



Cost Effective



Rugged PCB type



Isolated



Safety Approvals



EMI



Inrush current limiting



OCP

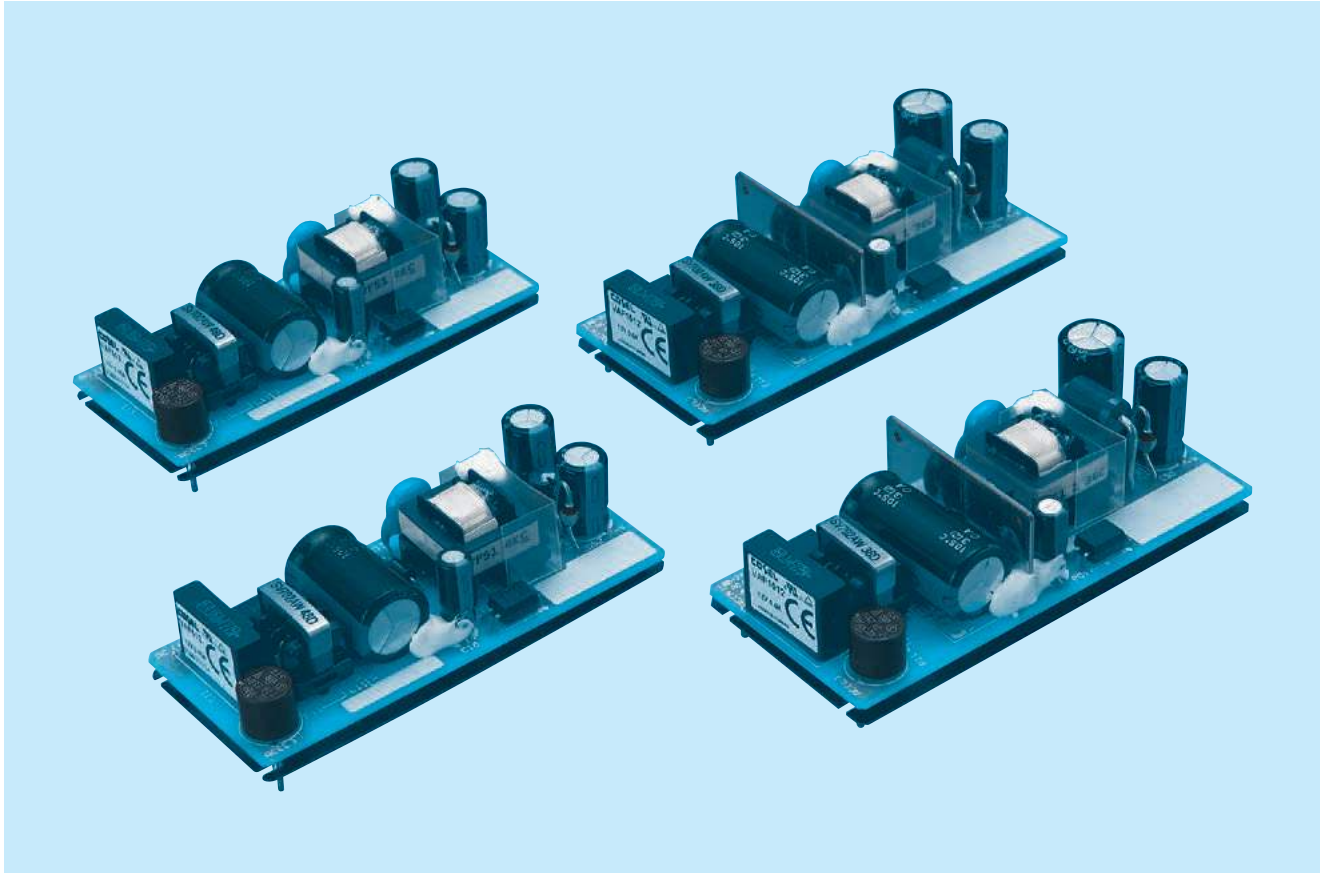


OVP



World wide

VAF-series



■ Feature

P.C. board mount AC/DC converter
Built-in inrush current and overcurrent protection circuits
Small and compact size

■ Safety agency approvals

UL60950-1, C-UL recognized TÜV approved
Complies with DEN-AN

■ EMI

FCC-B, VCCI-B, CISPR22-B (EN55022-B)

■ 3-year warranty

■ EMC Compliance

EN55022-B
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

■ CE marking

Low Voltage Directive
RoHS Directive

■ UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

VAF5

VAF 5 05

① ② ③



RoHS



① Series name
② Output wattage
③ Output voltage

	3.3	5.0	5.4	5.25	5.28
	3.3	5	12	15	24
	1.0 (Peak 1.2)	1.0 (Peak 1.2)	0.45 (Peak 0.54)	0.35 (Peak 0.42)	0.22 (Peak 0.27)

SPECIFICATIONS

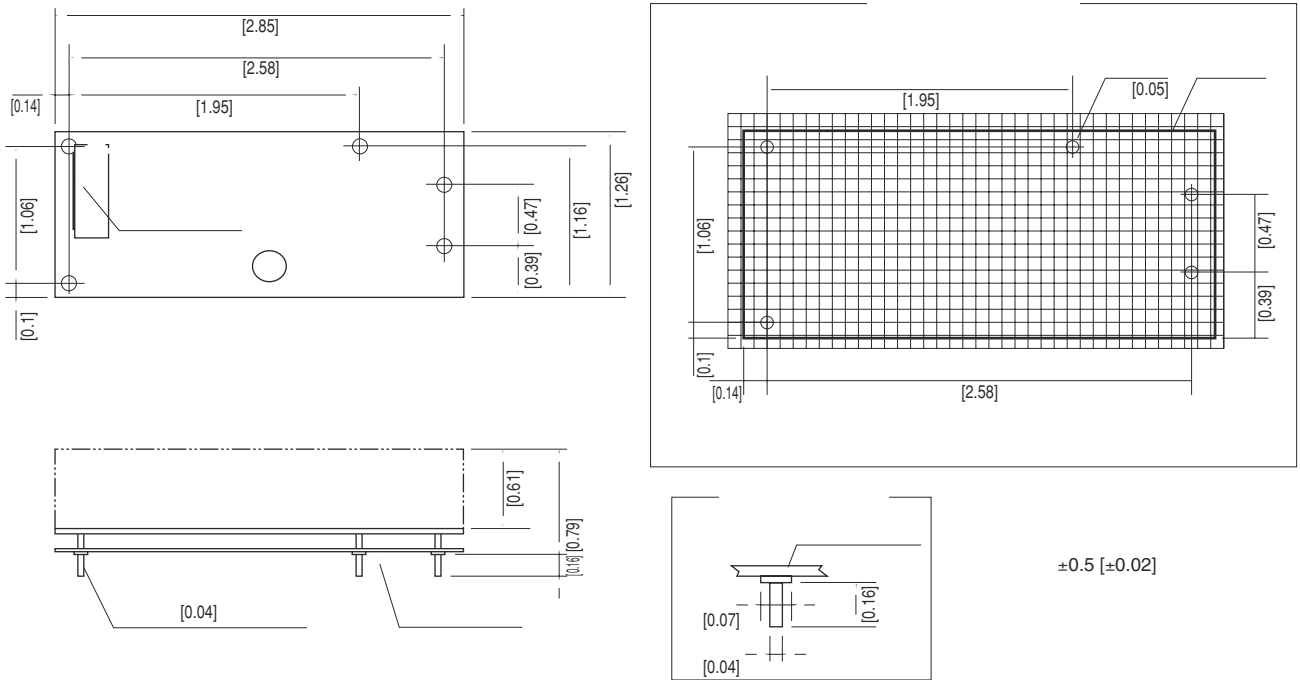
	MODEL	VAF503	VAF505	VAF512	VAF515	VAF524	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC110 - 370					
	CURRENT[A]	ACIN 100V	0.15typ (Io=100%)				
		ACIN 200V	0.10typ (Io=100%)				
	FREQUENCY[Hz]	47 - 440 or DC					
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%)				
		ACIN 200V	30typ (Io=100%)				
LEAKAGE CURRENT[ma]	0.5max (60Hz, According to IEC60950 and DEN-AN)						
EFFICIENCY[%]		68typ	77typ	78typ	78typ	81typ	
OUTPUT	VOLTAGE[V]	3.3	5	12	15	24	
	CURRENT[A]	*1	1.0 (Peak 1.2)	1.0 (Peak 1.2)	0.45 (Peak 0.54)	0.35 (Peak 0.42)	0.22 (Peak 0.27)
	LINE REGULATION[mV]		20max	20max	48max	60max	96max
	LOAD REGULATION[mV]		40max	40max	100max	120max	150max
	RIPPLE[mVp-p]	0 to +55°C *2	80max	80max	120max	120max	150max
		-10 - 0°C *2	140max	140max	160max	160max	200max
		Ic=100 - 120% *2	180max	180max	200max	200max	240max
	RIPPLE NOISE[mVp-p]	0 to +55°C *2	120max	120max	150max	150max	200max
		-10 - 0°C *2	160max	160max	180max	180max	230max
		Ic=100 - 120% *2	200max	200max	220max	220max	260max
	TEMPERATURE COEFFICIENT[mV]	-10 to +55°C	100max	50max	120max	150max	300max
	DRIFT[mV]	*3	20max	20max	48max	60max	96max
	OUTPUT VOLTAGE SETTING[V]		3.19 - 3.47	4.90 - 5.30	11.40 - 12.60	14.25 - 15.75	23.0 - 25.0
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed				
START-UP TIME[ms]		700max (ACIN 85V, Io=100%)					
HOLD-UP TIME[ms]		10typ (ACIN 85V, Io=100%), 20typ (ACIN 100V, Io=100%)					
PROTECTION CIRCUIT	OVERCURRENT PROTECTION	Works over 125% of rating and recovers automatically					
	OVERVOLTAGE PROTECTION	Works over 115% of rating (By zener diode clamping)					
ISOLATION	INPUT-OUTPUT	AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)					
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)					
	OUTPUT-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)					
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +71°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max					
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max					
	VIBRATION	19.6m/s ² 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis (Non operating)					
	IMPACT	196.1m/s ² 11ms, once each X, Y and Z axis (Non operating)					
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS	UL60950-1, C-UL, EN60950-1, EN50178 Complies with DEN-AN and IEC60950-1					
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR22-B, EN55022-B					
OTHERS	CASE SIZE/WEIGHT	32 x 20 x 72.5mm [1.26 x 0.79 x 2.85 inches] (W x H x D) / 30g max					
	COOLING METHOD	Convection					

*1 Peak load for 10sec. or less in acceptable if the total wattage is less than the rated wattage.

*2 This is the value that measured on measuring board with capacitor of 22 μF. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM101).

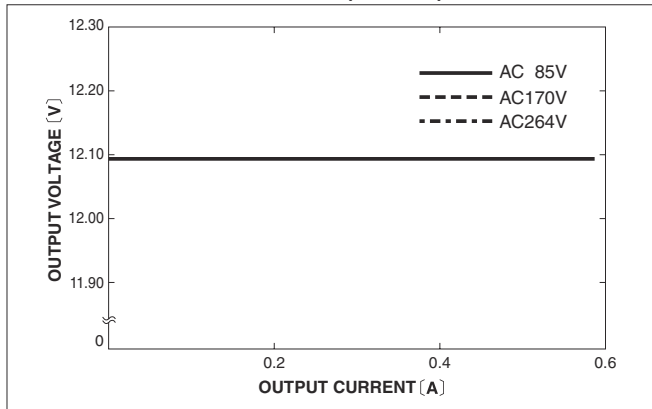
*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

External view

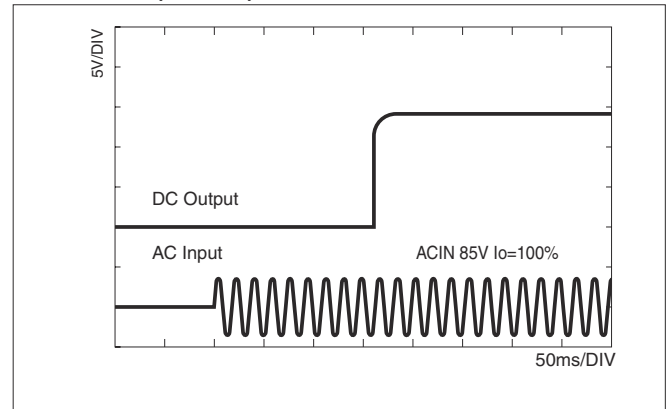


Performance data

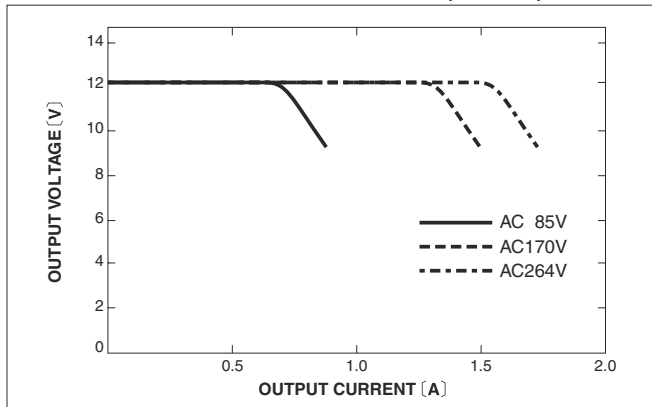
■ STATIC CHARACTERISTICS (VAF512)



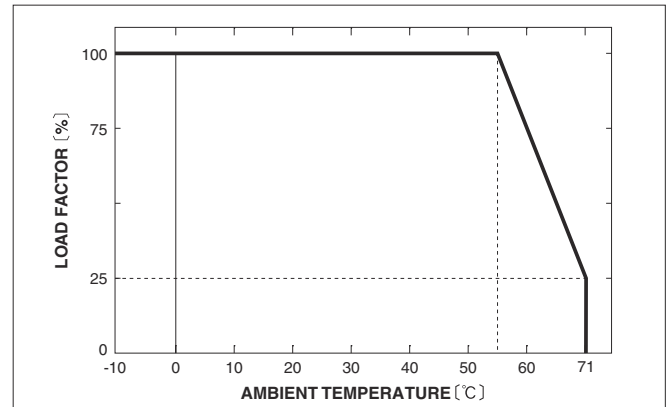
■ RISE TIME (VAF512)



■ OVERCURRENT CHARACTERISTICS (VAF512)



■ DERATING CURVE



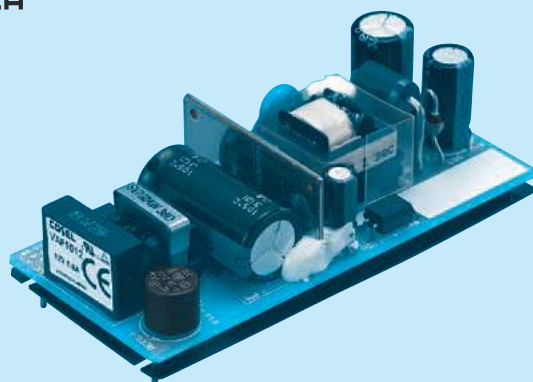
VAF10

VAF 10 05

① ② ③



RoHS



① Series name
② Output wattage
③ Output voltage

	6.6	10.0	10.8	10.5	10.8
	3.3	5	12	15	24
	2.0 (Peak 2.4)	2.0 (Peak 2.4)	0.9 (Peak 1.08)	0.7 (Peak 0.84)	0.45 (Peak 0.54)

SPECIFICATIONS

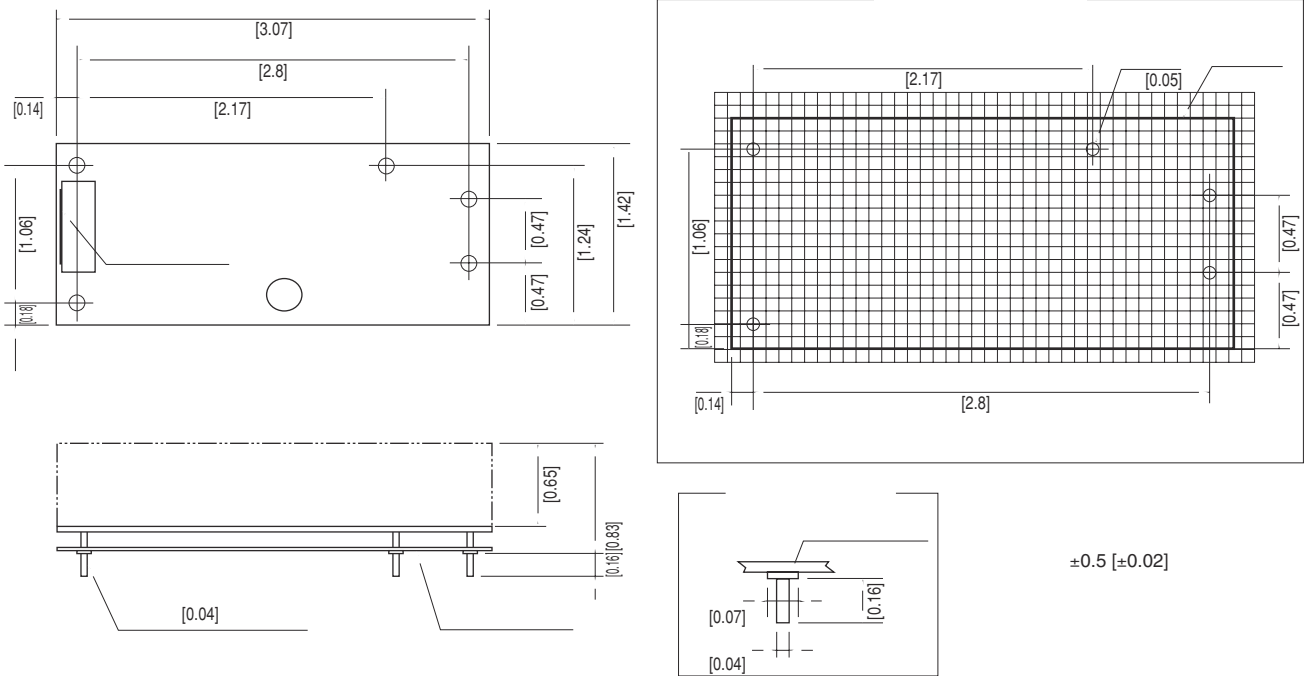
	MODEL	VAF1003	VAF1005	VAF1012	VAF1015	VAF1024	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC110 - 370					
	CURRENT[A]	ACIN 100V	0.3typ (Io=100%)				
		ACIN 200V	0.2typ (Io=100%)				
	FREQUENCY[Hz]	47 - 440 or DC					
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%)				
		ACIN 200V	30typ (Io=100%)				
LEAKAGE CURRENT[ma]	0.5max (60Hz, According to IEC60950 and DEN-AN)						
EFFICIENCY[%]		65typ	74typ	78typ	78typ	81typ	
OUTPUT	VOLTAGE[V]	3.3	5	12	15	24	
	CURRENT[A]	*1 2.0 (Peak 2.4)	2.0 (Peak 2.4)	0.9 (Peak 1.08)	0.7 (Peak 0.84)	0.45 (Peak 0.54)	
	LINE REGULATION[mV]	20max	20max	48max	48max	96max	
	LOAD REGULATION[mV]	40max	40max	100max	120max	150max	
	RIPPLE[mVp-p]	0 to +55°C *2	80max	80max	120max	120max	150max
		-10 - 0°C *2	140max	140max	160max	160max	200max
		Io=100 - 120% *2	180max	180max	200max	200max	240max
	RIPPLE NOISE[mVp-p]	0 to +55°C *2	120max	120max	150max	150max	200max
		-10 - 0°C *2	160max	160max	180max	180max	230max
		Io=100 - 120% *2	200max	200max	220max	220max	260max
	TEMPERATURE COEFFICIENT[mV]	-10 to +55°C	100max	50max	120max	150max	300max
	DRIFT[mV]	*3	20max	20max	48max	60max	96max
	OUTPUT VOLTAGE SETTING[V]		3.19 - 3.47	4.90 - 5.30	11.40 - 12.60	14.25 - 15.75	23.0 - 25.0
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed				
START-UP TIME[ms]		700max (ACIN 85V, Io=100%)					
HOLD-UP TIME[ms]		10typ (ACIN 85V, Io=100%), 20typ (ACIN 100V, Io=100%)					
PROTECTION CIRCUIT	OVERCURRENT PROTECTION	Works over 125% of rating and recovers automatically					
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ISOLATION	INPUT-OUTPUT	AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)					
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)					
	OUTPUT-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)					
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +71°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max					
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max					
	VIBRATION	19.6m/s ² 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis (Non operating)					
	IMPACT	196.1m/s ² 11ms, once each X, Y and Z axis (Non operating)					
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS	UL60950-1, C-UL, EN60950-1, EN50178 Complies with DEN-AN and IEC60950-1					
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR22-B, EN55022-B					
OTHERS	CASE SIZE/WEIGHT	36 x 21 x 78mm [1.42 x 0.83 x 3.07 inches] (W x H x D) / 40g max					
	COOLING METHOD	Convection					

*1 Peak load for 10sec. or less in acceptable if the total wattage is less than the rated wattage.

*2 This is the value that measured on measuring board with capacitor of 22 μF. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM101).

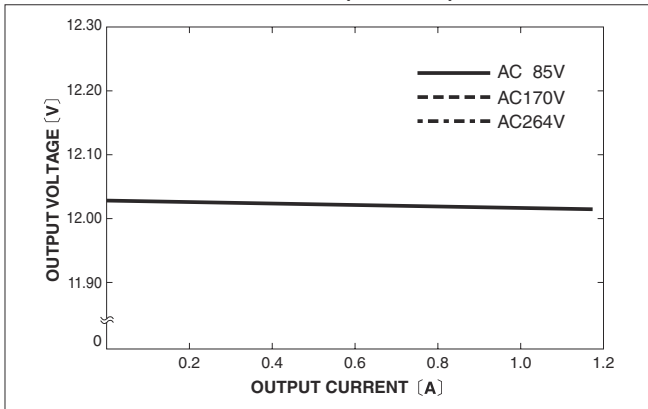
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External view

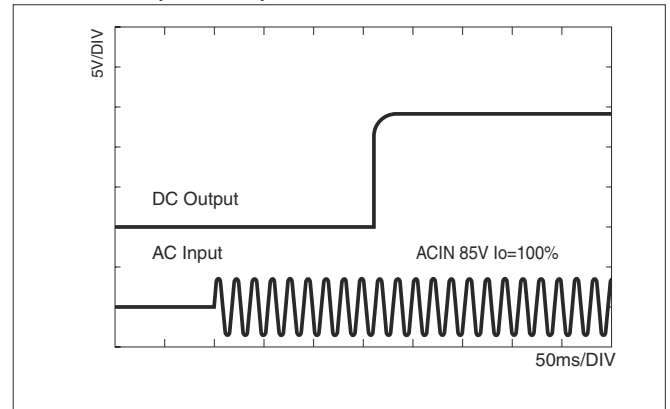


Performance data

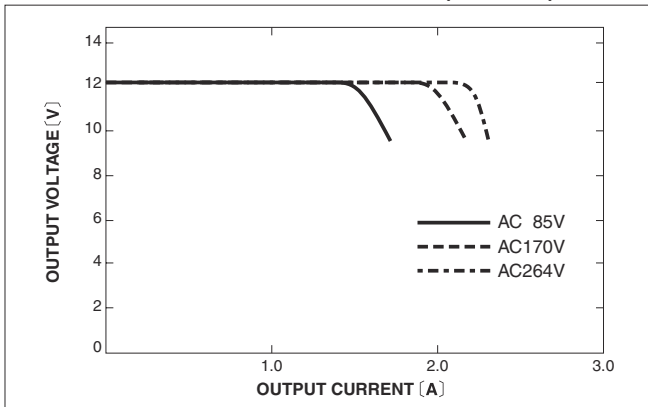
STATIC CHARACTERISTICS (VAF1012)



RISE TIME (VAF1012)



OVERCURRENT CHARACTERISTICS (VAF1012)



DERATING CURVE

