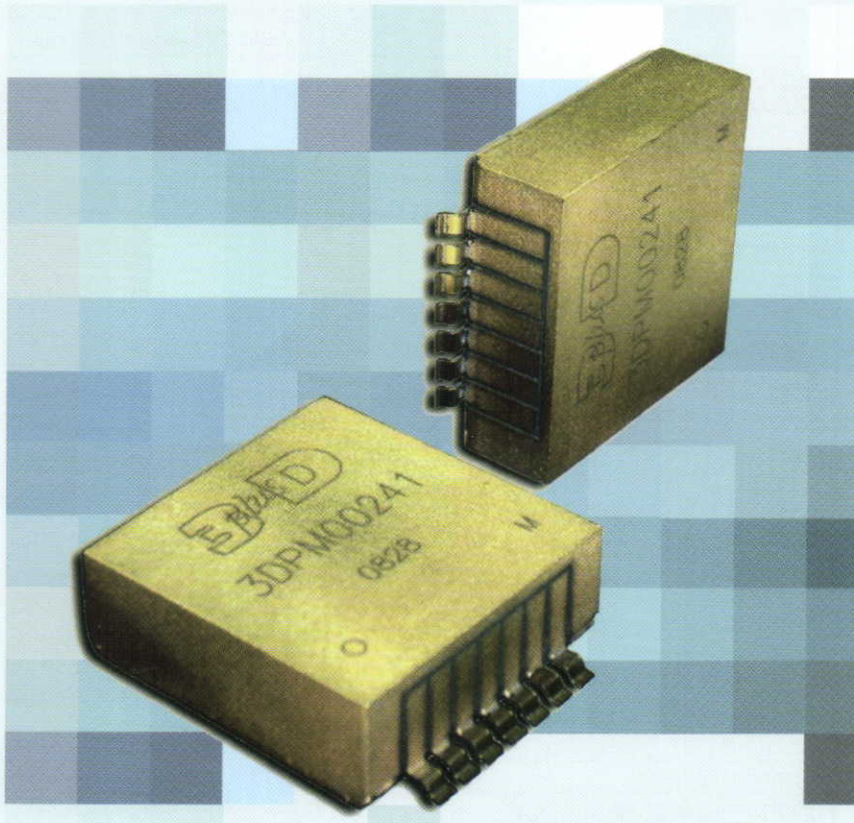
a HEICO company

Hi-Rel Point-Of-Load DC/DC Converter
5V Input, 1.22V to 4V Single Output
Radiation Hardened Design

3DPM0024-3

KEY FEATURES

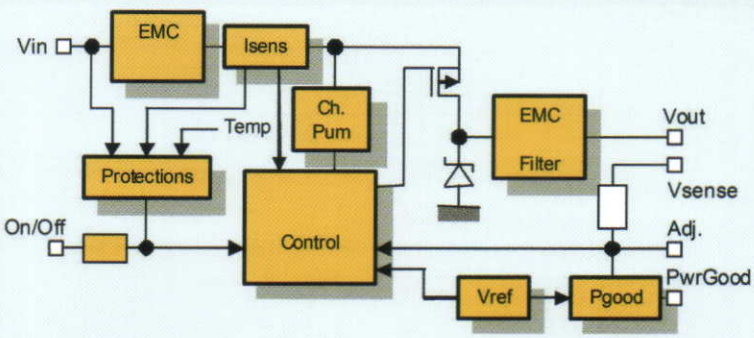
- Input Voltage: 5V ± 5%
- Output Voltage adjustable from 1.225V to 4V
- Output current up to 5.5A
- Efficiency: 88 % (3.3V/3A)
- Excellent Dynamic Performances
- Buck Converter Topology
- Fixed switching frequency (400kHz)
- Integrated EMC filter
- Input Under-voltage protection
- Thermal Shutdown and Current Limit Protections
- Power Good signal for Output voltage monitoring
- Soft Start, ON/OFF Command
- Space Qualified Technology
- Radiation Hardened design
- Junction Temperature Range -40°C / +125°C
- Compact Size and Low Weight
- 14-pin gull wing SMD
- ITAR Free Product - Worldwide delivery guaranty
- Size: 26.5 x 25 x 10 mm
- Mass: 15 g



PRODUCT OVERVIEW

The 3DPM0024-3 POL Converter provides high performances, high reliability, compact size and low weight for Space Applications.
Featuring specific radiation effect mitigation techniques and utilizing space design de-rating rules, the 3DPM0024-3 POL Converter is an ITAR Free product and features a SEL/SEE LETth of 80 Mev.cm2/mg and a TID of 50krad (Si).

Based on a Buck topology, the POL module uses a P channel Power MOSFET and Schottky Diode stage at 400 kHz switching frequency.
From a 5V now available on almost every digital system, the POL converter provides low voltages power supplies for most of today's digital designs. Its Output voltage is adjusted from 1.225V to 4V by an external resistor. A very high speed control loop keeps the output voltage within regulation under the high transient load swings commonly found in high speed modern ASICs, FPGAs and Memory devices.
The POL Module is fully protected against output overload, input under-voltage and internal over heating. The external ON/OFF command and Soft Start function enable any power supply ON/OFF sequencing.
Power Good signal is available for module survey and may be used for Power on Reset.



Input and output EMC filters are integrated to simplify module implementation directly on the digital board with only one additional component (resistor for output voltage adjustment).

The POL Converter is the best solution for Low voltage power distribution system for fast digital electronics such as ASICs, FPGAs (ACTEL, XILINX,...) and Memory (SDRAM, DDR, DDR2, DDR3,...). Also, it can be used for any other high efficiency Point of Load Regulation / Distributed Power System for all the space applications fields: sciences and deep space missions, earth observations, navigation, launchers and manned space vehicles.

PRODUCT PERFORMANCES

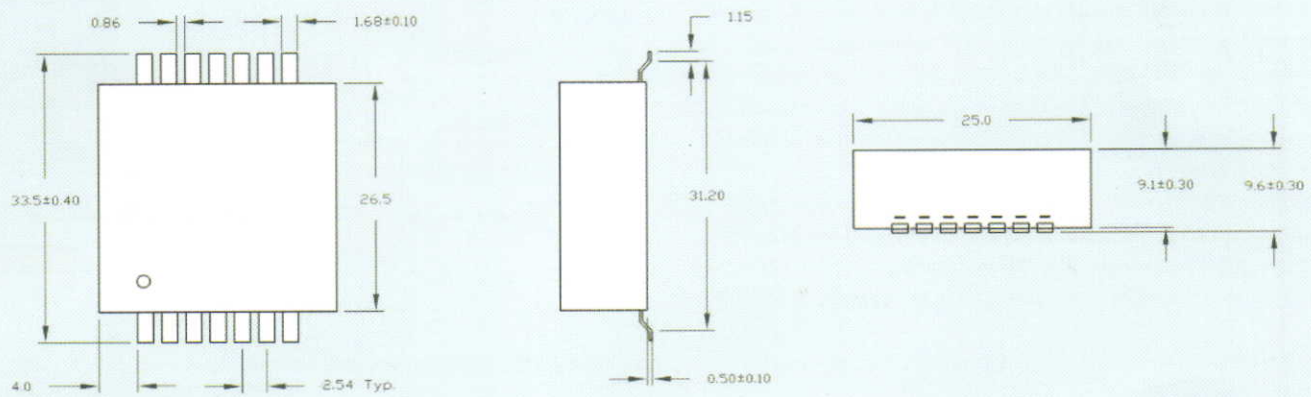
Parameter	Conditions	Min	Typ	Max	Unit
Output Characteristics					
Output Voltage range		1.225		4	V
Set-point Accuracy	-40°C to 100°C	-1.1		1.4	%
Load Regulation	min to max load			0.4	%
Ageing drift	10 years @ 50 krad	-0.5		0.5	%
Start-up time	ON cmd -> PGood ON	2	3	4	ms
Load Transient	Iout = +/- 3A, di/dt = 10A/µs (min DC load = 750mA)		60	90	mV
Load Capacitance				650	µF
Output Ripple	Measurement BW limited to 20MHz		35	60	mVpp
			6	10	mVrms
Switching Frequency		370	400	430	kHz
Efficiency	Vin = 5V, Vout = 3.3V / Iout = 3A	86.5	87.8		%
	Vin = 5V, Vout = 3.3V / Iout = 5A	83	86		%

ENVIRONMENTAL SPECIFICATION

Parameter	Conditions	Min	Typ	Max	Unit
Storage Temperature	-	-55		+150	°C
Junction Temperature	-	-40		+125	°C
Thermal Resistance (θ_{JC})	-			15	°C/W
Internal Temperature Protection					
Internal thermal shutdown temperature		115	125	135	°C

Parameter	Conditions	Min	Typ	Max	Unit
Total Irradiation Dose	-	50			kRad(Si)
Latch-up Immune LET Threshold	-	80			Mev.cm^2/mg
Single Event Transient Immune LET Threshold	-	80			Mev.cm^2/mg
Thermal Cycles	Mil-std-883 Method 1010 Condition B	500 Cycles, -55°C/+125°C			
High Temperature Storage	Mil-std-883 Method 1008 JESD22-A103-A	2000hrs, 150°C			
Shock	Mil-std-883 Method 2002 Condition B	Y1, 0.5 ms, 1500g			
Sinusoidal Vibration	Mil-std-883 Method 2007 Condition A	20Hz-2000Hz peak acceleration 20g – 3 axes			
Random Vibration	Mil-std-883 Method 2026 Condition I	Level H/J			
HAST	JEDEC STD 22TMA110	264 hrs, +110°C			
Outgazing	ESA-PSS-01-702 MA	TML&RML<1%, CVCM<0,1%			

PACKAGING



Dimensions are in mm.

TEMPERATURE RANGES

C : Commercial (0°C to 70°C)
I : Industrial (–40°C to +85°C)
S : Specific (–40°C to +95°C)

QUALITY GRADES (Screening Levels)

N : Commercial
B : Industrial
S : Space

ORDERING INFORMATION

Part Number - X X - X00X
Temperature Range
Quality Grade
Options