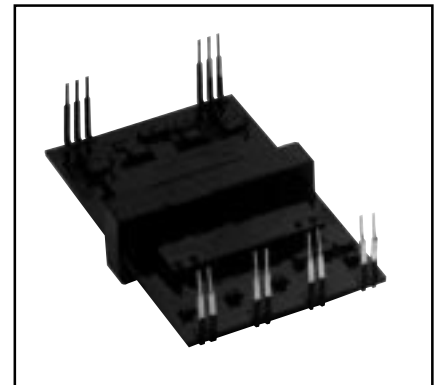
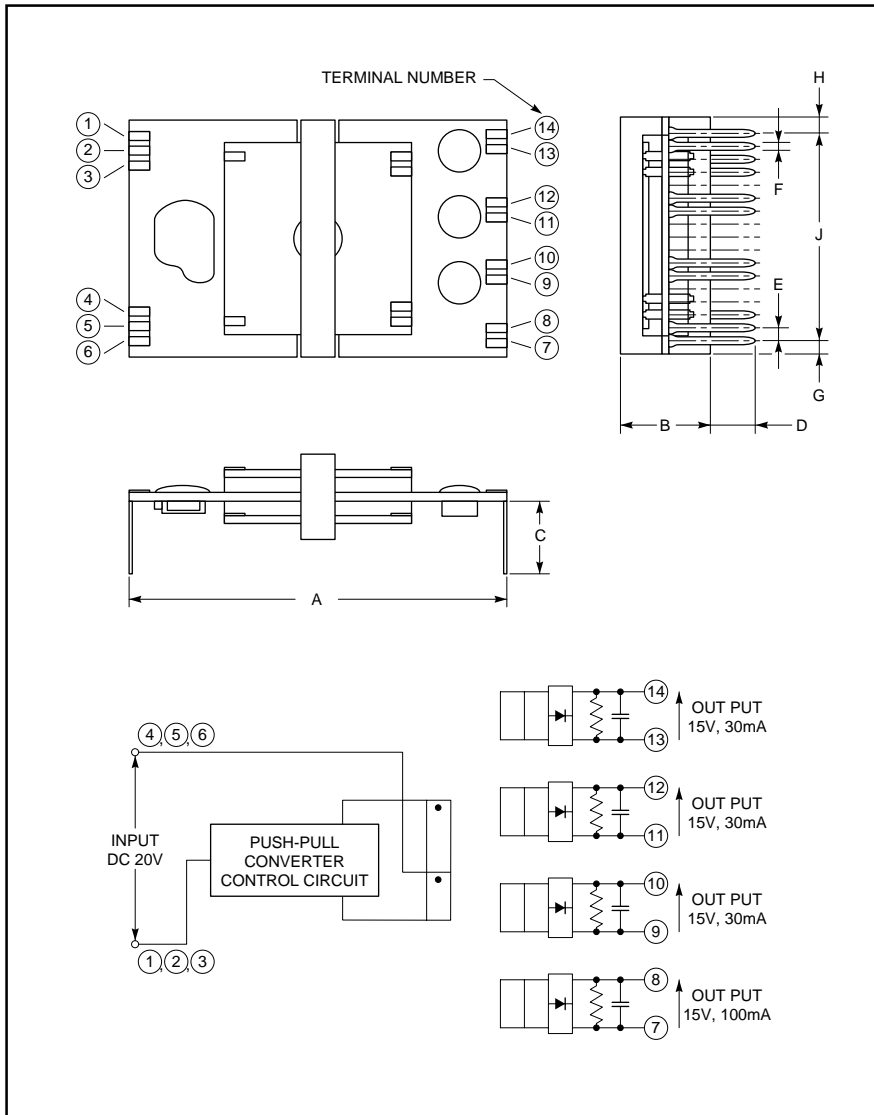


M57140-01

IPM POWER SUPPLY HYBRID IC



Description:

M57140-01 is an isolated DC-to-DC converter designed to drive IPMs (Intelligent Power Modules). With an input of DC 20V, the module supplies four 15V outputs. Isolation is provided from primary to secondary and also between the secondaries. Interwinding isolation is designed for driving the IPM.

Features:

- Output Specification: +15V x 4, Total 3W max.
- Primary-to-secondary Isolation: 2500 V_{RMS}, One Minute
- Secondary-to-secondary Isolation Voltage: 1500 V_{RMS}, One Minute
- Compact, Low Profile Design

Applications:

- IPMs for General Purpose Inverter and AC Servo
- Power Source for MOSFET Driving Circuits

Ordering Information:

M57140-01

Outline Drawing and Circuit Diagram

| Dimensions | Inches | Millimeters |
|------------|---------|-------------|
| A | 2.03 | 51.5 |
| B | 0.71 | 18.0 MAX |
| C | .39±.06 | 12.5±1.5 |
| D | .18±.06 | 4.5±1.5 |
| E | 0.07 | 1.8 |

| Dimensions | Inches | Millimeters |
|------------|--------|-------------|
| F | 0.02 | 0.55 |
| G | 0.08 | 2.1 |
| H | 0.08 | 2.1 |
| J | 1.13 | 28.8 |

M57140-01

IPM POWER SUPPLY HYBRID IC

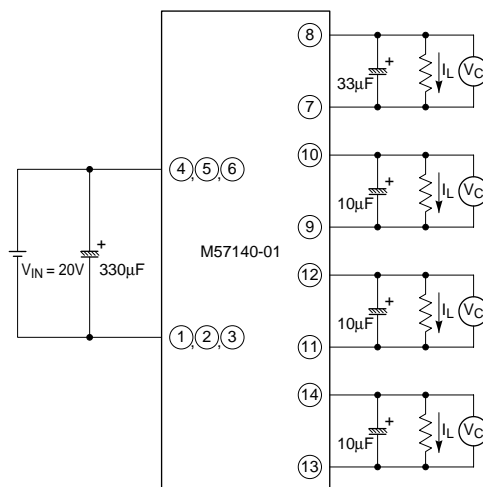
Absolute Maximum Ratings, $V_{IN} = 20V$, $T_a = 25^\circ C$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | M57140-01 | Units |
|----------------------------------|-----------|--|-----------|------------|
| Input Voltage | V_{IN} | Terminals (4), (5), (6)-(1), (2), (3) | 25 | Volts |
| Load Current | I_L | Terminals (14)-(13), (12)-(11), (10)-(9) | 30 | mA |
| | | Terminals (8)-(7) | 100 | mA |
| Operating Temperature | T_{opr} | There Should be | -10 ~ +75 | $^\circ C$ |
| Storage Temperature | T_{stg} | No Condensation | -20 ~ +85 | $^\circ C$ |
| Internal Power Dissipation | P_d | - | 1.5 | Watts |
| Primary-to-Secondary Isolation | | 1 Minute | 2500 | V_{rms} |
| Secondary-to-Secondary Isolation | | 1 Minute | 1500 | V_{rms} |

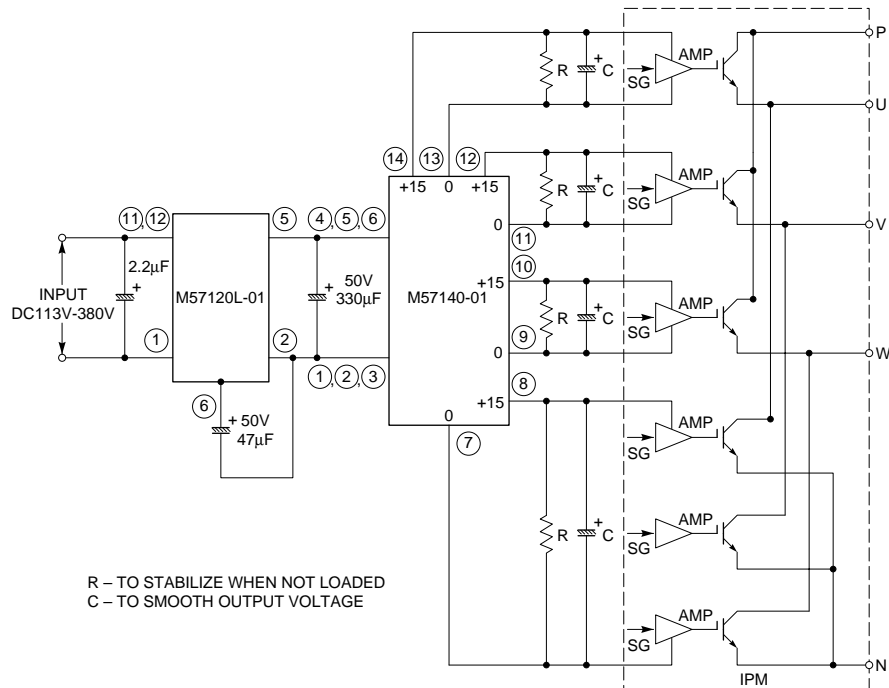
Electrical Characteristics, $V_{IN} = 20V$, $T_a = 25^\circ C$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|----------------------|----------|--|------|------|------|-------|
| Input Source Voltage | V_{IN} | Direct Current | 18 | 20 | 22 | Volts |
| Output Voltage | V_O | Between Pins (10)-(9), (12)-(11), (14)-(13) $I_L = 30mA$ | 13.5 | 15.0 | 16.5 | Volts |
| | | Between Pins (8)-(7), $I_L = 100mA$ | 13.5 | 15.0 | 16.5 | Volts |
| Peak Load Current | I_{LP} | Between Pins (10)-(9), (12)-(11), (14)-(13) | - | 33 | - | mA |
| | | Between Pins (8)-(7) | - | 110 | - | mA |
| Load Regulation | Reg-out | Between Pins (10)-(9), (12)-(11), (14)-(13) $I_L = 0 \sim 30mA$ | - | 5 | 10 | % |
| | | Between Pins (8)-(7), $I_L = 0 \sim 100mA$ | - | 7 | 12 | % |
| Efficiency | η | Between Pins (10)-(9), (12)-(11), (14)-(13) $I_L = 30mA$ | - | 70 | - | % |
| | | Between Pins (8)-(7), $I_L = 100mA$ | - | 70 | - | % |

Application Circuit



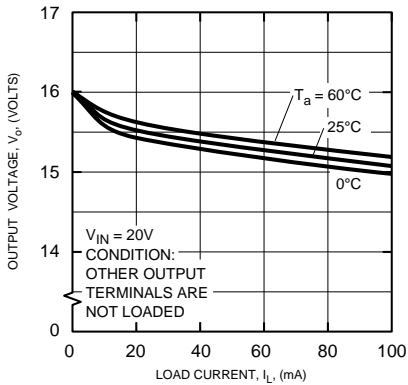
Application Circuit



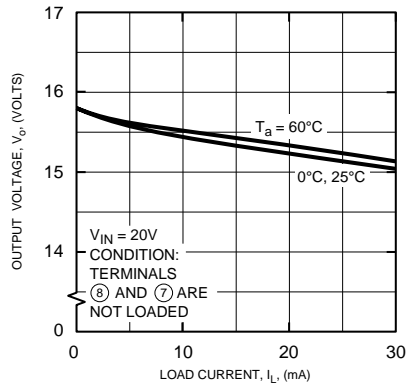
Handling Precautions:

- When M57140-01 is used under excessive load condition, output side rectifying diodes will be destroyed. Care should be exercised so as not to operate the device above the rated maximum load current.
- Coating Materials should not be applied on this device because the application of coating materials for waterproofing could cause a stress and destroy a device.

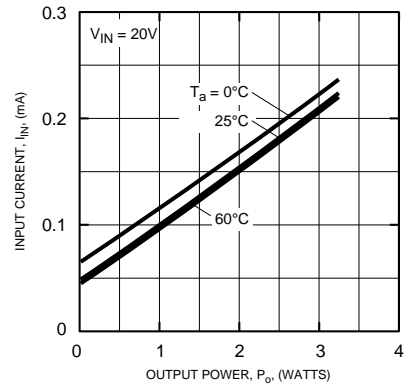
OUTPUT VOLTAGE - LOAD CURRENT CHARACTERISTICS BETWEEN TERMINALS ⑧ AND ⑦



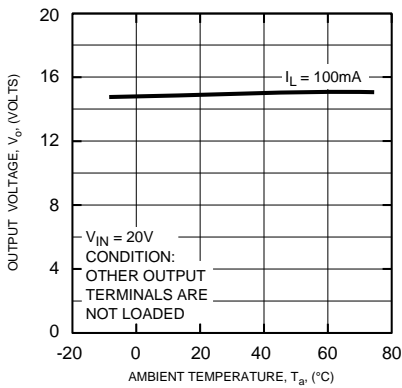
OUTPUT VOLTAGE - LOAD CURRENT CHARACTERISTICS BETWEEN TERMINALS ⑩-⑨, ⑫-⑪, ⑬-⑭



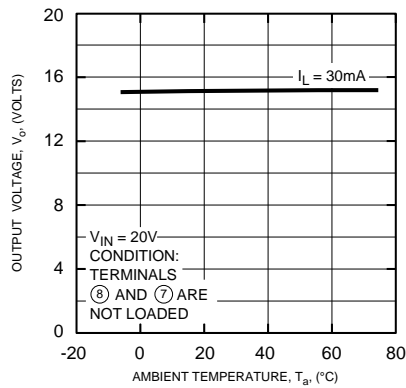
INPUT CURRENT - OUTPUT POWER



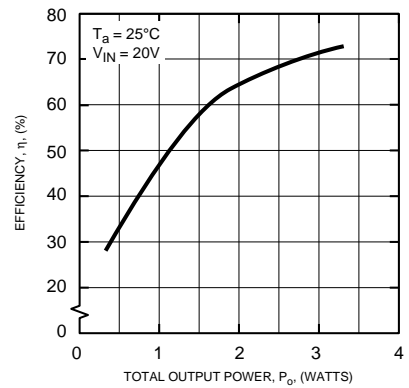
OUTPUT VOLTAGE VS AMBIENT TEMPERATURE BETWEEN TERMINALS ⑧ AND ⑦



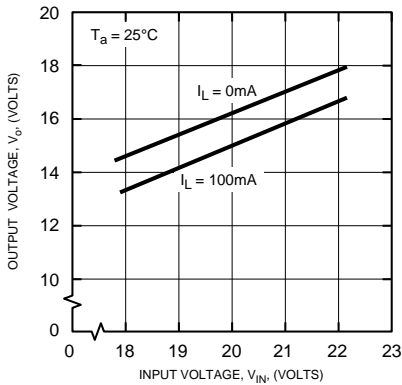
OUTPUT VOLTAGE VS AMBIENT TEMPERATURE BETWEEN TERMINALS ⑩-⑨, ⑫-⑪, ⑬-⑭



EFFICIENCY CHARACTERISTICS



OUTPUT VOLTAGE VS INPUT VOLTAGE BETWEEN TERMINALS ⑧ AND ⑦



OUTPUT VOLTAGE VS INPUT VOLTAGE BETWEEN TERMINALS ⑩-⑨, ⑫-⑪, ⑬-⑭

