ECLB60W SERIES
60 WATT 4:1 INPUT
DC-DC CONVERTERS

FEATURES

* 60W Isolated Output
* Efficiency to 92%
* Low No Load Power Consumption
* 2.05''x1.2"x0.4'' Six-Sided Shield Metal Case
* 4:1 Input Range
* Regulated Outputs
* Fixed Switching Frequency
* Input Under Voltage Protection
* Over Current Protection
* Remote On/Off
* Continuous Short Circuit Protection
* No Tantalum Capacitor Inside
* Safety Meets UL60950-1, EN60950-1, and IEC60950-1
* Full Load Operation Up to 60℃ with Heat-Sink M-C655 Natural Convection



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.		CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(3)	(2)	
ECLB60W-24S33	9-36 VDC	3.3 VDC	0 mA	15000 mA	10 mA	2279 mA	90.5	90	15000μF
ECLB60W-24S05	9-36 VDC	5 VDC	0 mA	12000 mA	10 mA	2717 mA	92	92	12000μF
ECLB60W-24S12	9-36 VDC	12 VDC	0 mA	5000 mA	10 mA	2717 mA	92.5	92	5000μF
ECLB60W-24S15	9-36 VDC	15 VDC	0 mA	4000 mA	10 mA	2717 mA	92	91	4000μF
ECLB60W-24D12	9-36 VDC	±12 VDC	0 mA	±2500 mA	12 mA	2747 mA	91	91	2500μF
ECLB60W-24D15	9-36 VDC	±15 VDC	0 mA	±2000 mA	12 mA	2747 mA	92	91	2000μF
ECLB60W-48S33	18-75 VDC	3.3 VDC	0 mA	15000 mA	8 mA	1140 mA	91	90.5	15000μF
ECLB60W-48S05	18-75 VDC	5 VDC	0 mA	12000 mA	8 mA	1359 mA	92	92	12000μF
ECLB60W-48S12	18-75 VDC	12 VDC	0 mA	5000 mA	8 mA	1359 mA	92.5	92	5000μF
ECLB60W-48S15	18-75 VDC	15 VDC	0 mA	4000 mA	8 mA	1359 mA	92	91	4000μF
ECLB60W-48D12	18-75 VDC	±12 VDC	0 mA	±2500 mA	8 mA	1374 mA	91	91	2500μF
ECLB60W-48D15	18-75 VDC	±15 VDC	0 mA	±2000 mA	8 mA	1374 mA	92	91	2000μF

NOTE:

1. Nominal Input Voltage 24 or 48 VDC
2. Measured at Nominal Input Voltage
3. Measured at 12VDC for 24Vin, 24VDC for 48Vin

SPECIFICATIONS

All Specifications Typical At Nominal Line, Full Load, and 25℃ Unless Otherwise Noted

INPUT SPECIFICATIONS:

Input Voltage Range ..... 24VDC ..... 9 – 36VDC
48VDC ..... 18 – 75VDC
Input Surge Voltage (100ms max.) ..... 24VDC ..... 50VDC max.
48VDC ..... 100VDC max.
Under Voltage Lockout ..... 24Vin Power Up ..... 8.5VDC typ.
24Vin Power Down ..... 8.0VDC typ.
48Vin Power Up ..... 17VDC typ.
48Vin Power Down ..... 16VDC typ.
Input Filter ..... PI Type
Remote On/Off Control (note3)

OUTPUT SPECIFICATIONS:

Voltage Accuracy ..... ±1.5% max.
Voltage Balance (Dual) ..... ±1% max.
Transient Response: 75% - 100% Step Load Change
Error Band ..... ±5% Vout nominal, Recovery Time ..... <250us
Ripple & Noise, 20MHz BW (Measured with 1uF MLCC)
Vo=3.3 & 5V ..... 100mV pk-pk max.
Vo=12V&15V&±12V&±15V ..... 150mV pk-pk max.
Temperature Coefficient ..... ±0.02%/℃ max.
Line Regulation (note1) ..... Single/Dual ..... ±0.2% max.
Load Regulation (note2) ..... Single/Dual ..... ±0.5% max.
Cross Regulation (Dual Output) Load Cross Variation 10%/100% .. ±5% max.
Over Voltage Protection ..... Zener or TVS Clamp
Current Limit ..... 110% - 170% Nominal Output
Output Short Circuit Protection ..... Continuous (Hiccup Mode)
External Trim Adj. Range (Single Output Models Only) ..... ±10%
Start Up Time ..... 30ms typ.

GENERAL SPECIFICATIONS:

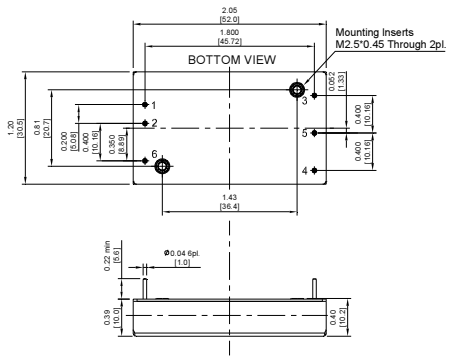
Efficiency ..... See Table
Isolation Voltage ..... Input/Output ..... 1500VDC min.
Input/Case, Output/Case ..... 1000VDC min.
Isolation Resistance ..... 10^9 ohm min.
Isolation Capacitance ..... Input/Output ..... 1500pF typ.
Input/Case, Output/Case ..... 1000pF typ.
Switching Frequency ..... Single .... 245KHz typ, Dual ... 300KHz typ.
EMI/RFI ..... Six-Sided Continuous Shield
Operating Ambient Temperature Range ..... -40℃ to +85℃
De-rating, Above 45℃ (note5) ..... Linearly to Zero Power at +105℃
Case Temperature (note5) ..... 105℃ max.
Cooling ..... Natural Convection
Storage Temperature Range ..... -55℃ to +125℃
Thermal Shutdown, Case Temp. ..... 110℃ typ.
Humidity ..... 95% RH max. Non-Condensing
MTBF .. MIL-HDBK-217F, GB, 25℃, Full Load ... Vo=3.3V 1116Khrs typ.
Vo=5V 872Khrs typ., Vo=12V 930Khrs typ., Vo=15V 1230Khrs typ.
Vo=±12V 859Khrs typ., Vo=±15V 1063Khrs typ.
Shock/Vibration ..... Meet MIL-STD-810F
Dimensions ..... 2.05x1.20x0.40 inches (52.0x30.5x10.2 mm)
Case Material ..... Aluminum with Non-Conductive Base
Weight 39g

NOTE :

1. Measured from high line to low line.
2. Measured from full load to min. load.
3. Logic compatibility ... CMOS or open collector TTL, refer to –Vin.
   Module on ..... >3.5VDC to 75VDC or open circuit
   Module off ..... 0 to < 1.2VDCt
4. Suffix "N" to the model number with negative logic remote on/off
   Module on ..... 0 to < 1.2 VDC
   Module off ..... >3.5VDC to 75VDC or open circuit
5. Maximum case temperature under any operating condition should not be exceeded 105℃.
6. Refer application note Item 6.2.

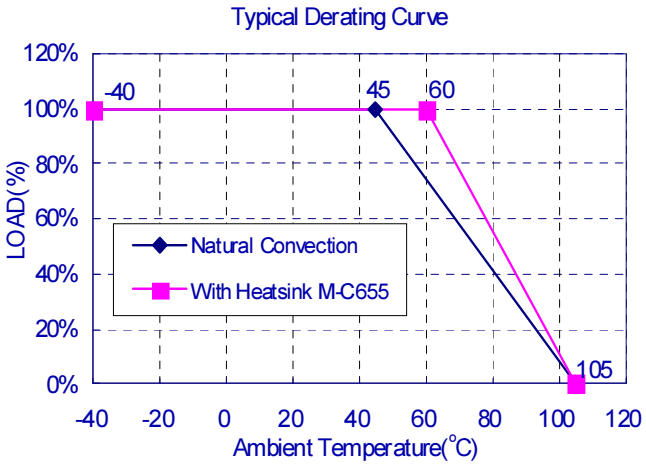
SIZE LB Dimensions:

NOTE: Pin Size is 0.04±0.004 Inch (1.0±0.1 mm)DIA
All Dimensions in Inches[mm]
Tolerance Inches:x.xx=±0.02 ,x.xxx=±0.010
Millimeters:x.x=±0.5 , x.xx=±0.25



PIN CONNECTION		
PIN	Single Output	Dual Output
1	+V Input	+V Input
2	-V Input	-V Input
3	+V Output	+V Output
4	Trim	-V Output
5	-V Output	Common
6	Remote On/Off	

Derating Curve



External Output Trimming

