

12V Micro TLynx™: Non-Isolated DC-DC Power Modules

4.5Vdc –14Vdc input; 0.69Vdc to 5.5Vdc output; 12A Output Current

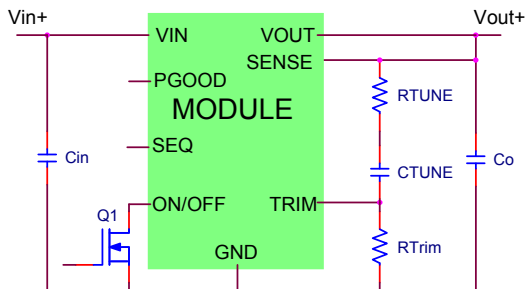
TUNABLE
LOOP™
A LINEAGE POWER TRADEMARK

DOSA
Distributed-power
Open Standards Alliance



RoHS Compliant EZ-SEQUENCE™ Applications

- Distributed power architectures
- Intermediate bus voltage applications
- Telecommunications equipment
- Servers and storage applications
- Networking equipment
- Industrial equipment



Description

The 12V Micro TLynx™ series of power modules are non-isolated dc-dc converters that can deliver up to 12A of output current. These modules operate over a wide range of input voltage ($V_{IN} = 4.5\text{Vdc}-14\text{Vdc}$) and provide a precisely regulated output voltage from 0.69Vdc to 5.5Vdc, programmable via an external resistor. The new Ruggedized version (-D) is capable of operation up to 105°C and can withstand high levels of shock and vibration. Features include frequency synchronization, remote On/Off, adjustable output voltage, over current and overtemperature protection, power good and output voltage sequencing. A new feature, the Tunable Loop™, allows the user to optimize the dynamic response of the converter to match the load with reduced amount of output capacitance leading to savings on cost and PWB area.

* UL is a registered trademark of Underwriters Laboratories, Inc.

† CSA is a registered trademark of Canadian Standards Association.

‡ VDE is a trademark of Verband Deutscher Elektrotechniker e.V.

** ISO is a registered trademark of the International Organization of Standards

Features

- Compliant to RoHS EU Directive 2002/95/EC (Z versions)
- Compatible in a Pb-free or SnPb reflow environment (Z versions)
- Wide Input voltage range (4.5Vdc-14Vdc)
- Output voltage programmable from 0.69Vdc to 5.5 Vdc via external resistor
- Tunable Loop™ to optimize dynamic output voltage response
- Flexible output voltage sequencing EZ-SEQUENCE (APTS versions)
- Fixed switching frequency and ability to synchronize with external clock
- Output overcurrent protection (non-latching)
- Overtemperature protection
- Remote On/Off
- Remote Sense
- Power Good signal
- Fixed switching frequency
- Ability to sink and source current
- Small size: 20.3 mm x 11.4 mm x 8.5 mm (0.8 in x 0.45 in x 0.334 in)
- Wide operating temperature range [-40°C to 105°C(Ruggedized: -D), 85°C(Regular)]
- Ruggedized (-D) version able to withstand high levels of shock and vibration
- UL* 60950-1 Recognized, CSA† C22.2 No. 60950-1-03 Certified, and VDE‡ 0805:2001-12 (EN60950-1) Licensed
- ISO** 9001 and ISO 14001 certified manufacturing facilities

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

Parameter	Device	Symbol	Min	Max	Unit
Input Voltage Continuous	All	V_{IN}	-0.3	15	Vdc
Voltage on SEQ terminal	All	V_{SEQ}	-0.3	V_{IN}	Vdc
Voltage on SYNC terminal	All	V_{SYNC}	-0.3	12	Vdc
Voltage on PG terminal	All	V_{PG}	-0.3	6	Vdc
Operating Ambient Temperature (see Thermal Considerations section)	All -D version	T_A T_A	-40 -40	85 105	°C °C
Storage Temperature	All	T_{stg}	-55	125	°C

Electrical Specifications

Unless otherwise indicated, specifications apply over all operating input voltage, resistive load, and temperature conditions.

Parameter	Device	Symbol	Min	Typ	Max	Unit
Operating Input Voltage	All	V_{IN}	4.5	—	14.0	Vdc
Maximum Input Current ($V_{IN}=4.5V$ to $14V$, $I_O=I_{O,max}$)	All	$I_{IN,max}$			11.5	Adc
Input No Load Current ($V_{IN} = 10.0Vdc$, $I_O = 0$, module enabled) ($V_{IN} = 12.0Vdc$, $I_O = 0$, module enabled)	$V_{O,set} = 0.69 Vdc$ $V_{O,set} = 3.3Vdc$	$I_{IN,No load}$ $I_{IN,No load}$		26 60		mA mA
Input Stand-by Current ($V_{IN} = 12.0Vdc$, module disabled)	All	$I_{IN,stand-by}$		1.2		mA
Inrush Transient	All	I^2t			1	A ² s
Input Reflected Ripple Current, peak-to-peak (5Hz to 20MHz, 1μH source impedance; $V_{IN}=0$ to 14V, $I_O=I_{O,max}$; See Test Configurations)	All			70		mAp-p
Input Ripple Rejection (120Hz)	All			45		dB

CAUTION: This power module is not internally fused. An input line fuse must always be used.

This power module can be used in a wide variety of applications, ranging from simple standalone operation to an integrated part of sophisticated power architecture. To preserve maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse. The safety agencies require a fast-acting fuse with a maximum rating of 15A (see Safety Considerations section). Based on the information provided in this data sheet on inrush energy and maximum dc input current, the same type of fuse with a lower rating can be used. Refer to the fuse manufacturer's data sheet for further information.