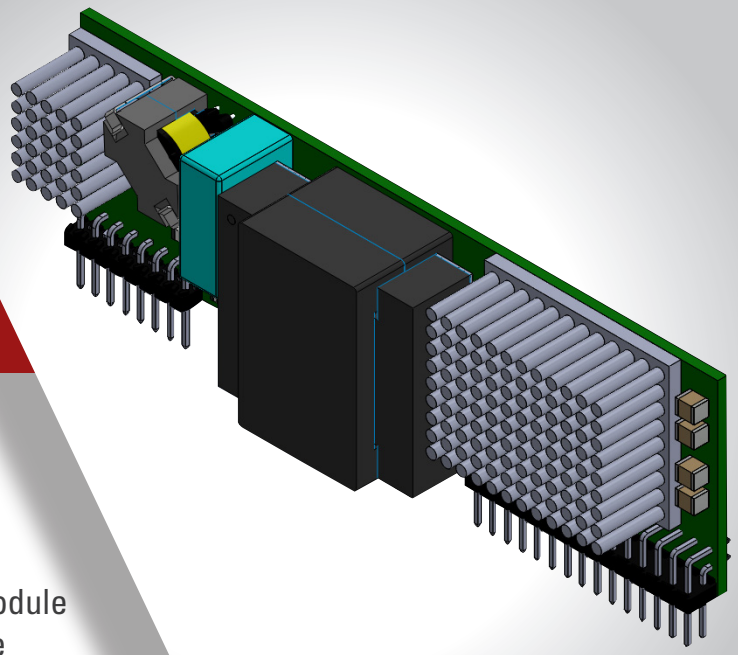
TELCODIUM
POWER SUPPLY TECHNOLOGY

LLC MODULE

TD-LLC-x00-xxV

100 to 500W LLC Power Modules



FEATURES

- High-Efficiency
- Low profile, small size
- Low power dissipation
- High efficiency switching technology
- New planar transformer technology
- Vertical or horizontal mount

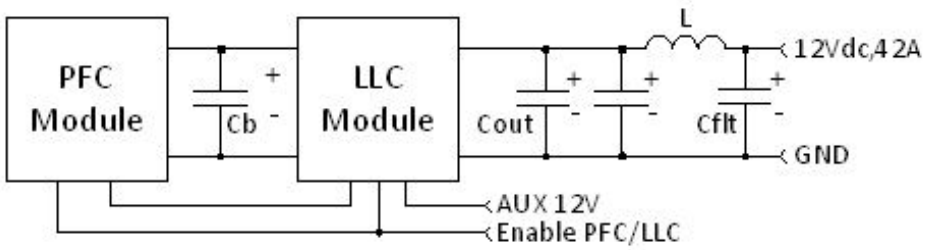
PRODUCT OVERVIEW

The Telcodium LLC module uses high efficiency switching technology for a low loss and low emi integrated in a small formfactor module. The LLC module uses advanced planar transformer design to reduce conduction loss yielding greater efficiency from low to high output loads. Telcodium's LLC HEM is best used in conjunction with other Telcodium High-Efficiency Modules

APPLICATIONS

- Power supply design high efficiency LLC converter
- High efficiency equipment design
- Convection cooling equipment

Figure 1.



SPECIFICATIONS

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Absolute maximum rating					
Input Voltage, Continuous	-	-	475	Vdc	
Isolation Voltage	-	3500	-	Vdc	
Operating temperature	-40	-	85	C	Note1
Storage temperature	-55	-	125	C	
Humidity (non condensing)					
Operating	20	-	95	%	RH
Non-Operating	10	-	95	%	RH
Input characteristics					
Operating input voltage	-	390	425	Vdc	Note2
Input voltage rise					
Input under voltage turn ON	-	312	-	Vdc	
Input under voltage turn OFF	-	284	-	Vdc	
Brownout	284	312	-	Vdc	
Input over voltage shutdown	-	-		Vdc	
Aux input voltage	11.00	12.00	17.00	Vdc	
Aux input current	tbd	-	tbd	mA	
Isolation characteristics					
Isolation voltage (dielectric strength)	3500	-	-	Vdc	
Air-core	3500	-	-	Vdc	
Temperature Limits					
Semiconductor Junction	-	-	150	C	
PCB	-	-	150	C	
Transformer	-		170	C	
Thermal Protection Active	-	140		C	
Thermal Protection Removed	-	110	-	C	

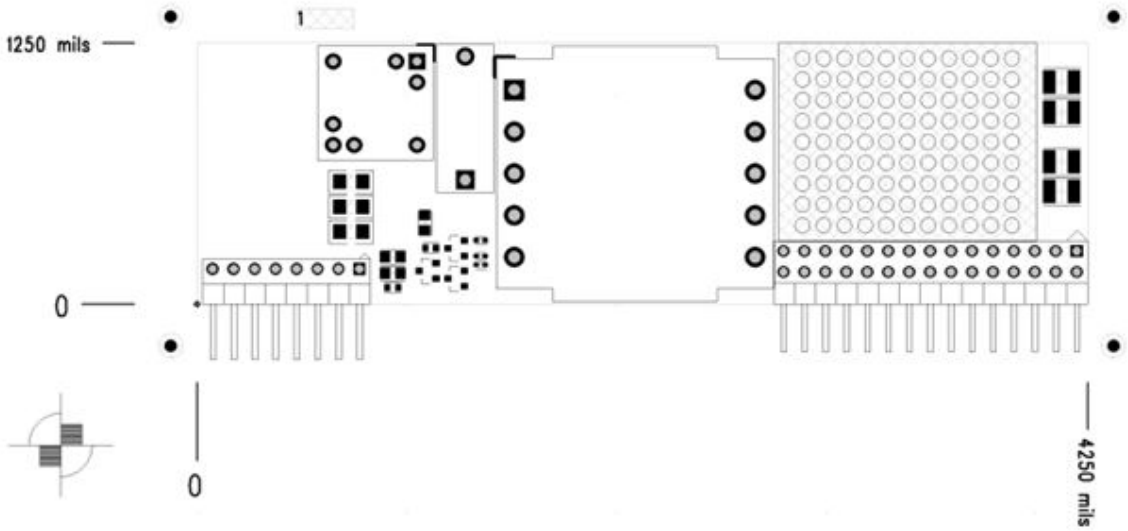
Feature					
Switching frequency	175	200	225	kHz	
ON/OFF State					
On state	-	0	-	Vdc	
OFF State	-	3.3	-	Vdc	
Temperature protection (shutdown)	-	125	-	C	
Input characteristics					
Maximum input current		1.3	-	A	See Graphic
Ouput characteristics					
Output voltage set point	11.8/46	12/48	12.2/50	Vdc	
Output voltage regulation	-	(+/-)2	(+/-)5	%	
Output voltage over temperature	-		-	mV	See Graphic
Output voltage ripple and noise	-		-	mV	See Graphic
Peak to Peak	-		-	mV	See Graphic
RMS	-		-	mV	
Output current range	-		-	A	
Output dc current limit	-			A	
output voltage limit shutdown	8	-	13.2	Vdc	
Output capacitor max	-		10000	uf	
Auxiliary power required	11.3	12	17	Vdc	
Efficiency					
On state		96		%	See Graphic
OFF State		96		%	See Graphic
Reliability Characteristics					
Calculated MTBF (MIL-217) MIL-HDBK-217F		10		10^6 HRS	Tb=70C
Standards Compliance					
UL 60950-1/R2011-12 CAN/CSA-C22.2 No. 60950-1/A1:2011 EN60950-1/A12:2011 CE marking					
Mechanical					
Size (WxHxL)	4.25x1.25x0.775			inch	
	108x31.75x20			mm	
Weight	tbd			g	
Note1	With temps rated capacitor -40 to 95C at 450V				
Note2	Base on Hold Tme				

Table 1

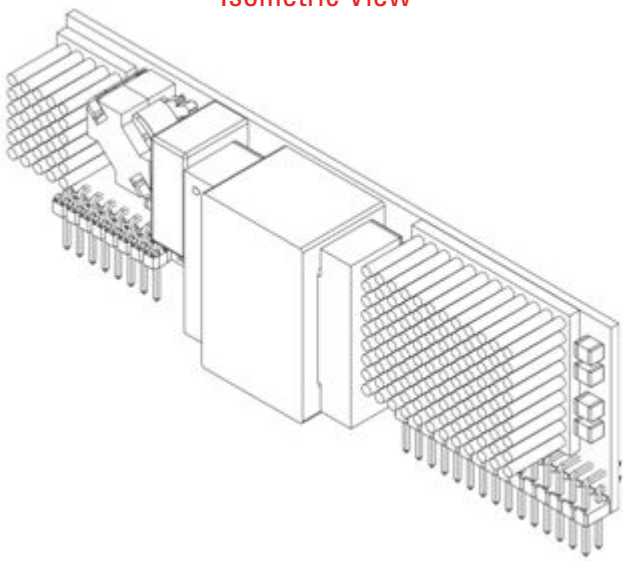
OUTLINE DRAWING

Figure 2.

Top View

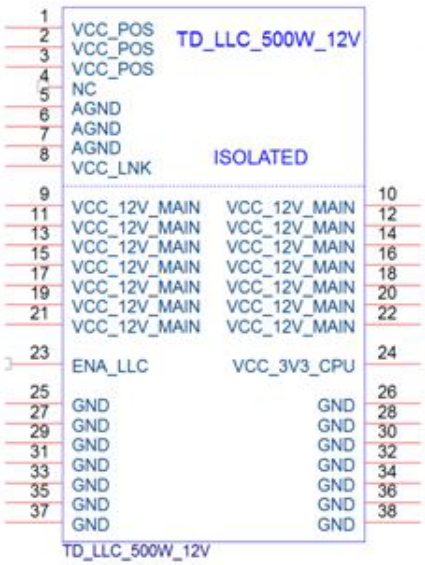


Isometric View



✓ See design guide PCB layout for proper clearance and trace width routing
✓ Connector, 0.1" (2.54mm) single and dual row

Symbol



Top View Pinout

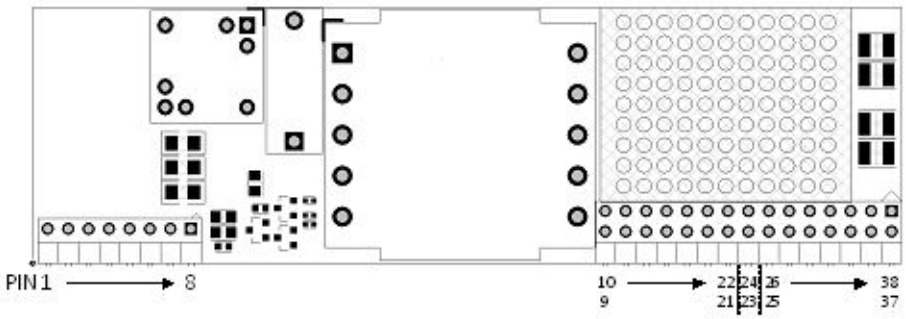


Figure 3.

ELECTRICAL CONNECTIONS

Pinout description

- Pin1,2,3: DC input 390V (from PFC)
- Pin4: NC
- Pin5,6,7: Ground none-isolated section
- Pin8: Auxiliary 12Vdc power source (100mA max), see design guide
- Pin9-22: Vout 12Vdc, isolated 3500V from primary side
- Pin23: Enable LLC module active low
- P24: VCC 3V3, input pin from TD CPU module or regulated 3.3V dc source 25mA
- P25-38: Isolated ground (Caution do not connect with AGND)

✓ See design guide for connections

RoHS COMPLIANCE

The EU led RoHS (Restriction of Hazardous Substances) Directive bans the use of Lead, Cadmium, Hexavalent Chromium, Mercury, Polybrominated Biphenyls (PBB), and Polybrominated Diphenyl Ether (PBDE) in Electrical and Electronic Equipment. Telcodium product is 6/6 RoHS compliant. For more information please refer to the Telcodium website RoHS addendum.

Part Number	Part Description
TD-LLC-200-12V	Telcodium LLC HEM 390V Input 12V-18A Output
TD-LLC-200-48V	Telcodium LLC HEM 390V Input 48V-4.5A Output
TD-LLC-300-12V	Telcodium LLC HEM 390V Input 12V-26A Output
TD-LLC-300-48V	Telcodium LLC HEM 390V Input 48V-6.5A Output
TD-LLC-400-12V	Telcodium LLC HEM 390V Input 12V-34A Output
TD-LLC-400-48V	Telcodium LLC HEM 390V Input 48V-8.5A Output
TD-LLC-500-12V	Telcodium LLC HEM 390V Input 12V-42A Output
TD-LLC-500-48V	Telcodium LLC HEM 390V Input 48V-10.5A Output

HEADQUARTERS

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