



Hi-Rel Latch-up Current Limiter 0.8V to 6.0V Input - up to 2 A Radiation Hardened Design

3DPM0168-1

KEY FEATURES

- ▲ Latch-up protection from 0.8V to 6V and up to 2A
- ▲ Very fast switch-off time (10µs max)
- ▲ Very low Voltage drop across the LCL
- ▲ Adjustable Run & Standby threshold currents
- ▲ Active threshold current selection via an external signal
- ▲ Automatic reconnection or through ON/OFF command
- ▲ Adjustable delay for automatic reconnection
- ▲ Protection Status signal for system supervision
- ▲ Space Qualified Technology
- ▲ Radiation Hardened design
 - TID > 50 Krad(Si)
 - SEL LET > 80Mev-cm²/mg
 - SET Immune > 80Mev-cm²/mg
- ▲ Temperature Range -55°C / +125°C
- ▲ Compact Size and Low Weight
- ▲ 20-pin SOP 20 pitch 1.27mm
- ▲ ITAR Free Product - Worldwide delivery guaranty
- ▲ Size: 15 x 15 x 12 mm
- ▲ Mass: 6.5 g

PRODUCT OVERVIEW

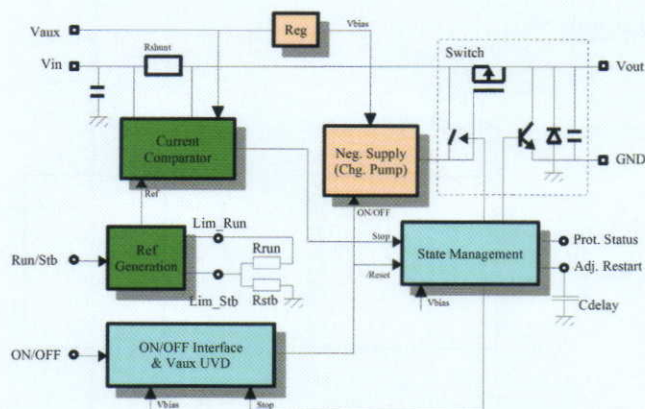
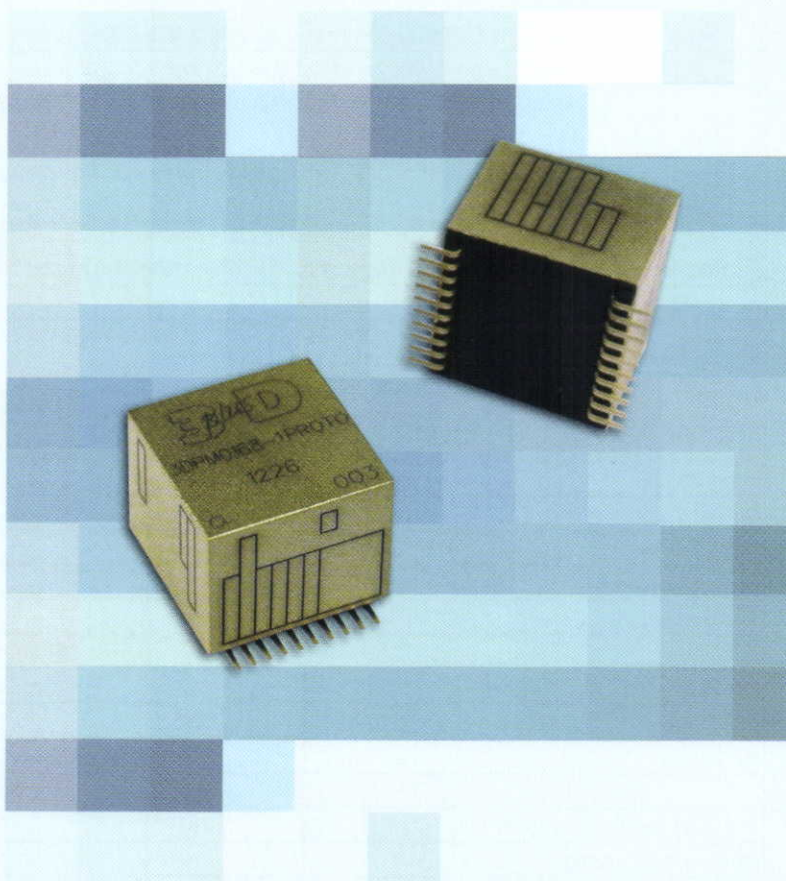
Advanced high performance semiconductor devices can be sensitive to Single Event Latch-Up (SEL) effect when exposed under radiation in the space environment. Even if SEL is a very rare event, it can lead to a self destruction of the device and shall be mitigated to ensure the relevant reliability and life time of the application. Therefore, a safe design for a mission critical space application shall include a protection device called the Latch-Up current Limiter (LCL).

The 3DPM0168-1 LCL Module monitors the power supply line of the radiation sensitive device and switches it off instantaneously in case of "radiation induced SEL" or any other overvoltage in order to protect the device from over current and overheating.

The LCL Module offers two adjustable threshold currents: to control device Run & Standby currents and two operating modes: Automatic reconnection with adjustable delay or reconnection through ON/OFF command.

Featuring specific radiation effect mitigation techniques and utilizing space design de-rating rules, the 3DPM0168-1 Latch-up Current Limiter is an ITAR Free product and features a SEL/SEE LET_{th} of 80 Mev.cm²/mg and a TID of 50krad (Si).

The LCL is the best solution for power lines protection for advanced high performance electronics such as ASICs, FPGAs (ACTEL, XILINX,...) and Memory banks. Also, it can be used for any other device power protection for all the space applications fields: sciences and deep space missions, earth observations, navigation, launchers and manned space vehicles.



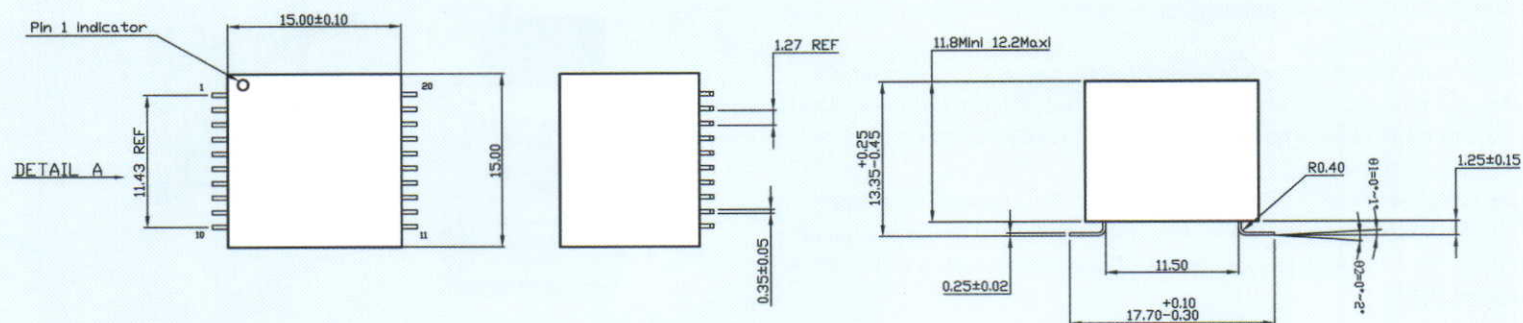
PIN DESCRIPTIONS

Pin	Description
Vin	Input voltage used to power the digital load at LCL output
Vprot	Protected voltage provided to the digital load
Vaux	Auxiliary supply used to power the internal control circuit. Minimum Vaux voltage is 3.3V. When above 5V, a serial resistance must be inserted in series with Vaux pin. connected to Vin when Vin is between 3.3V and 5V.
ON/OFF	External command to switch ON (high level) or OFF (low level) the LCL
Run/Stb	Run/Stb External command to select the RUN protection current (high level) or STANDBY protection current (low level)
Status	Digital signal which reflect the current LCL status (low = OFF, High = ON).
Lim_Run	Used to adjust the RUN protection level. Adjustment performed by connecting an external resistor between this pin and Lim_Stb pin.
Lim_Stb	Used to adjust the STANBY protection level. Adjustment performed by connecting an external resistor between this pin and ground
Rec_Delay	Used to adjust the automatic reconnection delay. Adjustment performed by connecting an external capacitor between this pin and ground. Use a short to inhibit the automatic reconnection mode.
GND	Ground pin

SPECIFICATION

Parameter	Symbol	Min	Typ	Max	Unit
Voltage & Current					
Input Voltage	Vin	0.8		6	V
Output Current	Iout			2000	mA
Voltage drop	Vdrop			80	mV
Capacitive load	Cload			2	μF
Auxiliary Supply	Vaux	3.2		6	V
Commands					
On Level	Von	1.5	2.2	3.5	V
OFF Level	Voff	0.6	1.5	2	V
Hysteresis	Hys	0.5	0.7	1.8	V
Protections					
Stand-By threshold current	Ith1	100			mA
On threshold current	Ith2	100		2000	mA
Delay for automatic reconnection	Tdelay	0.5		300	ms
Current threshold accuracy	Iacc		15		%
Timing delay accuracy	Tacc		35		%
Switch ON time (dV/dT)	SwonT	30	50	100	mV/μs
Switch OFF time	SwoffT			10	μs

PACKAGING



Dimensions are in mm.

TEMPERATURE RANGES

C : Commercial (0°C to 70°C)
I : Industrial (-40°C to +85°C)
M : Military (-55°C to +125°C)

QUALITY GRADES (Screening Levels)

N : Commercial
B : Industrial
S : Space

ORDERING INFORMATION

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



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