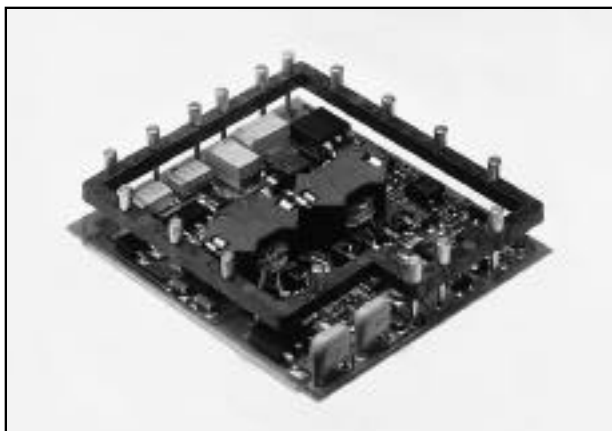


# MAC30 SERIES

## SINGLE, DUAL & TRIPLE OUTPUTS



PATENT PENDING

### FEATURES:

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

The MAC30 series of DC-DC converters have been designed as a surface-mount & thru-hole solution for a wide range of applications where light weight and ease of assembly are needed. Utilizing the latest thermal transfer techniques the MAC30 series packs up to 30 watts of power in 1.75" x 2.0" x .500" open frame construction and operating temperatures of -40c to + 105C. All models are designed to meet UL1950, CSA 950 and EN 60950.

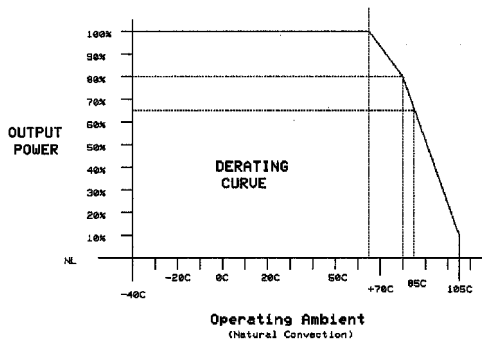
### MODEL SELECTION GUIDE:

INPUT VOLTAGE NOM. RANGE	I <sub>in</sub> @ VIN NOM. FL NL	OUTPUT V1 & V2/V3	OUTPUT CURRENT(FL)	PO (W)	OUTPUT OVP	TYPICAL EFFICIENCY	MODELNUMBER NOTE (**)		
12Vdc	9-18Vdc	1.299	7mA	2.5	4.8A	12	3.9V	77%	MAC30-12S2V5(**)
12Vdc	9-18Vdc	1.667	7mA	3.30	4.8A	16	3.9V	80%	MAC30-12S3V3
12Vdc	9-18Vdc	2.410	7mA	5.00	4.8A	24	6.8V	83%	MAC30-12S05
12Vdc	9-18Vdc	2.353	7mA	12.00	2.0A	24	15V	85%	MAC30-12S12
12Vdc	9-18Vdc	2.299	7mA	15.00	2.0A	24	18V	87%	MAC30-12S15
12Vdc	9-18Vdc	2.033	7mA	3.3 & +/-12.00	3.6 & +/-33A	20	3.9 (Vo1)	82%	MAC30-12T3D12
12Vdc	9-18Vdc	2.008	7mA	3.3 & +/-15.00	3.6 & +/-26A	20	3.9 (Vo1)	83%	MAC30-12T3D15
12Vdc	9-18Vdc	2.008	7mA	3.3 & +/-24.00	3.6 & +/-17A	20	3.9 (Vo1)	83%	MAC30-12T3D24
12Vdc	9-18Vdc	2.381	7mA	5.0 & +/-12.00	3.2 & +/-33A	24	6.8 (Vo1)	84%	MAC30-12T5D12
12Vdc	9-18Vdc	2.299	7mA	5.0 & +/-15.00	3.2 & +/-26A	24	6.8 (Vo1)	87%	MAC30-12T5D15
12Vdc	9-18Vdc	2.299	7mA	5.0 & +/-24.00	3.2 & +/-17A	24	6.8 (Vo1)	87%	MAC30-12T5D24
24Vdc	18-36Vdc	0.801	7mA	2.50	6.0A	15	3.9V	78%	MAC30-24S2V5
24Vdc	18-36Vdc	1.029	7mA	3.30	6.0A	20	3.9V	81%	MAC30-24S3V3
24Vdc	18-36Vdc	1.488	7mA	5.00	6.0A	30	6.8V	84%	MAC30-24S05
24Vdc	18-36Vdc	1.453	7mA	12.00	2.5A	30	15V	86%	MAC30-24S12
24Vdc	18-36Vdc	1.420	7mA	15.00	2.0A	30	18V	88%	MAC30-24S15
24Vdc	18-36Vdc	1.255	7mA	3.3 & +/-12.00	4.5 & +/-42	25	3.9 (Vo1)	83%	MAC30-24T3D12
24Vdc	18-36Vdc	1.240	7mA	3.3 & +/-15.00	4.5 & +/-33A	25	3.9 (Vo1)	84%	MAC30-24T3D15
24Vdc	18-36Vdc	1.240	7mA	3.3 & +/-24.00	4.5 & +/-21A	25	3.9 (Vo1)	84%	MAC30-24T3D24
24Vdc	18-36Vdc	1.471	7mA	5.0 & +/-12.00	4.0 & +/-42A	30	6.8 (Vo1)	85%	MAC30-24T5D12
24Vdc	18-36Vdc	1.420	7mA	5.0 & +/-15.00	4.0 & +/-33A	30	6.8 (Vo1)	88%	MAC30-24T5D15
24Vdc	18-36Vdc	1.420	7mA	5.0 & +/-24.00	4.0 & +/-21A	30	6.8 (Vo1)	88%	MAC30-24T5D24
48Vdc	36-75Vdc	0.396	7mA	2.50	6.0A	15	3.9V	79%	MAC30-48S2V5
48Vdc	36-75Vdc	0.508	7mA	3.30	6.0A	20	3.9V	82%	MAC30-48S3V3
48Vdc	36-75Vdc	0.735	7mA	5.00	6.0A	30	6.8V	85%	MAC30-48S05
48Vdc	36-75Vdc	0.718	7mA	12.00	2.5A	30	15V	87%	MAC30-48S12
48Vdc	36-75Vdc	0.702	7mA	15.00	2.0A	30	18V	89%	MAC30-48S15
48Vdc	36-75Vdc	0.620	7mA	3.3 & +/-12.00	4.5 & +/-42	25	3.9 (Vo1)	84%	MAC30-48T3D12
48Vdc	36-75Vdc	0.599	7mA	3.3 & +/-15.00	4.5 & +/-33A	25	3.9 (Vo1)	87%	MAC30-48T3D15
48Vdc	36-75Vdc	0.599	7mA	3.3 & +/-24.00	4.5 & +/-21A	25	3.9 (Vo1)	87%	MAC30-48T3D24
48Vdc	36-75Vdc	0.718	7mA	5.0 & +/-12.00	4.0 & +/-42A	30	6.8 (Vo1)	87%	MAC30-48T5D1212
48Vdc	36-75Vdc	0.702	7mA	5.0 & +/-15.00	4.0 & +/-33A	30	6.8 (Vo1)	89%	MAC30-48T5D15
48Vdc	36-75Vdc	0.702	7mA	5.0 & +/-24.00	4.0 & +/-21A	30	6.8 (Vo1)	89%	MAC30-48T5D24

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

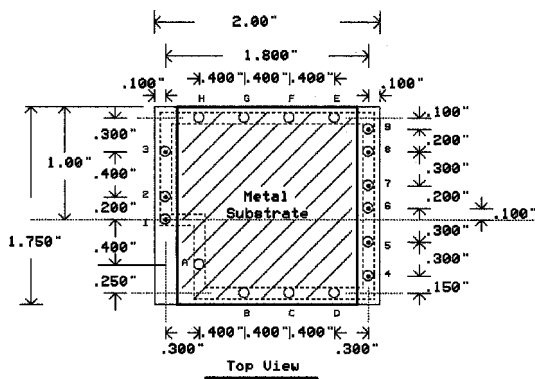
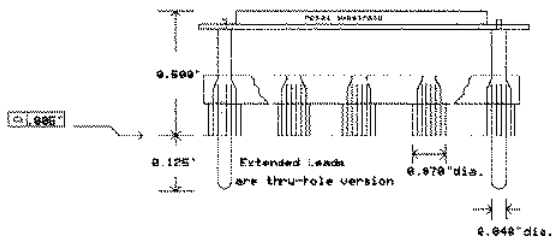
# 30 WATT DC-DC

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



Operating Ambient (Natural Convection)

"Rail Pins" are alpha  
"Input/Output" are numeric



## PIN CONNECTIONS

PIN NUMBER	SINGLE OUTPUTS	TRIPLE OUTPUTS
1	+Vin	+Vin
2	-Vin	-Vin
3	ON/OFF	ON/OFF
4	N/C	+V2
5	N/C	Com.V2/V3
6	N/C	-V3
7	+Vo	+V1
8	-Vo	Com.V1
9	Trim	Trim
A	N/C	N/C
B	N/C	N/C
C	N/C	N/C
D	N/C	N/C
E	N/C	N/C
F	N/C	N/C
G	N/C	N/C
H	N/C	N/C

Pin no.'s A - H are used for mechanical integrity and are intended for Surface Mount models only.

## 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	30 W Continuous(Max)
Output Voltage/current	See Model Table
Output Setting Accuracy	
Singles	+/- 1% typ., +/- 1.5%max.
Aux	+/- 3%
Load Variation	
Singles(FL-10%L)	+/- 0.5% Note (4),(6)
Aux (FL-20%L)	+/- 3%, Balanced, V1 (10%L-F1)
Line Regulation	+/- 0.5%(Vo1), +/- 2% Aux
Total Error Band	
Singles	+/- 3%, Line/Load&Temp.
Auxiliary outputs	+/- 10%(Io1, 2&3 @ 20%FL)
Ripple & Noise(20Mhz BW)	100mV(Vo1), 1%(Aux)
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	350Khz
MTBF	1.0M hrs.MIL-HDBK-217F Ground Benign @ 25C

## ENVIRONMENTAL

Operating Temperature Range	-40C To + 105C (See Derating Curve)
	-40C To + 65C @ 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	1.75" X 2.00" X 0.500"
Weight	24.0G
Mounting	SMD & Through Hole Types
Case/Material	Open-Frame, 94V-0 FR-4 P.C.B., with Bonded Aluminum Substrate

## NOTES:

- 1) O.V.P. protection is across Vo1.
- 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) Auxiliary output regulation rely's on cross coupling of output channels. A 10% minimum load is required on Vo1 for regulation