Effective December 2015 Supersedes June 2015

10x38mm photovoltaic fuses 1000Vdc, 1-30A





Catalog symbols / mounting style:

- · 1-20A*
 - PV-(amp)A10F (cylindrical)
 - PV-(amp)A10-T (bolt mounting)
 - PV-(amp)A10-1P (single PCB tab)
 - PV-(amp)A10-2P (dual PCB tab)
 - PV-(amp)10F-CT (in-line with crimp terminals)
- · 25-30A** PV10M-(amp) (cylindrical)
- * Ceramic tube construction.
- ** Melamine tube construction.

Description:

Eaton's Bussmann[®] series of 10x38mm, 1000Vdc PV fuses are for protecting and isolating photovoltaic strings. The fuses are specifically designed for use in PV systems with extreme ambient temperature, high cycling and low fault current conditions (reverse current, multi-array fault) string arrays.

Four styles available for application flexibility.

Specifications:

Basic fuse size

• 10x38mm

Ratings

- Volts 1000Vdc
- Amps 1-30A
- Interrupting Rating
 - 50kA (1-20A)
 - 20kA (25-30A)
- Time Constant: 1-3ms

EATON Powering Business Worldwide

Operating class

· gPV and UL PV fuse links

PV fuse coordination

• With thin film cells and 4", 5" and 6" crystalline silicon cells

BUSSMA

Agency information

- UL[®] Listed to 2579*, Guide JFGA, File E335324
- IEC[®] 60269-6 (gPV)
- CSA[®] File 53787, Class 1422-30 (1-15A), 20-30A pending
- CCC[®] (1-20A) (25-30A pending)
- RoHS compliant
- * Except crimp terminal version that is UL Recognized to UL 2579, Guide JFGA2, File E335324.

Packaging (carton quantity)

- PV-(amp)A10F, PV-(amp)A10T, PV-(amp)A10-_P and PV10M-(amp): 10
- PV-(amp)10F-CT & PV10M-(amp)-CT in-line: 180

Features:

- Meets UL and IEC photovoltaic standards for global acceptance
- Low watts loss performance for energy efficiency
- Low temperature rise performance for more precise sizing
- In-line crimp terminal version is easy to apply in wire harness construction

Typical applications:

- Combiner boxes
- PV wire harnesses

Specifications:

Catalog numbers / configurations									
	PCB fixing		_	Current	Voltage	Energy integrals I ² t (A ² s)		Watts loss (W)	
Bolt fixing	Single pin	Double pin	In-line with crimp terminal	rating (amps)	rating (Vdc)	Pre-arcing	Total @ 1000V	0.81 _n	I _n
PV-1A10-T	PV-1A10-1P	PV-1A10-2P	PV-1A10F-CT	1	1000	0.15	0.4	0.8	1.5
PV-2A10-T	PV-2A10-1P	PV-2A10-2P	PV-2A10F-CT	2	1000	1.2	3.4	0.6	1.0
PV-3A10-T	PV-3A10-1P	PV-3A10-2P	PV-3A10F-CT	3	1000	4	11	0.8	1.3
PV-3-5A10-T	PV-3-5A10-1P	PV-3-5A10-2P	PV-3-5A10F-CT	3.5	1000	6.6	18	0.9	1.4
PV-4A10-T	PV-4A10-1P	PV-4A10-2P	PV-4A10F-CT	4	1000	9.5	26	1.0	1.5
PV-5A10-T	PV-5A10-1P	PV-5A10-2P	PV-5A10F-CT	5	1000	19	50	1.0	1.6
PV-6A10-T	PV-6A10-1P	PV-6A10-2P	PV-6A10F-CT	6	1000	30	90	1.1	1.8
PV-8A10-T	PV-8A10-1P	PV-8A10-2P	PV-8A10F-CT	8	1000	3	32	1.2	2.1
PV-10A10-T	PV-10A10-1P	PV-10A10-2P	PV-10A10F-CT	10	1000	7	70	1.2	2.3
PV-12A10-T	PV-12A10-1P	PV-12A10-2P	PV-12A10F-CT	12	1000	12	120	1.5	2.7
PV-15A10-T	PV-15A10-1P	PV-15A10-2P	PV-15A10F-CT	15	1000	22	220	1.7	2.9
PV-20A10-T	PV-20A10-1P	PV-20A10-2P	PV-20A10F-CT	20	1000	34	350	2.1	3.6
_	_	_	_	25	1000	325	1860*	1.65	2.91
_	_	_	_	30	1000	536	3360*	1.65	3.31
	Bolt fixing V-1A10-T V-2A10-T V-3A10-T V-3-5A10-T V-4A10-T V-4A10-T V-6A10-T V-6A10-T V-10A10-T V-10A10-T V-12A10-T V-15A10-T V-20A10-T V-20A10-T - -	PCB Bolt fixing Single pin V-1A10-T PV-1A10-1P V-2A10-T PV-2A10-1P V-2A10-T PV-3A10-1P V-3A10-T PV-3-5A10-1P V-3-5A10-T PV-3-5A10-1P V-4A10-T PV-4A10-1P V-5A10-T PV-5A10-1P V-6A10-T PV-6A10-1P V-8A10-T PV-6A10-1P V-8A10-T PV-10A10-1P V-10A10-T PV-10A10-1P V-12A10-T PV-12A10-1P V-12A10-T PV-15A10-1P V-15A10-T PV-20A10-1P - -	PCB fixing PCB fixing Bolt fixing Single pin Double pin V-1A10-T PV-1A10-1P PV-1A10-2P V-2A10-T PV-2A10-1P PV-2A10-2P V-3A10-T PV-3A10-1P PV-3A10-2P V-3-5A10-T PV-3-5A10-1P PV-3-3A10-2P V-3-5A10-T PV-3-5A10-1P PV-3-3A10-2P V-4A10-T PV-4A10-1P PV-4A10-2P V-5A10-T PV-5A10-1P PV-4A10-2P V-5A10-T PV-6A10-1P PV-6A10-2P V-6A10-T PV-6A10-1P PV-6A10-2P V-8A10-T PV-6A10-1P PV-6A10-2P V-10A10-T PV-10A10-1P PV-10A10-2P V-10A10-T PV-10A10-1P PV-10A10-2P V-12A10-T PV-12A10-1P PV-12A10-2P V-12A10-T PV-15A10-1P PV-15A10-2P V-20A10-T PV-20A10-1P PV-20A10-2P - - -	PCB fixing In-line with crimp terminal Bolt fixing Single pin Double pin In-line with crimp terminal V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10F-CT V-2A10-T PV-2A10-1P PV-2A10-2P PV-2A10F-CT V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT V-3-5A10-T PV-3-5A10-1P PV-3-3A10-2P PV-3-3A10F-CT V-3-5A10-T PV-3-5A10-1P PV-3-3-5A10-2P PV-3-5A10F-CT V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT V-5A10-T PV-5A10-1P PV-5A10-2P PV-5A10F-CT V-6A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT V-8A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT V-8A10-T PV-10A10-1P PV-10A10-2P PV-10A10F-CT V-10A10-T PV-10A10-1P PV-10A10-2P PV-10A10F-CT V-12A10-T PV-12A10-1P PV-12A10-2P PV-12A10F-CT V-12A10-T PV-15A10-1P PV-15A10-2P PV-15A10F-CT V-12A10-T	PCB fixing Current In-line with crimp terminal Current rating (amps) Bolt fixing Single pin Double pin In-line with crimp terminal Current rating (amps) V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10F-CT 1 V-2A10-T PV-2A10-1P PV-2A10-2P PV-2A10F-CT 2 V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT 3 V-3-5A10-T PV-3-5A10-1P PV-3-5A10-2P PV-3-5A10F-CT 3.5 V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT 4 V-5A10-T PV-5A10-1P PV-5A10-2P PV-5A10F-CT 5 V-6A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT 6 V-8A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT 10 V-10A10-T PV-10A10-1P PV-10A10-2P PV-10A10F-CT 10 V-12A10-T PV-12A10-1P PV-12A10-2P PV-12A10F-CT 12 V-15A10-T PV-15A10-2P PV-15A10F-CT 12 V-15A10-T <	PCB fixing Current rating (amps) Voltage rating (amps) Bolt fixing Single pin Double pin In-line with crimp terminal Current rating (amps) Voltage rating (Vdc) V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10F-CT 1 1000 V-2A10-T PV-2A10-1P PV-2A10-2P PV-2A10F-CT 2 1000 V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT 3 1000 V-3-5A10-T PV-3A10-1P PV-3A10-2P PV-3-5A10F-CT 3.5 1000 V-3-5A10-T PV-3A10-1P PV-3-5A10-2P PV-3-5A10F-CT 3.5 1000 V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT 4 1000 V-5A10-T PV-5A10-1P PV-5A10-2P PV-5A10F-CT 5 1000 V-6A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT 8 1000 V-8A10-T PV-10A10-1P PV-10A10-2P PV-10A10F-CT 10 1000 V-12A10-T PV-12A10-2P PV-10A10F-CT	PCB fixing PCB fixing Current Double pin Current crimp terminal Current rating (amps) Energy integrating Bolt fixing Single pin Double pin In-line with crimp terminal Current rating (amps) Pre-arcing V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10F-CT 1 1000 0.15 V-2A10-T PV-2A10-1P PV-2A10-2P PV-3A10F-CT 2 1000 1.2 V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT 3 1000 4 V-3-5A10-T PV-35A10-1P PV-3-5A10-2P PV-3-5A10F-CT 3.5 1000 6.6 V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT 4 1000 9.5 V-5A10-T PV-5A10-1P PV-5A10-2P PV-6A10F-CT 6 1000 30 V-6A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT 8 1000 3 V-10A10-T PV-6A10-1P PV-10A10-2P PV-10A10F-CT 10 1000 7 V-12A10-T PV-10A10-2P	PCB fixing Energy integrals Pt (A ² s) Bolt fixing Single pin Double pin In-line with crimp terminal Current rating (amps) Voltage rating Energy integrals Pt (A ² s) V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10F-CT 1 1000 0.15 0.4 V-2A10-T PV-2A10-1P PV-2A10-2P PV-2A10F-CT 2 1000 1.2 3.4 V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT 3 1000 4 11 V-3-5A10-T PV-3A10-2P PV-3A10F-CT 3.5 1000 6.6 18 V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT 4 1000 9.5 26 V-5A10-T PV-5A10-1P PV-5A10-2P PV-5A10F-CT 5 1000 19 50 V-6A10-T PV-6A10-2P PV-6A10F-CT 8 1000 3 32 V-10A10-T PV-10A10-2P PV-10A10F-CT 10 1000 7 70 V-12A10-T <t< td=""><td>PCB fixing Current crimp terminal Voltage rating (amps) Energy integrals Pt (A²s) Watts to Watts to Watts to Pre-arcing Bolt fixing Single pin Double pin In-line with crimp terminal Current (amps) Voltage rating (Vdc) Total @ Pre-arcing Total @ 1000V 0.81, 0.081, V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10FCT 1 1000 0.15 0.4 0.8 V-2A10-T PV-2A10-1P PV-2A10-2P PV-2A10FCT 2 1000 1.2 3.4 0.6 V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT 3.5 1000 6.6 18 0.9 V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT 4 1000 9.5 26 1.0 V-5A10-T PV-5A10-1P PV-5A10-2P PV-5A10F-CT 5 1000 19 50 1.0 V-6A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT 6 1000 30 90 1.1 V-8A10-T PV-10A10-1P PV-10A10-2P <t< td=""></t<></td></t<>	PCB fixing Current crimp terminal Voltage rating (amps) Energy integrals Pt (A ² s) Watts to Watts to Watts to Pre-arcing Bolt fixing Single pin Double pin In-line with crimp terminal Current (amps) Voltage rating (Vdc) Total @ Pre-arcing Total @ 1000V 0.81, 0.081, V-1A10-T PV-1A10-1P PV-1A10-2P PV-1A10FCT 1 1000 0.15 0.4 0.8 V-2A10-T PV-2A10-1P PV-2A10-2P PV-2A10FCT 2 1000 1.2 3.4 0.6 V-3A10-T PV-3A10-1P PV-3A10-2P PV-3A10F-CT 3.5 1000 6.6 18 0.9 V-4A10-T PV-4A10-1P PV-4A10-2P PV-4A10F-CT 4 1000 9.5 26 1.0 V-5A10-T PV-5A10-1P PV-5A10-2P PV-5A10F-CT 5 1000 19 50 1.0 V-6A10-T PV-6A10-1P PV-6A10-2P PV-6A10F-CT 6 1000 30 90 1.1 V-8A10-T PV-10A10-1P PV-10A10-2P <t< td=""></t<>

* Total I²t @ 20kA IR.

Dimensions/configurations - mm:

Cylindrical PV-(amp)A10F, PV10M-(amp)



Cylindrical with PCB tabs PV-(amp)A10-1P (single pin), PV-(amp)A10-2P (double pin)



Recommended fuse holders and fuseclips:

Part number	Description and date sheet/brochure No.			
CHPV1IU	1-Pole modular fuse holder with indication 3185			
CHPV1U	1-Pole modular fuse holder without indication 3185			
CHPV2IU	2-Pole modular fuse holder with indication 3185			
CHPV2U	2-Pole modular fuse holder without indication 3185			
1A3400	PCB Fuseclips 2131			
HPV-DVA	In-line fuse holder assembly 2157			

Cylindrical with bolt fixings PV-(amp)A10-T



In-line with crimp terminals PV-(amp)A10F-CT (1-20A)



The in-line crimp terminal version can be electrically insulated with customer supplied overmolding or approved heat-shrink.

Operating temperature range

-40°C to 90°C

Wire range and type

Single conductor, 12-10AWG 75°C/90°C Cu stranded PV

Overmolding temperature parameters

· 233°C for 180 sec Max

Terminals

Crimp terminal for 12-10AWG PV copper conductors

Recommended tools

Sta-Kon[®] terminal crimping tool, catalog # ERG4002

Time-current characteristics – 1-20A:



Available current DC, - Time constant, <1m (amps)

Technical Data 10121 Effective December 2015

Temperature derating curves - 1-20A:



No additional derating is required for PV fuse links installed in ganged modular fuse holders without spacing between units, provided that the rating used is >1.56 x I_{sc} .

Time-current characteristics – 25-30A:



Available currnet, DC - time constant, <1ms (amps)

Temperature derating curves - 25-30A:



The only controlled copy of this data sheet is the electronic read-only version located on the Eaton network drive. All other copies of this document are by definition uncontrolled. This bulletin is intended to clearly present comprehensive product data and provide technical information that will help the end user with design applications. Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin. Once a product has been selected, it should be tested by the user in all possible applications.

Eaton 1000 Eaton Boulevard Cleveland, OH 44122 United States Eaton.com

Bussmann Division 114 Old State Road Ellisville, MO 63021 United States Eaton.com/bussmannseries

© 2015 Eaton All Rights Reserved Printed in USA Publication No. 10121 — BU-SB14107 October 2015 Eaton and Bussmann are valuable trademarks of Eaton in the US and other countries. You are not permitted to use the Eaton trademarks without prior written consent of Eaton.

The CCC mark is administered by the Certification and Accreditation Administration of the People's Republic of China. CSA is a registered trademark of the Canadian Standards Group. IEC is a registered trademark of the International Electrotechnical Commission. Sta-Kon is a registered trademark of Thomas & Betts. UL is a registered trademark of the Underwriters Laboratories. Inc For Eaton's Bussmann series product information, call **1-855-287-7626** or visit: **Eaton.com/bussmannseries**

Follow us on social media to get the latest product and support information.





Powering Business Worldwide