

Three Output NiPOL DC-DC Converter



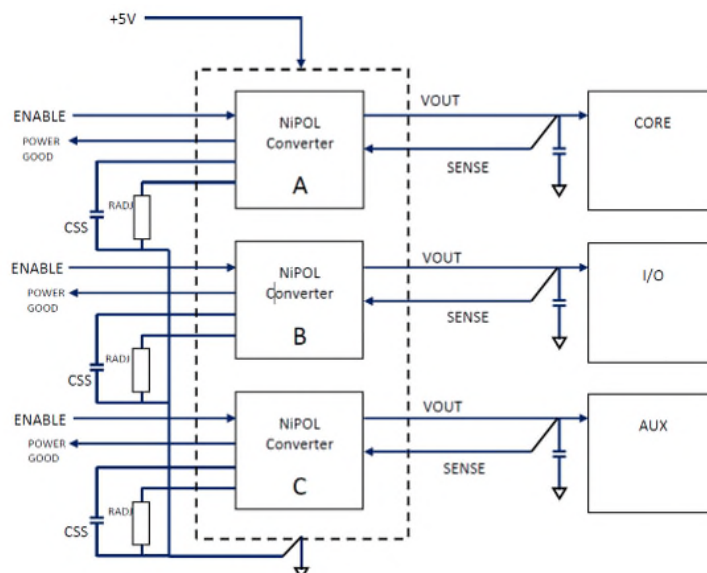
Frontgrade introduces the 59005333 Three Output Converter. The Three Output Converter was design to address ancillary voltage needs associated with high performance FPGAs.

The Frontgrade Three Output NiPOL DC-DC Converter module provides three independent non-isolated point-of-load regulators in one convenient package. The converters share a common ground but have independent 5V inputs. Since they are non-isolated, the input ground and output ground are also common, resulting in a three terminal regulator configuration. Each converter has an individual load voltage sense input, enable input, power good output, and output voltage programming resistor input.

The converter use buck topology with secondary synchronous rectification. Overcurrent protection is cycle by cycle. When the individual current limit is exceeded for any converter, it enters a “hiccup” mode until the overcurrent condition is removed.

KEY FEATURES

- Three independent NiPOL converters in one convenient package
- Designed for aerospace and high reliability space applications
- Radiation performance
 - Total dose: 50krads (Si), Dose rate = 0.01 rads (Si) / s
 - SEL/SEB/SEGR: Immune up to 43 MeV-cm²/mg
- VIN range 4.5VDC – 5.5VDC for each converter
- VOUT range 0.8VDC – 3.3VDC for each converter
- Output voltage set by external programming resistor independently for each converter
- Output current up to 6A for each converter
- Overcurrent/short circuit protection for each converter
- Configurable Soft-Start for each converter
- Enable/disable control for each converter
- Power Good output from each converter
- -55°C to +125°C operation (TJ)



PARAMETERS – FOR EACH OF THE THREE CONVERTERS UNLESS NOTED

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage range	V_{IN}		4.5	--	5.5	V
Input	dV_{IN} / dt		--	--	1	V/us
Input quiescent current	I_Q	+VIN=5.5V, No Load, Not Enabled	--	2	6	mA
Input current, No Load	I_{IN}	+VIN=5.5V, No Load, Enabled	--	40	65	mA
Output Voltage Range		+VIN=4.5V minimum Set by programming resistor on ADJ pin	0.80	--	3.6	V
Output Current			--	--	6	A
Overcurrent Trip Level			7.8	10.2	15	A
Output voltage rise time (SOFT START – As supplied. May be extended with external capacitors)	T_r	10% to 90% Vout	--	2.6	--	ms
Enable (EN) Input Voltage		Rising/falling threshold	0.56	0.6	0.64	V
Enable (EN) Sink Current		EN = 0.3V	6.4	11	16.6	mA
Input Capacitance	C_{IN}		--	110	--	uF
External Output Capacitance	C_{out}	Low ESR required for stability/transient response	150	800	--	uF
Output Voltage Tolerance		Over full temperature range. Add tolerance of ADJ resistor.	--	--	1.25	%
Line Regulation			--	0.01	--	%
Load Regulation			--	0.3	--	%
Output Ripple		Vout = 1V	--	7	--	mv(p-p)

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