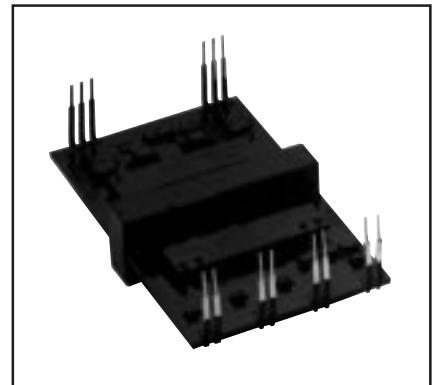
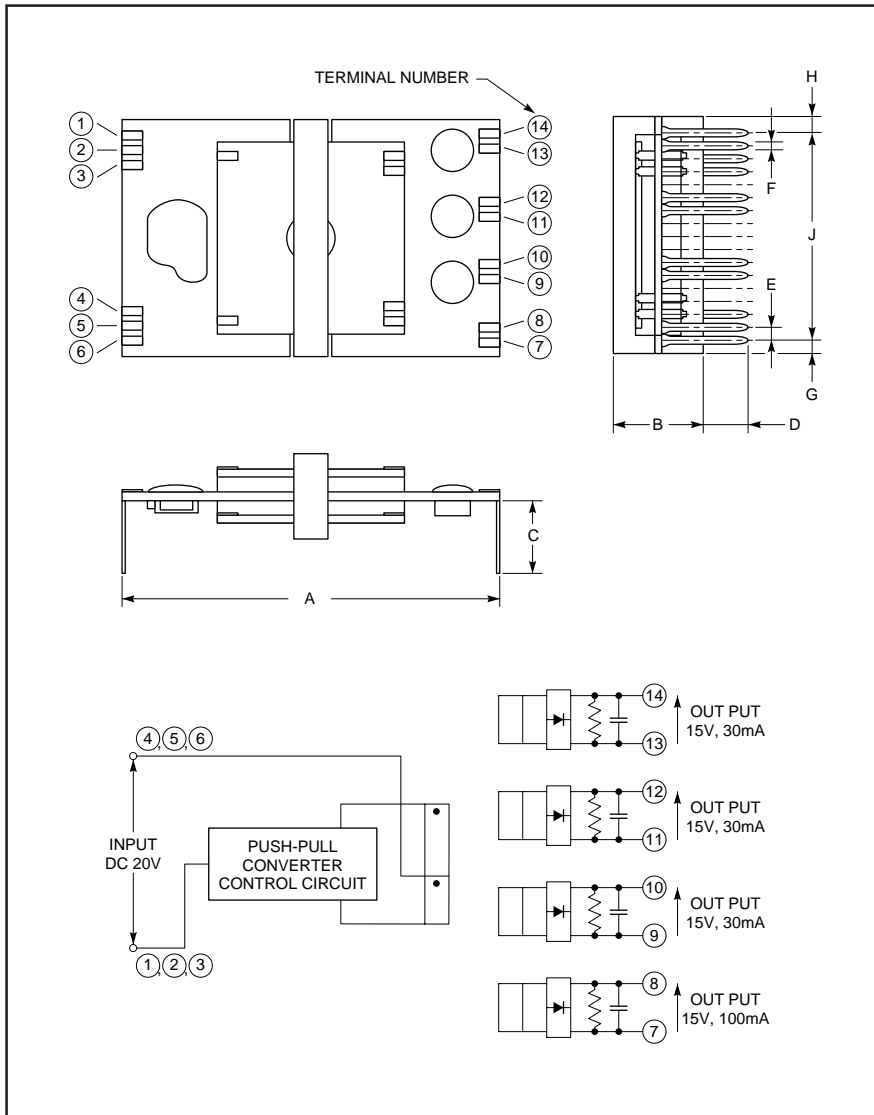


HYBRID IC
M57140-01

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

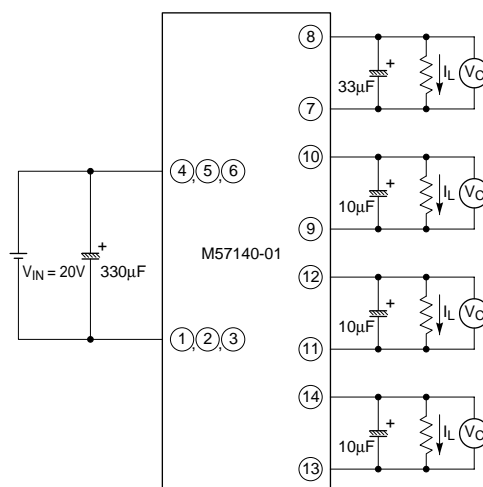
Dimensions	Inches	Millimeters
F	0.02	0.55
G	0.08	2.1
H	0.08	2.1
J	1.13	28.8

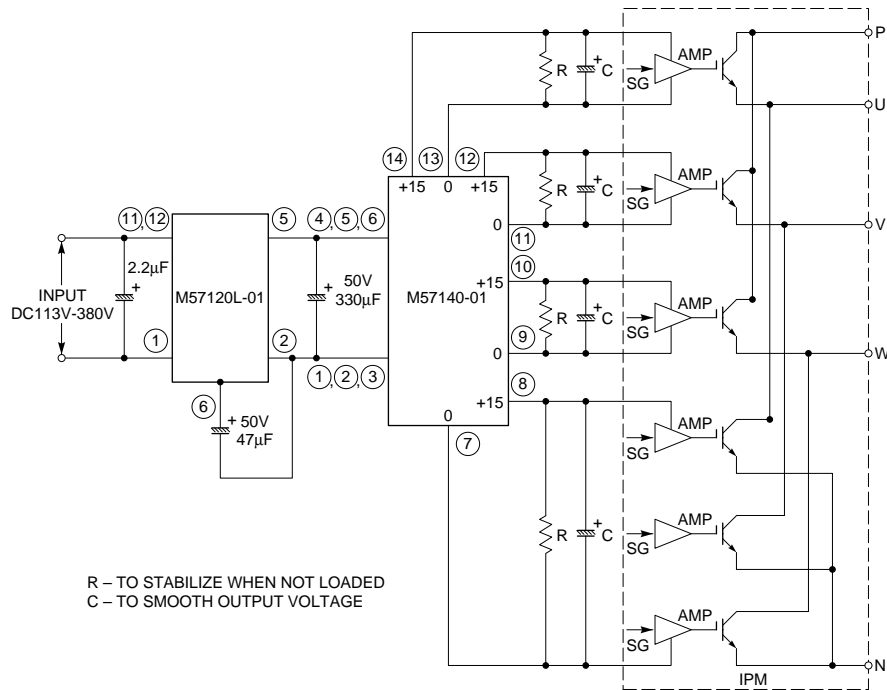
Absolute Maximum Ratings, $V_{IN} = 20V, T_a = 25^\circ C$ unless otherwise specified

Item	Symbol	Test Conditions	Limit	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	\emptyset	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

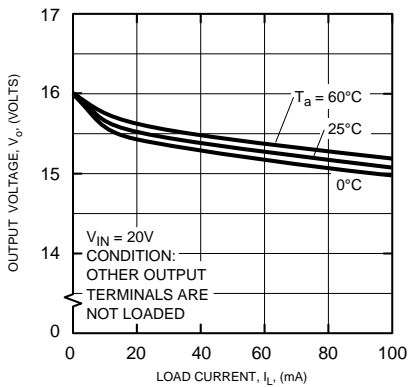
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Source Voltage	V_{IN}	Direct Current	18	20	22	Volts
Output Voltage	V_O	Between Pins (10)-(9), (12)-(11), (14)-(13) $I_L = 30mA$	13.5	15.0	16.5	Volts
		Between Pins (8)-(7), $I_L = 100mA$	13.5	15.0	16.5	Volts
Peak Load Current	I_{LP}	Between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

Application Circuit

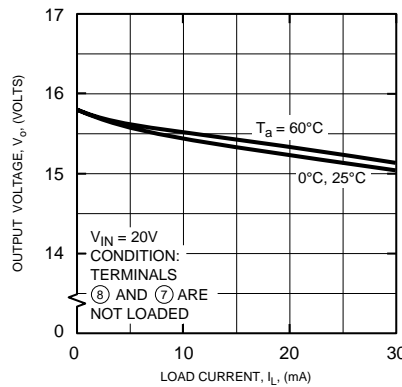
Application Circuit**Handling Precautions:**

- 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.

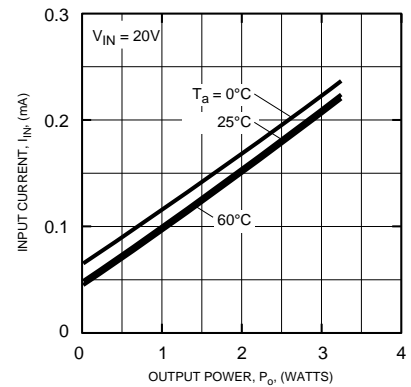
OUTPUT VOLTAGE - LOAD CURRENT CHARACTERISTICS BETWEEN TERMINALS ⑧ AND ⑦



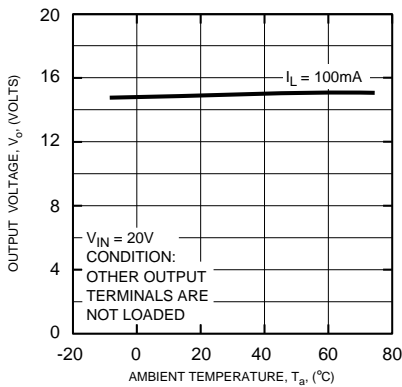
OUTPUT VOLTAGE - LOAD CURRENT CHARACTERISTICS BETWEEN TERMINALS ⑩-⑨, ⑫-⑪, ⑭-⑬



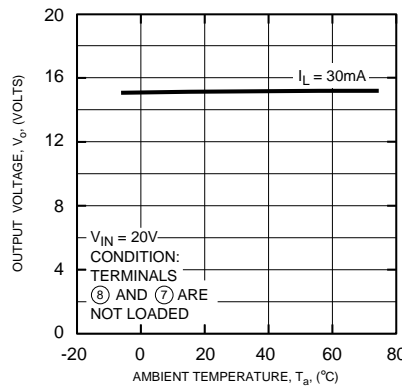
INPUT CURRENT - OUTPUT POWER



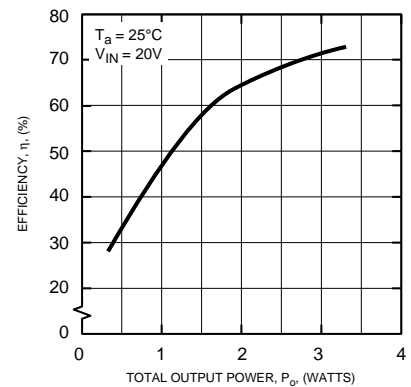
OUTPUT VOLTAGE VS AMBIENT TEMPERATURE BETWEEN TERMINALS ⑧ AND ⑦



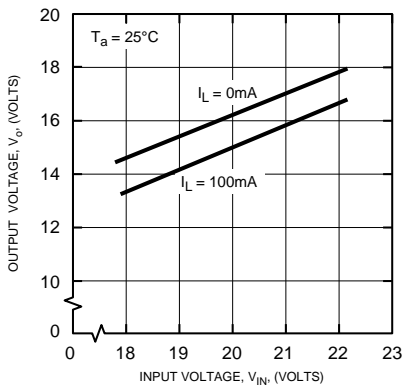
OUTPUT VOLTAGE VS AMBIENT TEMPERATURE BETWEEN TERMINALS ⑩-⑨, ⑫-⑪, ⑭-⑬



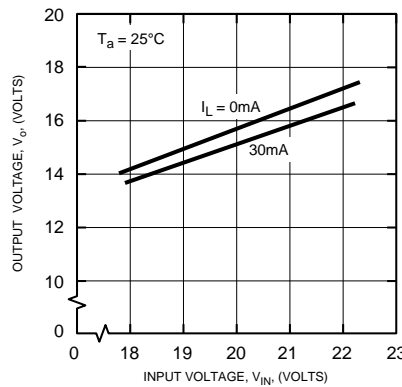
EFFICIENCY CHARACTERISTICS



OUTPUT VOLTAGE VS INPUT VOLTAGE BETWEEN TERMINALS ⑧ AND ⑦



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



FOR SAFETY USING

Great detail and careful attention are given to the production activity of Hics, such as the development, the quality of production, and in its reliability. However the reliability of Hics depends not only on their own factors but also in their condition of usage. When handling Hics, please note the following cautions.

CAUTIONS	
Packing	The materials used in packing Hics can only withstand normal external conditions. When exposed to outside shocks, rain and certain environmental contaminants, the packing materials will deteriorates. Please take care in handling.
Carrying	<ol style="list-style-type: none"> 1) Don't stack boxes too high. Avoid placing heavy materials on boxes. 2) Boxes must be positioned correctly during transportation to avoid breakage. 3) Don't throw or drop boxes. 4) Keep boxes dry. Avoid rain or snow. 5) Minimal vibration and shock during transportation is desirable.
Storage	<p>When storing Hics, please observe the following notices or possible deterioration of their electrical characteristics, risk of solder ability, and external damage may occur.</p> <ol style="list-style-type: none"> 1) Devices must be stored where fluctuation of temperature and humidity is minimal, and mustnot be exposed to direct sunlight. Store at the normal temperature of 5 to 30 degrees Celsius with humidity at 40 to 60%. 2) Avoid locations where corrosive gasses are generated or w here much dust accumulates. 3) Storage cases must be static proof. 4) Avoid putting weight on boxes.
Extended storage	When extended storage is necessary, Hics must be kept non-processed. When using Hics which have been stored for more than one year or under severe conditions, be sure to check that the exterior is free from flaw and other damages.
Maximum ratings	To prevent any electrical damages, use Hics within the maximum ratings. The temperature, current, voltage, etc. must not exceed these conditions.
Polarity	To protect Hics from destruction and deterioration due to wrong insertion, make sure of polarity in inserting leads into the board holes, conforming to the external view for the terminal arrangement.



Marketing division, Marketing planning department

6-41 Tsukuba, Isahaya, Nagasaki, 854-0065 Japan

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