXIMUM RATINGS	Conditions ①	Minimum	Typical/Nominal	Maximum	Units
Input Voltage, Continuous	Full power operation	0		36	Vdc
Input Reverse Polarity	None, install external fuse		None		Vdc
Output Power		0		5.15	W
Output Current	Current-limited, no damage, short-circuit protected	0		1.5	A
Storage Temperature Range	Vin = Zero (no power)	-55		125	°C
Absolute maximums are stress ratings. Exposure of devices to greater than any of these conditions may adversely affect long-term reliability. Proper operation under conditions other than those listed in the Performance/Functional Specifications Table is not implied or recommended.					
INPUT					
Operating voltage range		7	12	36	Vdc
Recommended External Fuse	Fast blow			2	A
Reverse Polarity Protection ⑨	None, install external fuse		None		Vdc
Internal Filter Type			C-TYPE		
Input current					
Full Load Conditions	Vin = nominal		0.48	0.51	A
Low Line	Vin @ min		0.80	0.85	A
Inrush Transient			0.16		A^2-Sec.
Short Circuit Input Current			5		mA
No Load Input Current	Vin = nominal		5	10	mA
Shut-Down Mode Input Current			1		mA
Reflected (back) ripple current ②	(Cin = 2 X 100uF, CBus = 1000uF, LBus = 1uH)		50		mA, pk-pk
GENERAL and SAFETY					
Efficiency	@ Vin nom, 3.3Vout	83.7	85.5		%
	@ Vin min, 3.3Vout	87.0	88.4		%
Safety	Certified to UL-60950-1, IEC/EN60950-1, 2nd Edition		Yes		
Calculated MTBF ④	Per Telcordia SR332, issue 1, class 3, ground fixed, Tambient=+25°C		78.7		Hours x 10^6
DYNAMIC CHARACTERISTICS					
Fixed Switching Frequency			500		kHz
Dynamic Load Response	50-100-50% load step, settling time to within ±2% of Vout di/dt =1A/µSec		25	50	µSec
Dynamic Load Peak Deviation	same as above		100	150	mV

FUNCTIONAL SPECIFICATIONS – OKI-78SR-3.3/1.5-W36E-C (CONT.)

OUTPUT	Conditions	Minimum	Typical/Nominal	Maximum	Units
Total Output Power		0	4.95	5.15	W
Voltage					
Nominal Output Voltage Range		3.168	3.3	3.432	Vdc
Setting Accuracy	At 50% load	-4		4	% of Vnom.
Output Voltage Overshoot - Startup:				3	%Vo nom
Current					
Output Current Range		0	1.5	1.5	A
Minimum Load ⑪			No minimum load		
Current Limit Inception	98% of Vnom., after warmup @3.3Vout	2.50	3.50	5.00	A
Short Circuit Mode ⑥⑪					
Short Circuit Current	Hiccup technique, autorecovery within ±1% of Vout		0.01		A
Short Circuit Duration (remove short for recovery)	Output shorted to ground, no damage		Continuous		
Short circuit protection method ⑧	Current limiting				
Regulation ⑩					
Total Regulation Band	Over all line, load and temp conditions	-3	Vo set	3	% Vo set
Line Regulation	Vin=min. to max. Vout=nom.			±0.30	%
Load Regulation	Iout=min. to max.			±0.40	%
Ripple and Noise (20MHz BW) ⑪	3.3Vo, 12Vin		30	40	mV pk-pk
Temperature Coefficient	At all outputs		±0.02		% of Vnom./°C
Maximum Capacitive Loading	low ESR; >0.001, <0.01 ohm		300		µF
Maximum Capacitive Loading	0.01 ohm		3300		µF
MECHANICAL					
Outline Dimensions			0.47 x 0.69 x 0.40		Inches
			11.9 x 17.6 x 10.0		mm
Weight			0.16		Ounces
			4.5		Grams
Pin Material			copper alloy		
Pin Finish	Matte Tin		100-300		µ"
	Nickel		75-150		µ"
ENVIRONMENTAL					
Operating Ambient Temperature Range ③	see derating curves	-40		85	°C
Storage Temperature	Vin = Zero (no power)	-55		125	°C
RoHS Compliant			RoHS-6		

Specification Notes:

1) 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..
2) 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.
3) 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.
4) 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.
5) The input and output are not isolated. They share a single COMMON power and signal return.
6) 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.
7) The output is not intended to sink appreciable reverse current.
8) "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.
9) 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.
10) Regulation specifications describe the deviation as the line input voltage or output load current is varied from a nominal midpoint value to either extreme.
11) 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.