



- NON-ISOLATION REGULATED OUTPUT VOLTAGE
- REMOTE ON/OFF
- ADJUSTABLE OUTPUT VOLTAGE
- OVER CURRENT PROTECTION
- HIGH EFFICIENCY UP TO 91%
- FIXED SWITCHING FREQUENCY
- SMALL 2.50" X 0.55" X 0.26" PACKAGE

The OPN20 series are non-isolation DC-DC converter packaged in a single-in-line footprint (2.5 x 0.55 x 0.26 inch) giving designers a cost effective solution for conversion from 5VDC to 3.3V, 2.5V, 2.1V, 1.8V and 1.5V and from 3.3VDC to 2.5V, 2.1V, 1.8V, 1.5V. This series was designed for applications that include distributed power, workstations, computers and servers.

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS		
Output power		20 Watts max
Voltage accuracy	Full load and nominal Vin	± 2.7%
Minimum load		0%
Line regulation	LL to HL at Full Load	± 0.5%
Load regulation	0% to 100% FL	± 0.5%
Ripple and noise	20MHz bandwidth	100mVp-p
Temperature coefficient		±0.02% / °C, max
Transient response	$\Delta I_o / \Delta t = 1A/10\mu s$ Nominal input	Peak deviation 80mV
recovery time (see fig. 1)	Load change step (0% to 100% or 100% to 0% of I_o , max)	Setting time 200 μs
Output current limit (Note 1)		Latching
External load capacitance		10000 μF
Voltage adjustability (see fig.2)		±10%
Remote sense (option)	Suffix-S	0.25V
Power OK, (option)	Suffix-K	
Power OK signal	Asserts "HI" when Vout is between Following thresholds	
Lower sense threshold	% V setpoint	-16 ~ -10
Upper sense threshold		+10 ~ +16
INPUT SPECIFICATIONS		
Input voltage range	3.3V nominal input (Note 2) 5V nominal input	3.0 – 3.6VDC 4.5 – 5.5VDC
Maximum input current		6000mA
Remote ON/OFF	DC-DC ON DC-DC OFF	Open or 0V < Vr < 1V 3.3V input 2.4V < Vr < 6V 5V input 3.2V < Vr < 6V
Input reflected ripple	5~20MHz, 500uH source impedance	625mArms
Rise time	80% Full load and nominal Vin	8mS,typ.

GENERAL SPECIFICATIONS	
Efficiency	See table
Isolation voltage	None
Switching frequency	500KHz, typ
Designed meet safety standard	IEC60950, UL60950, EN60950
Dimensions (see fig.3)	2.50 X 0.55 X 0.26 Inch (63.5 X 14.0 X 6.6 mm)
Weight	8.5g (0.3 oz)
MTBF (Note 3)	2.064 x 10 ⁶ hrs
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature range (see fig. 4)	-40°C ~ +85°C
Storage temperature range	-55°C ~ +105°C
Thermal shock	MIL-STD-810D
Over temperature protection	125°C
EMC CHARACTERISTICS	
Conducted emissions	EN55022 Level A
Radiated emissions	EN55022 Level A
Conducted immunity	EN61000-4-6 Perf. Criteria2



Model Number	Input Range	Output Voltage	Output Current	Input Current ⁽⁴⁾	Eff ⁽⁵⁾ (%)
OPN20-03S2P5	3.0 – 3.6 VDC	2.5 VDC	6000mA	5540mA	86
OPN20-03S2P1	3.0 – 3.6 VDC	2.1 VDC	6000mA	4780mA	84
OPN20-03S1P8	3.0 – 3.6 VDC	1.8 VDC	6000mA	4200mA	82
OPN20-03S1P5	3.0 – 3.6 VDC	1.5 VDC	6000mA	3590mA	80
OPN20-05S3P3	4.5 – 5.5 VDC	3.3 VDC	6000mA	4660mA	89
OPN20-05S2P5	4.5 – 5.5 VDC	2.5 VDC	6000mA	3620mA	87
OPN20-05S2P1	4.5 – 5.5 VDC	2.1 VDC	6000mA	3120mA	85
OPN20-05S1P8	4.5 – 5.5 VDC	1.8 VDC	6000mA	2700mA	84
OPN20-05S1P5	4.5 – 5.5 VDC	1.5 VDC	6000mA	2310mA	82

Note

- The output short circuit of the start up mode will be damage these devices. The others modes is critical protection.
- In order to meet all specification for 3.3V input module have to add external capacitor at input. The capacitor is SANYO OS-CON, SA-series, 68uF/10V
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
- Maximum value at nominal input voltage and full load of standard type.
- Minimum value at nominal input voltage and full load

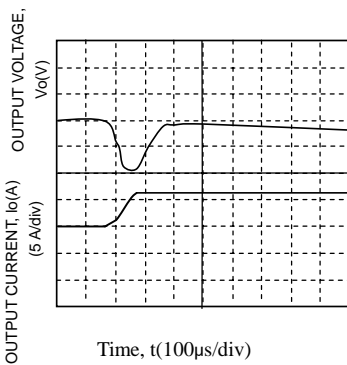


Fig.1

Typical Transient Response to Step Load Change from 0% to 100% of I_o , max at Room Temperature and 5V Input (Waveform Averaged to Eliminate Ripple Component.)

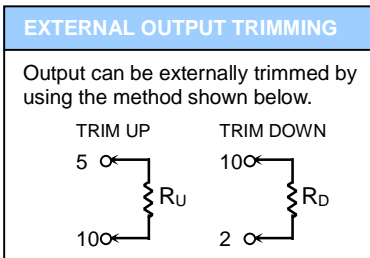
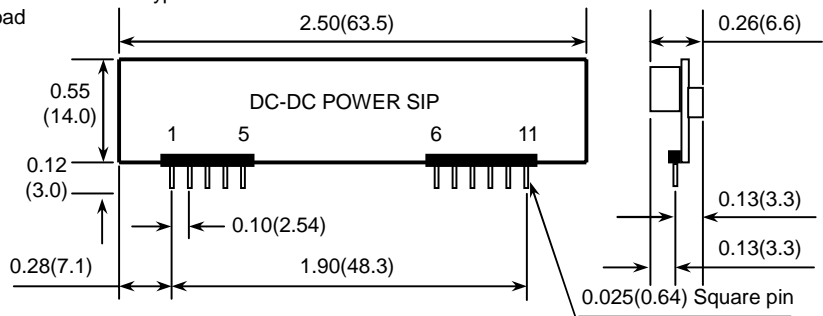


Fig.2



(-H) Model

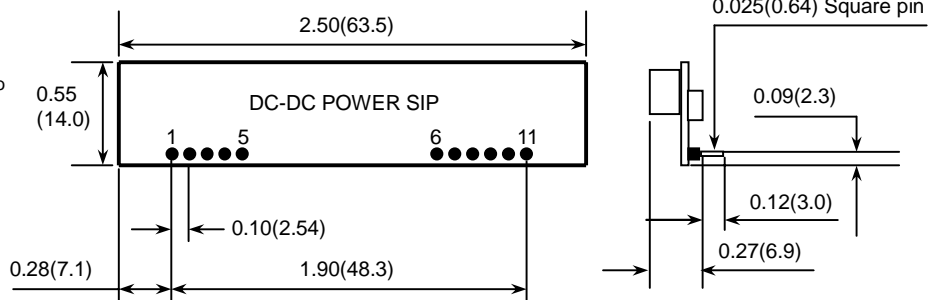
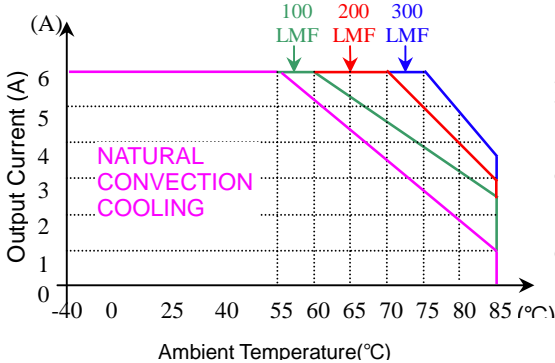


Fig.3

- All dimensions in Inches (mm)
- Pin pitch tolerance ± 0.014 (0.35)

DIP PIN CONNECTION	
PIN	DEFINE
1	+ OUTPUT
2	+ OUTPUT
3	Sense (option) or no pin
4	+ OUTPUT
5	GND
6	GND
7	+ INPUT
8	+ INPUT
9	Power OK (option) or no pin
10	TRIM
11	REMOTE ON-OFF

OPN20-03S2P5 Derating Curve



OPN20-05S3P3 Derating Curve

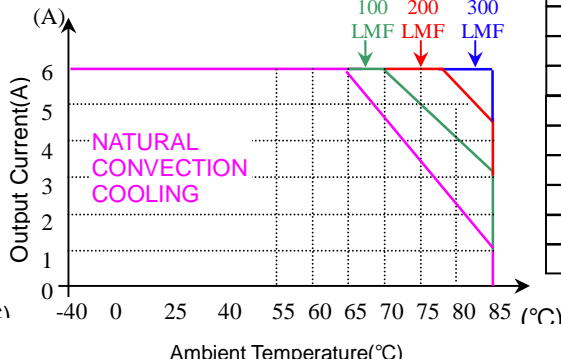


Fig.4