HYBRID IC

M57147AU-01

IPM POWER SUPPLY UNIT

DESCRIPTION

The M57147AU-01 is an insulated DC-DC converter designed to drive the IPM. 6 outputs can obtain from an input of 140 ~ 380VDC.
The terminals between inputs and outputs, and each outputs are insulated.

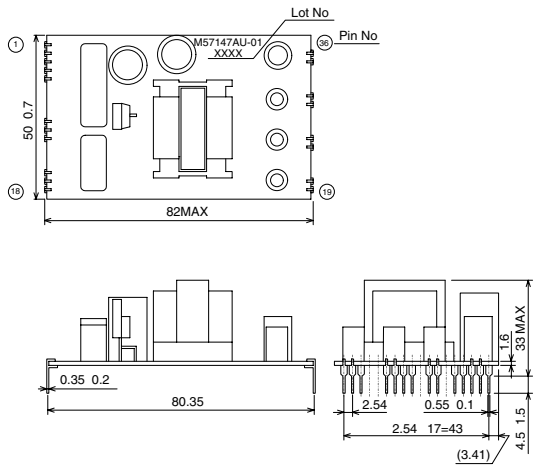
FEATURES

- Input ..... 140 ~ 380VDC
- Output ..... +15V, 50mAX3
  +15V, 150mAX1
  +12V, 400mAX1
  +5V, 300mAX1

- Electrical isolation (between input and outputs)
  ..... 1500Vrms 1minute
- Electrical isolation (between each outputs)
  ..... 1500Vrms 1minute

OUTLINE DRAWING

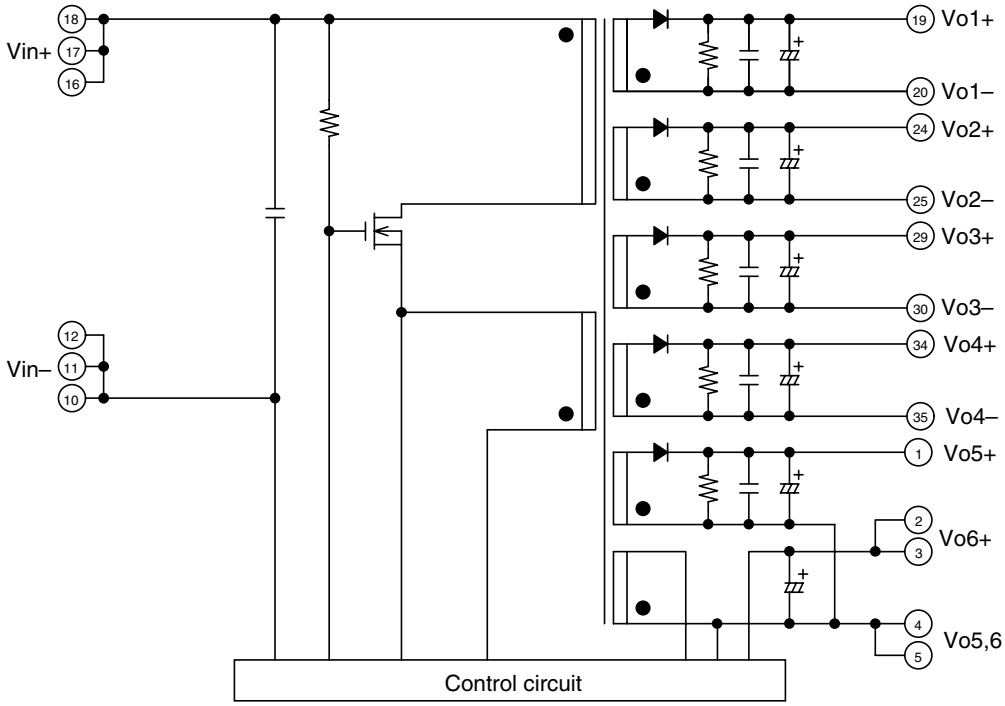
Dimensions: mm



APPLICATION

Power supply for IPM drive

BLOCK DIAGRAM



MAXIMUM RATINGS (Ta = 25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
Vin	Input voltage	–	380	V
I_L	Output current	Vo1, Vo2, Vo3	50	mA
		Vo4	150	
		Vo5	400	
		Vo6	300	
T_{opr}	Operating temperature	No condensation	–10 ~ 70	℃
T_{stg}	Storage temperature	No condensation	–20 ~ 85	℃
Po	Total output power	–	*10.8	W
Viso1	Electrical isolation between input and outputs	Sine wave voltage, 60Hz, 1 minutes	1500	Vrms
Viso2	Electrical isolation between each outputs	Sine wave voltage, 60Hz, 1 minutes	1500	Vrms

*Refer to Output Power vs.Input Voltage Charactreristics

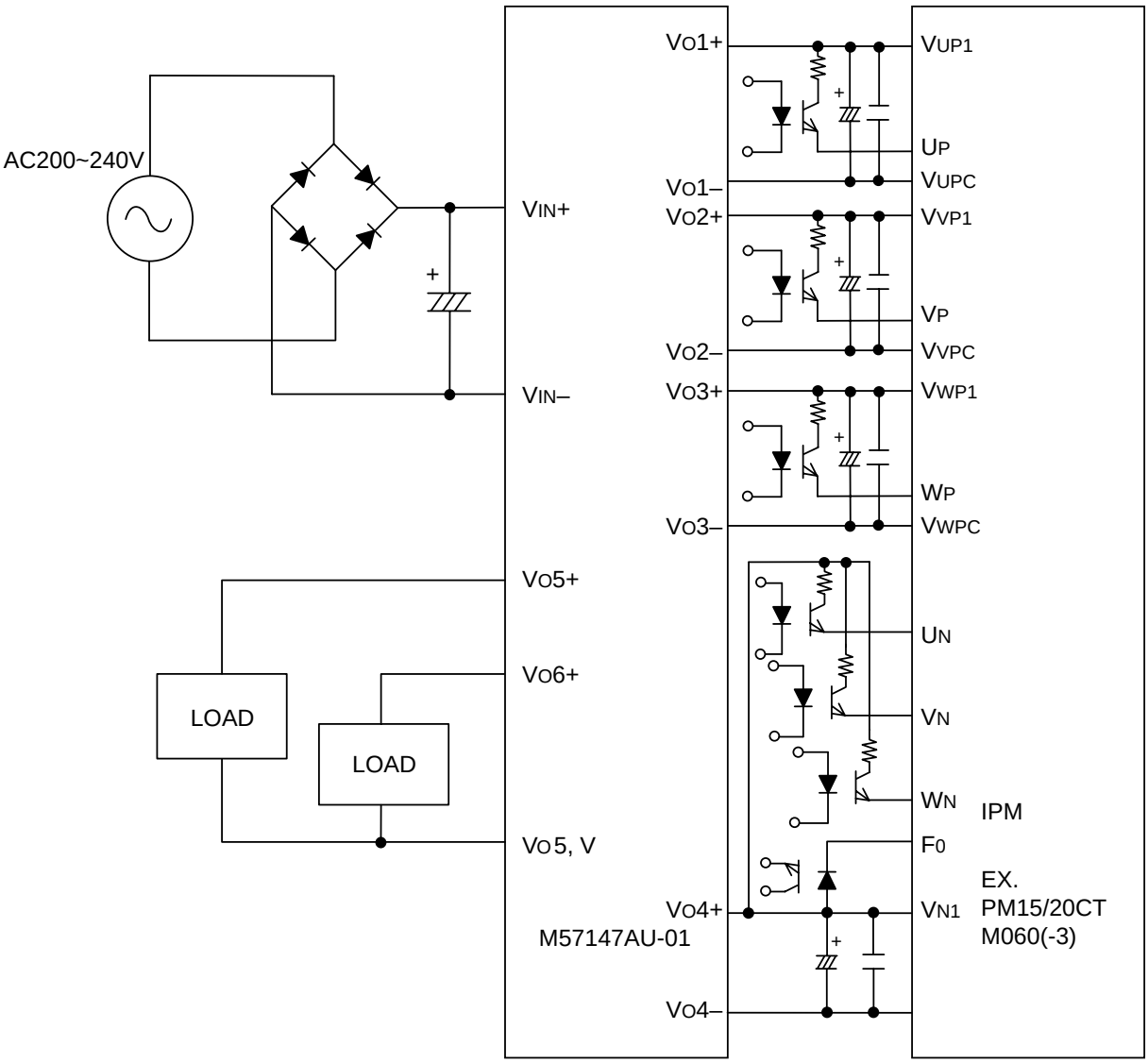
ELECTRICAL CHARACTERISTICS (Vin= 140 ~ 380V, Ta = 25℃, Unless otherwise noted)

Symbol	Parameter	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Vin	Input voltage	Recommended range	140	–	380	V
Vo1	Output voltage	Io1 = 5 ~ 50mA, Io2 = Io3 = 5mA, Io4 = 25mA Io5 = 200mA, Io6 = 200mA	14	15	16	V
Vo2		Io2 = 5 ~ 50mA, Io1 = Io3 = 5mA, Io4 = 25mA Io5 = 200mA, Io6 = 200mA	14	15	16	
Vo3		Io3 = 5 ~ 50mA, Io1 = Io2 = 5mA, Io4= 25mA Io5 = 200mA, Io6 = 200mA	14	15	16	
Vo4		Io4 = 25 ~ 150mA, Io1 = Io2 = Io3 = 5mA Io5 = 200mA, Io6 = 200mA	14	15	16	
Vo5		Io5 = 30 ~ 400mA, Io1 = Io2 = Io3 = 5mA, Io4 = 25mA Io6 = 200mA	11	12	14	
Vo6		Io6 = 50 ~ 300mA, Io1 = Io2 = Io3 = 5mA, Io4 = 25mA Io5 = 200mA	4.75	5.0	5.25	
Reg-I	Line regulation	Vo1 voltage change Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Io6 = 300mA	–	0.3	0.5	V
		Vo2 voltage change Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Io6 = 300mA	–	0.3	0.5	
		Vo3 voltage change Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Io6 = 300mA	–	0.3	0.5	
		Vo4 voltage change Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Io6 = 300mA	–	0.3	0.5	
		Vo5 voltage change Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Io6 = 300mA	–	0.2	0.5	
		Vo6 voltage change Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Io6 = 300mA	–	0.1	0.2	

ELECTRICAL CHARACTERISTICS (Vin= 140 ~ 380V, Ta = 25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Reg-L	Load regulation	Vo1 voltage change Io1 = 5 ~ 50mA, Io2 = Io3 = 50mA, Io4 = 150mA, Io5 = 400mA, Io6 = 300mA, Vin = 300V	–	0.4	1.0	V
		Vo2 voltage change Io2 = 5 ~ 50mA, Io1 = Io3 = 50mA, Io4 = 150mA, Io5 = 400mA, Io6 = 300mA, Vin = 300V	–	0.4	1.0	
		Vo3 voltage change Io3 = 5 ~ 50mA, Io1 = Io2 = 50mA, Io4 = 150mA, Io5 = 400mA, Io6 = 300mA, Vin = 300V	–	0.4	1.0	
		Vo4 voltage change Io4 = 25 ~ 150mA, Io1 = Io2 = Io3 = 50mA,, Io5 = 400mA, Io6 = 300mA, Vin = 300V	–	0.5	1.0	
		Vo5 voltage change Io5 = 30 ~ 400mA, Io1 = Io2 = Io3 =50mA, Io4 =150mA, Io6 = 300mA, Vin = 300V	–	1.5	1.8	
		Vo6 voltage change Io6 = 50 ~ 300mA, Io1 = Io2 = Io3 = 50mA, Io4 =150mA, Io5 = 400mA, Vin = 300V	–	0.1	0.2	
	Efficiency	Vin = 300V, Po = 10.8W	70	77	–	%

TYPICAL CHARACTERISTICS



AVAILABLE IPM EXAMPLES

PM100CVA060	PM10CSJ060	PM100CSA060	PM50RSA060	PM50RSK060	PM15CTM060
PM150CVA060	PM15CSJ060	PM150CSA060	PM75RSA060	PM75RSK060	PM15CTM060-3
PM200CVA060	PM20CSJ060	PM200CSA060	PM100RSA060		PM20CTM060
	PM30CSJ060		PM150RSA060	PM30CTJ060	PM20CTM060-3
		PM50CTK060		PM30CTJ060-3	
PM75RVA060	PM30RSF060	PM75CTK060			

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 it's 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 contaminators, the packing materials will deteriorates. Please take care in handling.
Carrying	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	When storing Hics, please observe the following notices or possible deterioration of their electrical characteristics, risk of solder ability, and external damage may occur. 1) Devices must be stored where fluctuation of temperature and humidity is minimal, and must not 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 where 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.

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IPM POWER SUPPLY UNIT

ISAHAYA ELECTRONICS CORPORATION

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Nov.2002