



- 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 recovery time (see fig. 1)	$\Delta I_o / \Delta t = 1A/10\mu S$ Nominal input	Peak deviation	80mV
	Load change step (0% to 100% or 100% to 0% of I _o , max.)	Setting time	200μS
Output current limit (Note 1)			Latching
External load capacitance			10000μF
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)		3.0 – 3.6VDC
	5V nominal input (Note 2)		4.5 – 5.5VDC
Maximum input current			6000mA
Remote ON/OFF	DC-DC ON	Open or 0V < Vr < 1V	
	DC-DC OFF	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	IEC60950-1, UL60950-1, EN60950-1		
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 ambient temperature (see fig. 4)			-40°C ~ +85°C
Storage temperature range			-55°C ~ +105°C
Thermal shock			MIL-STD-810F
Over temperature protection			125°C
EMC CHARACTERISTICS			
Conducted emissions	EN55022		Class A
Radiated emissions	EN55022		Class A
Conducted immunity	EN61000-4-6		Perf. Criteria B



Model Number	Input Range	Output Voltage	Output Current	Input Current ⁽⁴⁾	Eff ⁽⁵⁾ (%)
OPN20-03S2P5	3.0 – 3.6 VDC	2.5 VDC	6000mA	5480mA	87
OPN20-03S2P1	3.0 – 3.6 VDC	2.1 VDC	6000mA	4720mA	85
OPN20-03S1P8	3.0 – 3.6 VDC	1.8 VDC	6000mA	4090mA	84
OPN20-03S1P5	3.0 – 3.6 VDC	1.5 VDC	6000mA	3590mA	80
OPN20-05S3P3	4.5 – 5.5 VDC	3.3 VDC	6000mA	4610mA	90
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 and 5V 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

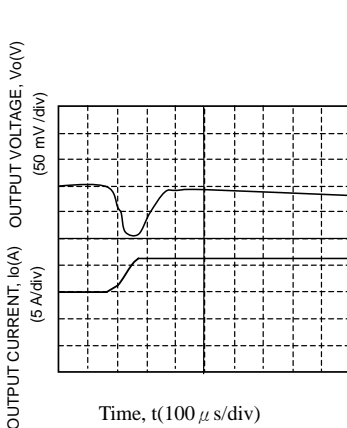
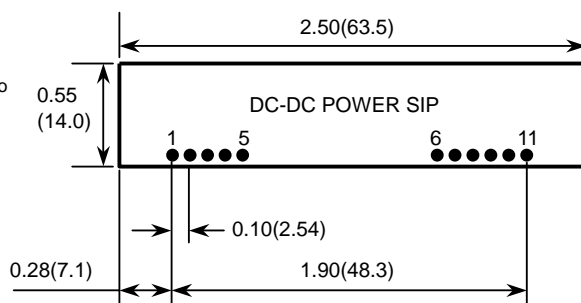
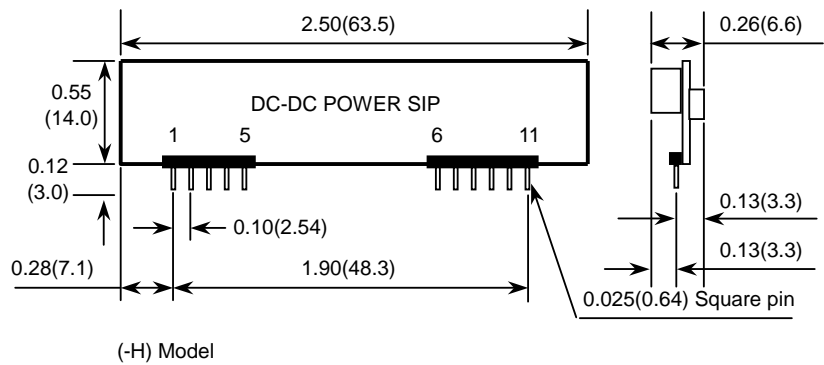


Fig.1 Typical Transient Response to Step Load Change from 0% to 100% of I_o , max at Room Temperature and 5V Input (Waveform Averaged to Eliminate Ripple Component.)



- All dimensions in Inches (mm)
Tolerance : $x.xx \pm 0.02 (x.xx \pm 0.5)$
 $x.xxx \pm 0.01 (x.xx \pm 0.25)$
- Pin pitch tolerance $\pm 0.014 (0.35)$

Fig.3

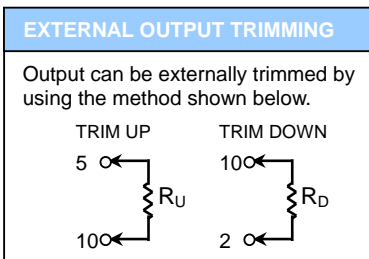
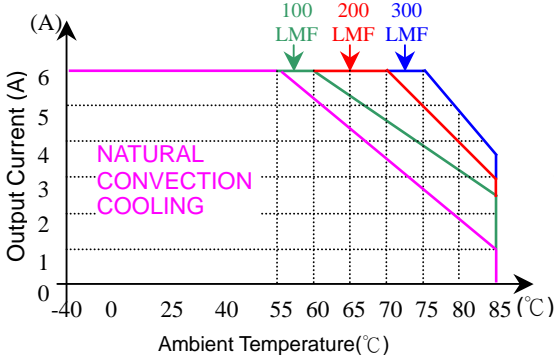


Fig.2

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

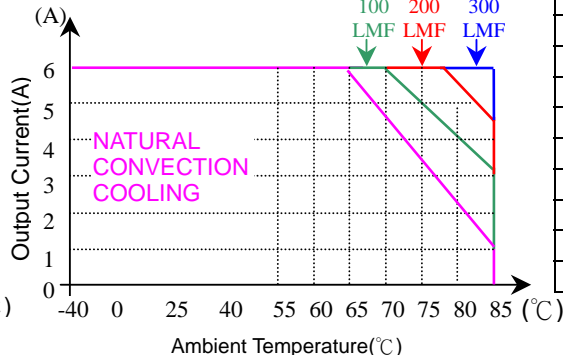


Fig.4