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81006

PFC BOOST CONVERTER MODULE (400Hz)

The **81006** Series PFC boost converter module contains all the necessary circuitry for complete power line compliance with aeronautics specification RTCA/DO-160C and Boeing's D6-44588. Providing line rectification, minimized input current harmonic distortion, and near unity power factor; this low profile (0.92") PCB mount device is ideal for avionics applications whose power demands are in the 50W - 100W range.

The **81006** provides a standard 200Vdc output, compatible with a broad range of off-the-shelf DC/DC converter modules. Utilizing a modular approach, system power supplies are easily configured with a few individual components required. Tedious design and development cycles normally associated with custom power solutions are no longer necessary with this approach. Reliable, compliant power supplies can be configured in weeks, not months, without the need for specialized Power Supply Engineers.



FEATURES

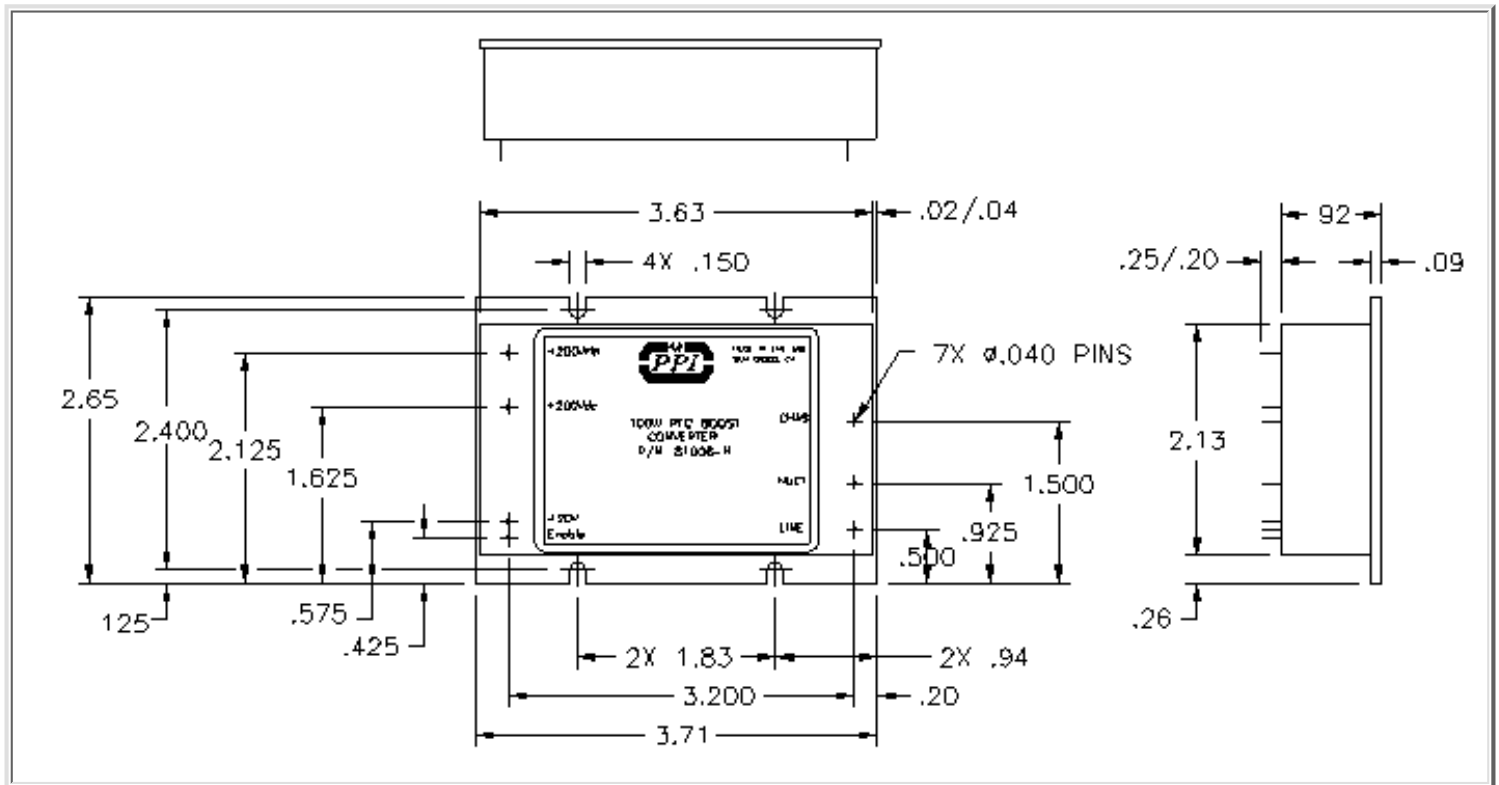
▶	EXCEEDS BOEING SPECIFICATION D6-44588 (AA) FOR POWER FACTOR AND INPUT CURRENT HARMONIC DISTORTION LEVELS @ 400 ± 10% Hz
▶	EFFICIENCY: 92% TYPICAL
▶	WIDE INPUT RANGE = 115 ± 15% V _{AC} , 50-440Hz
▶	200VDC ± 5% OUTPUT COMPATIBLE WITH BROAD RANGE OF <i>OFF-THE-SHELF</i> DC/DC CONVERTER MODULES
▶	COMPLIES WITH RTCA/D0-160C EMI & SUSCEPTIBILITY
▶	VL94V-0 FLAMMABILITY CLASSIFICATION
▶	RUGGEDIZED EPOXY ENCAPSULATED CONSTRUCTION PROVIDES IMMUNITY FROM HARSH ENVIRONMENTS
▶	INPUT TRANSIENT SUPPRESSION - 30J/2mSecs
▶	SIZE = 3.71" x 2.65" x 0.92", WEIGHT = 8oz.
▶	EXTERNAL BOOST INHIBIT COMMAND

TEMPERATURE CHARACTERISTICS

*AIRFLOW (LFM)	THERMAL IMPEDANCE (0s-a) (°C/W)	BASEPLATE TEMPERATURE RISE (°C)
0 LFM	5.60	50.4
250 LFM	2.20	19.8
500 LFM	1.70	15.3
750 LFM	0.90	8.1

* Air velocity using a digital anemometer positioned within an airflow duct 1.0" X 2.3" above top of module

MECHANICAL DIAGRAM



ELECTRICAL SPECIFICATIONS

UNLESS OTHERWISE SPECIFIED THE FOLLOWING TEST CONDITIONS APPLY: $T_a=25^{\circ}\text{C}$, CONSTANT RESISTIVE LOAD APPLIED TO OUTPUT & 220 μF , CAPACITOR ACROSS OUTPUT, $V_{\text{IN}}=115V_{\text{rms}}$, 400Hz, < 1% THD SINUSOID

INPUT CHARACTERISTICS

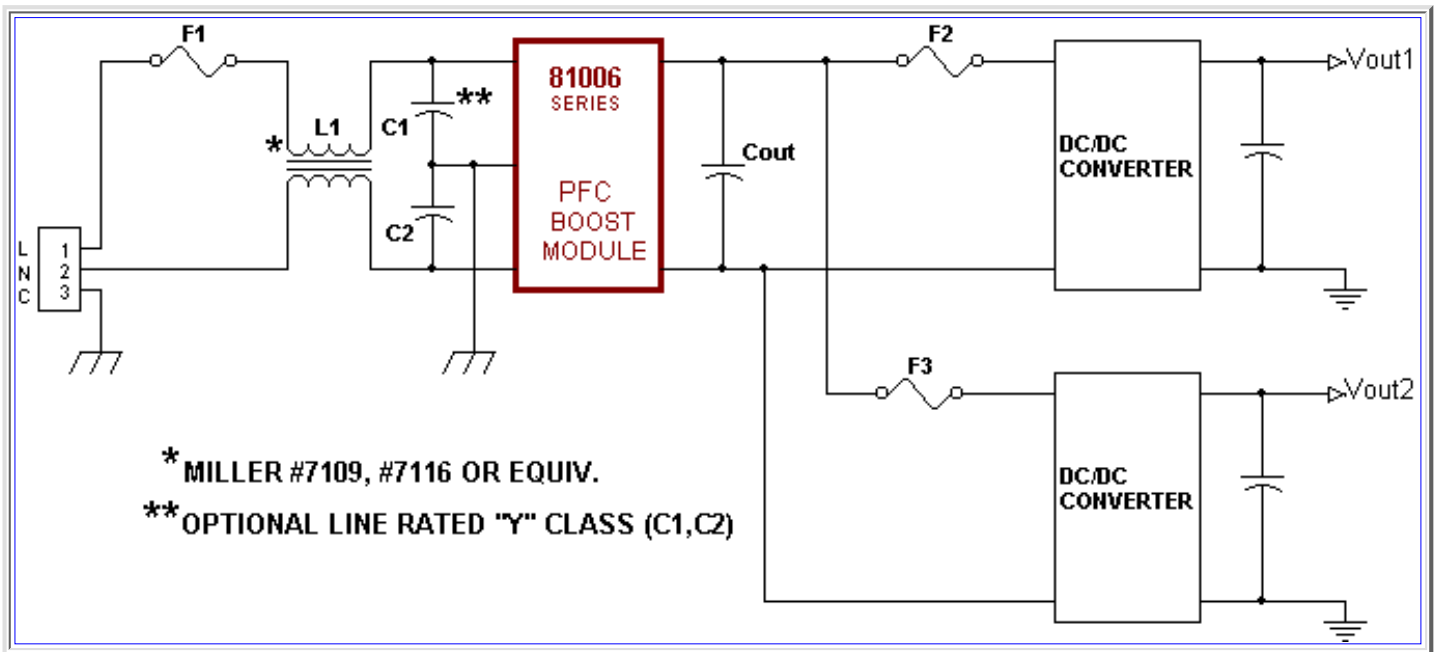
PARAMETER	81006 SERIES	REMARKS
INPUT VOLTAGE RANGE	115V _{AC} ±15%	COMPLIES WITH NORMAL/ABNORMAL INPUT VOLTAGES PER RTCA/DO-160C
INPUT FREQUENCY RANGE	400Hz ± 10%	OPERATES @ 60Hz WITH REDUCED DISTORTION PERFORMANCE
LEAKAGE CURRENT	<3mA	AC LINE/NEUTRAL TO CHASSIS, V_{in} @ 400Hz
TOTAL HARMONIC DISTORTION (INPUT CURRENT)	<3.5%	50% TO FULL LOAD n =1 THRU 62, n = ORDER OF HARMONIC
INDIVIDUAL HARMONICS - AC CLEAN	EVEN: < 1% I_f / n , (n<10) EVEN: <0.1% I_f (n ≥10) ODD: < 30% I_f / n ODD TRIPLENS: < 15% I_f / n	50% TO FULL LOAD I_f = FUNDAMENTAL CURRENT $V_{\text{thd}} \leq 1\%$
INDIVIDUAL HARMONICS - DISTORTED INPUT	EVEN: < 1% $I_f / n + V_n$ (n<10) EVEN: <0.1% $I_f + V_n$ (n ≥10) ODD: < 30% $I_f / n + V_n$ ODD TRIPLENS: < 15% $I_f / n + V_n$	50% TO FULL LOAD $V_{\text{thd}} > 5\%$ V_n = CORRESPONDING INPUT VOLTAGE HARMONIC
POWER FACTOR	0.90 min	$P_{\text{out}} > 25\text{W}$
TRANSIENT SURGE WITHSTAND	30J / 2mSec	NORMAL MODE
CREST FACTOR (CURRENT)	1.314 - 1.514	RATIO OF PEAK/RMS
CONDUCTED EMISSIONS	RTCA/DO-160C	SECTION 21, CATEGORY Z
OPERATING TEMPERATURE RANGE	-25% TO 100°C	BASEPLATE
EXTERNAL BOOST INHIBIT COMMAND	<1.0V	ENABLE WITH RESPECT TO V_{rtn}

OUTPUT CHARACTERISTICS

PARAMETER	81006 SERIES	REMARKS
RATED OUTPUT VOLTAGE	200V ± 5%	
MINIMUM OUTPUT CURRENT	0A_{dc}	
MAXIMUM BASEPLATE TEMPERATURE	100°C	
TEMPERATURE STABILITY COEF.	0.03% / °C	OUTPUT VOLTAGE
OUTPUT RIPPLE + NOISE (pk - pk)	<0.5%	20MHz BANDWIDTH, C_{out} = 220uF
LINE REGULATION	< 1%	OUTPUT DEVIATION FOR ± 20%, STEP CHANGE IN LINE VOLTAGE
HOLD-UP TIME	0mSec	REQUIRES EXTERNAL HOLD-UP CAPACITOR
MINIMUM OUTPUT CAPACITANCE	100uF / 250V	OBSERVE RIPPLE CURRENT REQUIREMENTS @ 800Hz & 100kHz FOR EXTERNAL OUTPUT CAPACITORS
ISOLATION VOLTAGE 1) INPUT TO OUTPUT 2) INPUT/OUTPUT TO CHASSIS	1) NONE 2) 1500V _{dc}	
SHORT-CIRCUIT PROTECTION	NONE	FUSE INPUT WITH 3AG FAST BLOW
OUTPUT VOLTAGE ADJUSTMENT	NONE	
EFFICIENCY	92% TYPICAL	50% TO FULL LOAD

TYPICAL APPLICATION

To obtain additional information click on schematic



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