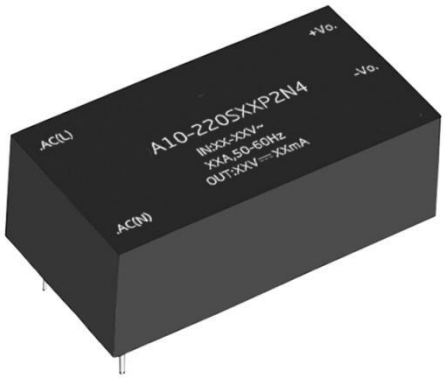
KINRI® INNOVATE

PCB MOUNT POWER MODULE 10W SERIES



Features

. Input 90V to 305VAC, 50~60Hz suitable for worldwide use
. Output voltage optional from 3.3V to 24Vdc constant voltage
. Protections: Short Circuit / Overload / Over Voltage Protection
. 100% full load burn-in test for 2Hrs to make every unit reliable
. EMI Class B without additional components, pass LPS
. Cooling by free air convection, operating temperature -30~50℃
. Long life and high reliability design with 3 years warranty
. Low standby consumption power <0.1W

Safety Standards

. IEC62368-1 CB report for worldwide use
. UL62368-1 + CAN/CSA 62368-1 for USA and Canada
. EN 62368-1:2014/A11:2017 for European Union
. AS/NZS 62368.1:2018 for Australia and New Zealand
. J62368-1 for Japan and GB4943.1 for China market.

UL62368-1 BS EN/EN62368-1 R33100 RoHS J62368-1 K60950-1 AS/NZS60950-1 GB4943.1

Product Description:

This is a highly reliable and small size AC-DC module type 10W switching power supply solution with wide range 90-305Vac input and designed strictly according to the international safety standards. It's ready to be solder onto the PCB boards of various kind of electronic instruments, industrial automation equipments and military devices. The entire series supplies different models with output voltages ranging between 3.3Vdc and 24Vdc that can satisfy the demands for various types of electronics devices. This 10W PCB mount power module is built-in EMI filtering components with supreme EMC features keep the end electronics units from electromagnetic interference. With high efficiency up to 82% and very low no load power consumption of less than 0.1W, the power module fulfill the worldwide energy regulation for low power consumption requirements for electronics with compact size of 45.7 x 25.4 x 21.5mm.

Technical Specification

Typ. Model	KRM-10-3.3	KRM-10-5	KRM-10-12	KRM-10-15	KRM-10-24
Output					
Output Voltage	3.3VDC	5VDC	12VDC	15VDC	24VDC
Rated Current	2.5A	2A	0.85A	0.67A	0.42A
Current Range	0 ~ 2.5A	0 ~ 2A	0 ~ 0.85A	0 ~ 0.67A	0 ~ 0.42A
Output Power	8.25W Max.	10W Max.	10W Max.	10W Max.	10W Max.
Voltage Tolerance	±3%	±3%	±3%	±3%	±3%
Ripple & Noise	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p
Input					
Input voltage	90 - 305Vac or 120- 430Vdc				
Input Frequency	50-60Hz (When the input is AC)				
Input Current	0.25A Max. @ 100 ~240Vac 50/60Hz input				
Inrush Current	40A Max. @ 100 ~240Vac 50/60Hz input				
Efficiency (Typ.)	74%	77%	82%	82%	82%
Leakage Current	≤0.25mA @ full input range				
Protections					
Over current	115~200% rated output power. Auto-Recovery when the fault is removed				
Short Circuit	No damage. Auto-Recovery when the fault is removed				
Over temperature	Shut down o/p voltage, re-power on to recover				
Environmental					
Operation Temperature	-30℃ to +50℃, 20%RH to 90%RH				
Storage Temp, Humidity	-45~ +85℃, 10%RH to 95%RH				
Operation Altitude	≤2000m @ full load and rated operating temperatures				
MTBF	≥50000Hrs @ full load and rated operating temperatures				
Mechanical					
Dimensions (L x W x H)	45.7 x 25.4 x 21.5mm (1.80 x 1.00 x 0.85 inch)				
Unit Weight	33g±5 grams				
Packing Information	270pcs/ Carton, carton dimensions:47*37*20cm, 9.8kgs/ Carton				

TEST REPORT

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	RIPPLE & NOISE	200mVp-p (Max)	I/P:230VAC / O/P:FULL LOAD / Ta:25℃	133mVp-p	P
2	VOLTAGE TOLERANCE	-3% ~ +3% (Max)	I/P:90VAC~305VAC O/P:FULL~MIN. LOAD / Ta:25℃	-1.0% ~ +1.0% of output voltage	P
3	LINE REGULATION	-0.3% ~ +0.3% (Max)	I/P:90VAC ~305VAC O/P:FULL LOAD / Ta:25℃	-0.07% ~ +0.07% of output voltage	P
4	LOAD REGULATION	-0.5% ~ +0.5% (Max)	I/P:230VAC O/P:FULL ~MIN LOAD / Ta:25℃	-0.22% ~ +0.23% of output voltage	P
5	OVER/UNDERSHOOT	<±5%	I/P: 230VAC O/P:FULL LOAD / Ta:25℃	0.8%	P
6	SET UP TIME	600 mS (Max)	I/P:230VAC O/P:FULL LOAD / Ta:25℃	458 mS	P
7	RISE TIME	30 mS (Max)	I/P: 230VAC O/P:FULL LOAD / Ta:25℃	26 mS	P
8	HOLD UP TIME	15 mS (Min)	I/P: 115VAC O/P:FULL LOAD / Ta:25℃	19 mS	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD / Ta:25℃	77V~305V	P
2	FREQUENCY RANGE	50HZ - 60HZ (Typ) NO DAMAGE OSC	I/P: 100VAC ~ 240VAC O/P:FULL~MIN LOAD / Ta:25℃	TEST: OK	P
3	EFFICIENCY	82% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25℃	82.96%	P
4	AVERAGE EFFICIENCY	80%	I/P:115/230VAC &O/P:25%、50%、75%、100% LOAD & Ta:25℃	80.69% (115VAC) 81.02% (230VAC)	P
5	AC CURRENT	0.25A (Max)	I/P:100VAC & O/P:FULL LOAD Ta:25℃	0.19A	P
6	INRUSH CURRENT	<40A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25℃	27.9A	P
7	LEAKAGE CURRENT	<0.25mA	I/P:240VAC & O/P:Min LOAD Ta:25℃	L-FG:0..148mA N-FG:0.147mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	OVER LOAD PROTECTION	115 ~ 200% (Typ)	I/P:230VAC & O/P:TESTING Ta:25℃	174.43% HICCUP MODE	P
2	OVER VOLTAGE PROTECTION	115 ~ 135% (Typ)	I/P:230VAC O/P:MIN LOAD & Ta:25℃	Hiccup mode ,recovers automatically after fault condition is removed	P
3	SHORT PROTECTION	SHORT OUTPUT 1 HOUR NO DAMAGE	I/P:264VAC O/P:FULL LOAD & Ta:25℃	NO DAMAGE HICCUP MODE	P

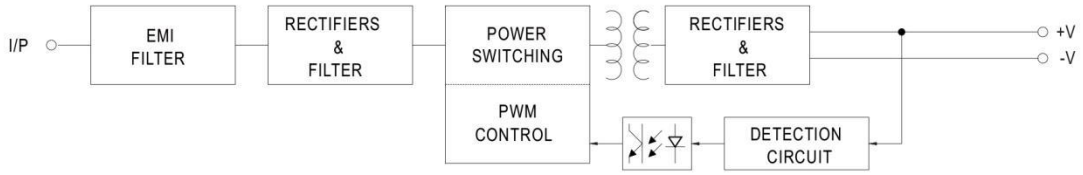
SAFETY TEST & E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P- FG: 2KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 0.6KVAC/min Ta:25℃	I/P-O/P:1.83mA I/P-FG: NA O/P-FG: NA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-O/P: 9999MΩ I/P-FG: NA O/P-FG: NA NO DAMAGE	P
3	CONDUCTION	BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN	I/P：230 VAC (50HZ) O/P：FULL/50% LOAD Ta：25℃	PASS Test by certified Lab	P
4	RADIATION	BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN	I/P： 230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab	P
5	SURGE	BS EN/EN61000-4-5 LIGHT INDUSTRY L-N: 1KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA B	P
6	E.S.D	BS EN/EN61000-4-2 LIGHT INDUSTRY AIR：8KV / Contact：4KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA B	P

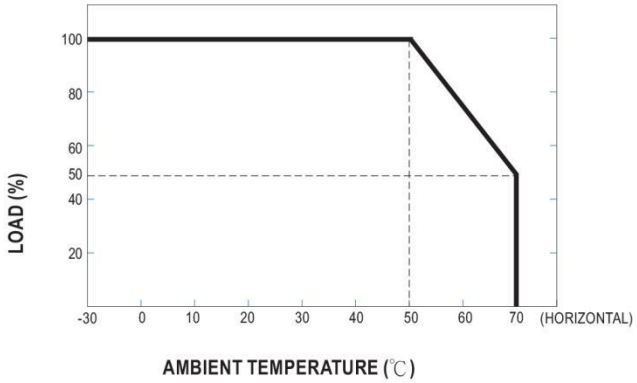
TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHU LI	WANG LW	ZHANG DL

■ Block Diagram

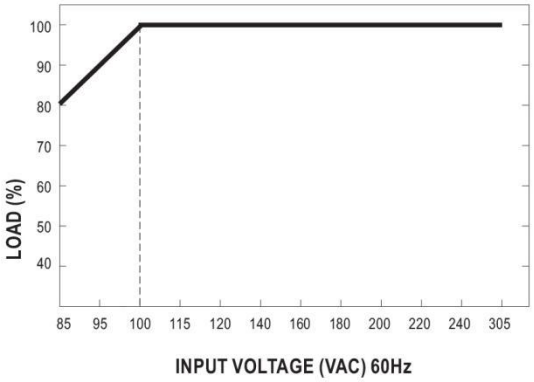
fosc : 65KHz



■ Derating Curve

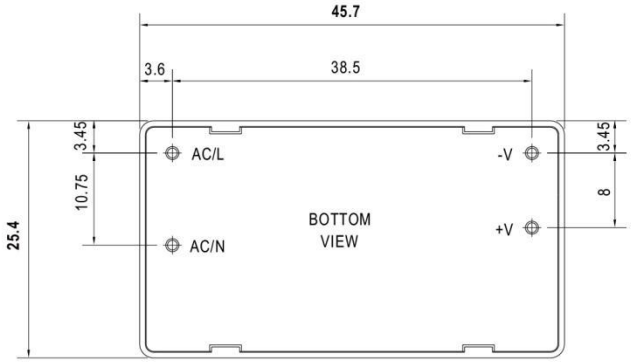


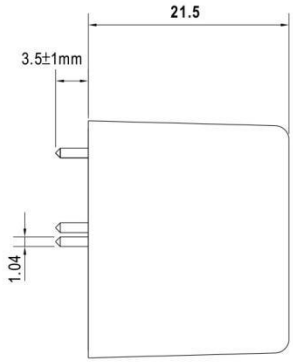
■ Output Derating VS Input Voltage



■ Mechanical Specification

Case No.222A Unit:(mm)





P/N diameter:1.04