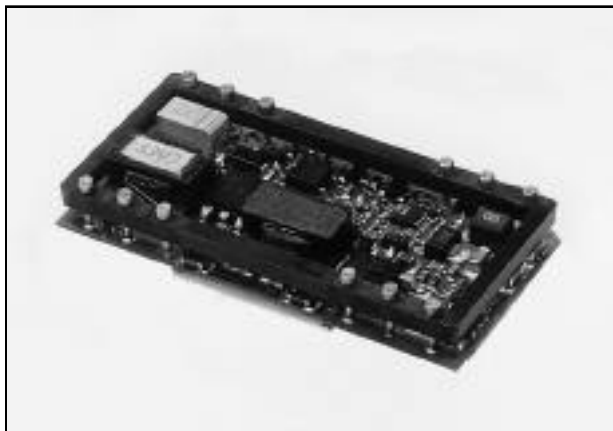


# MAC15 SERIES

## SINGLE & DUAL OUTPUTS



PATENT PENDING

### FEATURES:

- High Efficiency to 89%
- Low Profile 0.315"Ht.
- External Trim
- -40C To +105C Operation
- 1500Vdc Isolation
- Overvoltage & Short Circuit Protection
- Pick & Place Packaging
- **Surface Mount & Thru-Hole Types**
- Wide Input Range 2:1
- Remote On/Off
- Under-Voltage Lockout
- Open Frame Construction
- Integral Metal Substrate

The MAC15 series of DC-DC converters have been designed as a surface-mount & thru-hole solution for a wide range of applications where low profile and ease of assembly are needed. Utilizing the latest thermal transfer techniques the MAC15 series packs up to 15 watts of power in 1.0" x 2.0" x .315" open frame construction, with input ranges of 9-18Vdc, 18-36Vdc and 36-75Vdc, make the MAC15 series ideal for telecommunications, industrial systems and mobile battery systems. Although small in size, this series compacts 24 watt/in.cubed and operating temperatures to 105C. All models are designed to meet UL1950, CSA 950 and EN 60950.

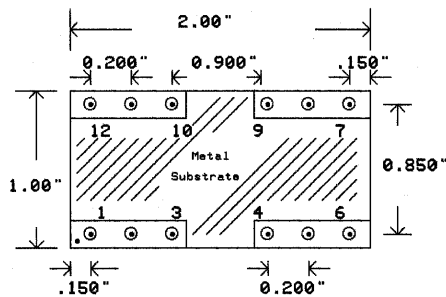
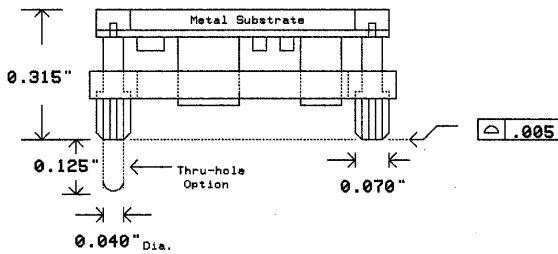
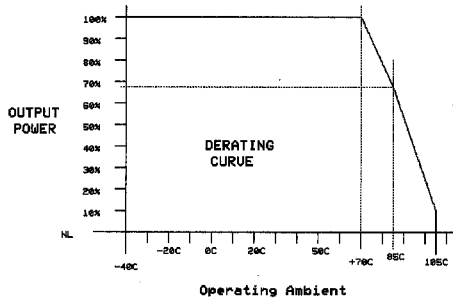
### MODEL SELECTION GUIDE:

INPUT VOLTAGE NOM.	INPUT VOLTAGE RANGE	I <sub>in</sub> @ VIN NOM. FL	I <sub>in</sub> @ VIN NOM. NL	OUTPUT VOLTAGE	OUTPUT CURRENT (FL)	PO (W)	OUTPUT OVP	TYPICAL EFFICIENCY	MODEL NUMBER NOTE (**)
12Vdc	9-18Vdc	843mA	7mA	3.30	2.4A	8	3.9V	79%	MAC15-12S3V3(**)
12Vdc	9-18Vdc	1220mA	7mA	5.00	2.4A	12	6.8V	82%	MAC15-12S05(**)
12Vdc	9-18Vdc	1205mA	7mA	7.00	1.72A	12	8.2V	83%	MAC15-12S07(**)
12Vdc	9-18Vdc	1191mA	7mA	12.00	1.00A	12	15V	84%	MAC15-12S12(**)
12Vdc	9-18Vdc	1163mA	7mA	15.00	.800A	12	18V	86%	MAC15-12S15(**)
12Vdc	9-18Vdc	1220mA	7mA	+/-5.00	1.20A	12	12 (1)	82%	MAC15-12D05(**)
12Vdc	9-18Vdc	1191mA	7mA	+/-12.00	.500A	12	30 (1)	84%	MAC15-12D12(**)
12Vdc	9-18Vdc	1163mA	7mA	+/-15.00	.400A	12	36 (1)	86%	MAC15-12D15(**)
24Vdc	18-36Vdc	521mA	7mA	3.30	3.00A	10	3.9V	80%	MAC15-24S3V3(**)
24Vdc	18-36Vdc	744mA	7mA	5.00	3.00A	15	6.8V	84%	MAC15-24S05(**)
24Vdc	18-36Vdc	735mA	7mA	7.00	2.15A	15	8.2V	85%	MAC15-24S07(**)
24Vdc	18-36Vdc	727mA	7mA	12.00	1.25A	15	15V	86%	MAC15-24S12(**)
24Vdc	18-36Vdc	710mA	7mA	15.00	1.00A	15	18V	88%	MAC15-24S15(**)
24Vdc	18-36Vdc	753mA	7mA	+/-5.00	1.50A	15	12 (1)	83%	MAC15-24D05(**)
24Vdc	18-36Vdc	727mA	7mA	+/-12.00	.625A	15	30 (1)	86%	MAC15-24D12(**)
24Vdc	18-36Vdc	710mA	7mA	+/-15.00	.500A	15	36 (1)	88%	MAC15-24D15(**)
48Vdc	36-75Vdc	257mA	7mA	3.30	3.00A	10	3.9V	81%	MAC15-48S3V3(**)
48Vdc	36-75Vdc	367mA	7mA	5.00	3.00A	15	6.8V	85%	MAC15-48S05(**)
48Vdc	36-75Vdc	363mA	7mA	7.00	2.15A	15	8.2V	86%	MAC15-48S07(**)
48Vdc	36-75Vdc	359mA	7mA	12.00	1.25A	15	15V	87%	MAC15-48S12(**)
48Vdc	36-75Vdc	351mA	7mA	15.00	1.00A	15	18V	89%	MAC15-48S15(**)
48Vdc	36-75Vdc	372mA	7mA	+/-5.00	1.50A	15	12 (1)	84%	MAC15-48D05(**)
48Vdc	36-75Vdc	359mA	7mA	+/-12.00	.625A	15	30 (1)	87%	MAC15-48D12(**)
48Vdc	36-75Vdc	351mA	7mA	+/-15.00	.500A	15	36 (1)	89%	MAC15-48D15(**)

Note (\*\*): Insert suffix; **SM** for Surface-mount type or **TH** for Thru-hole Type mounting • **MODIFICATIONS AND CUSTOMS AVAILABLE**

# 15 WATT DC-DC

**SPECIFICATIONS:** All Specifications Are Typical @ Nominal Input, Full Load & 25C Unless Otherwise Stated and are Subject to Change without Notice



## PIN CONNECTIONS

PIN NUMBER	SINGLE OUTPUTS	DUAL OUTPUTS
1	-Vin	-Vin
2	-Vin	-Vin
3	-Vin	-Vin
4	N/C	N/C
5	+Vo	Com.
6	-Vo	+Vo
7	-Vo	-Vo
8	+Vo	Com.
9	Trim	Trim
10	ON/OFF	ON/OFF
11	-Vin	-Vin
12	+Vin	+Vin

## INPUT

Input Voltage Range	2:1
Note (3)	9-18Vdc (12V Models) 18-36Vdc (24V Models) 36-75Vdc (48V Models)
Input filter	Pi Type
Under Voltage Lockout	8.5V (12V Models) 16.5V (24V Models) 32V (48V Models)
Remote	:ON :OFF
Conducted Noise	+5V or open, Ref. (-)Vin +0.7V, Ref (-)Vin EN55022, Level A (Note 5)

## OUTPUT

Output Power	15 W Continuous(Max)
Output Voltage/current	See Model Table
Output Setting Accuracy	
Singles	+/- 1% typ., +/- 1.5%max.
Duals	+/- 1% typ., +/- 2.0%max.
Load Regulation	
Singles (FL.-NL.)	+/- 0.5% Note (4),(6)
Duals (FL.-10%L)	+/- 0.5% Balanced +/- 2% Unbalanced
Line Regulation	+/- 0.2%
Total Error Band	
Singles	+/- 3%, Line/Load&Temp.
Duals	+/- 5%
Ripple & Noise (20Mhz BW)	60mV typ., 100mV Max.
Transient Response (FL-1/2L)	2 % Deviation, 200uS
Temperature Coefficient	+/- .01%/c
Short circuit Protection	Indefinite, Modulated, Automatic Recovery

## GENERAL

Efficiency	See Model Table
Isolation Voltage	1500Vdc ( 1Min)
Isolation Resistance	100M
Switching Frequency	400Khz
MTBF	1.0M hrs.MIL-HDBK-217F Ground Benign @ 25C

## ENVIRONMENTAL

Operating Temperature Range	-40C To +105C (See Derating Curve) -40C To +70C@ FL
Storage Temperature Range	-55C To +125C
Maximum Case Temperature	110 C
Humidity	5% To 95% RH, Non-condensing
Cooling	Natural Convection
Processing (Note 2)	(230C peak, 20 sec.)

## MECHANICAL

Size	1.00" X 2.00" X 0.315"
Weight	12.0G
Mounting	SMD & Through Hole Types
Case/Material	Open-Frame, 94V-0 FR-4 P.C.B., with Bonded Aluminum Substrate

## NOTES:

- 1) On dual output models O.V.P. protection is across +Vo to -Vo
- 2) Consult factory for recommended reflow profile.
- 3) Typical start-up for 12Vin models is 9V. Maximum startup is 9.5V, with full operation down to 9.0V
- 4) Operation is allowed to No-Load on single outputs, however operation below 10% load may cause ripple & noise to exceed spec.
- 5) External Capacitor required.
- 6) Dual outputs are tightly regulated across +Vo to -Vo, unbalanced loads rely on cross coupling of output channels