

Intrinsicly Safe Boost Protection Module

1 Features

- Limits the possible voltage supplied by a step-up (boost) DC-DC converter in case of converter malfunction
- Protects the DC-DC converter's surrounding circuitry from over-voltage
- Quad over-voltage (crowbar) protection
- Separate protection for converter's input circuitry (Part A)
- Separate protection for converter's output circuitry (Part B)
- Input crowbar can trigger output protection
- 0 to 60 V operating voltage range
- 4.9 to 25 V tripping voltage for Part A*
- 4.9 to 53 V tripping voltage for Part B*
- Very low series resistance (max. 20mΩ)
- Very low self-capacitance (max. 440nF)
- No voltage increasing circuitry inside the module
- IEC and ATEX certified component: Zone 1 and Zone 2, Zone 21 and Zone 22
- Package dimensions (W x L x H): 28.15mm x 22.5mm x 4.9mm
- RoHS Compliant, Pb free

*Depends on the selected part number



2 Certifications

2.1 IECEx Certification

(IEC 60079-0, 60079-11)



IECEX BKJ 20.0003U

- Ex ib IIC Gb
- Ex ib IIIC Db

2.2 ATEX Certification

(ATEX Directive 2014/34/EU)

BKJ20ATEX0014U

-  II 2G Ex ib IIC Gb
-  II 2D Ex ib IIIC Db

3 Part Numbers:

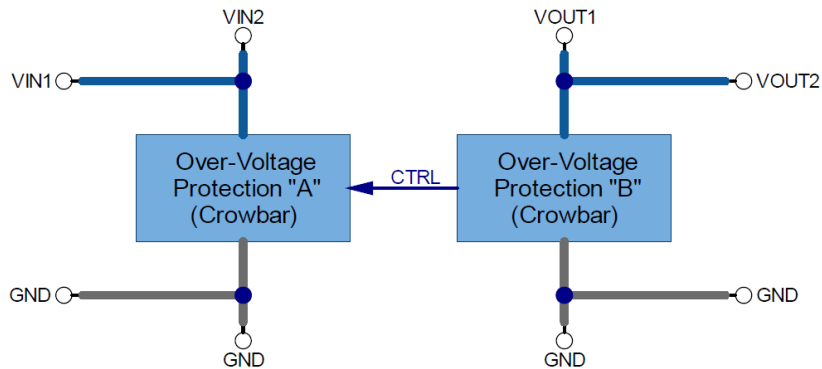
A.BPEX X - XX - AA V A - BB V B

- X – Generation (0-9 A-Z)
- XX – Revision (00-99)
- AA V A – Tripping voltage, Part A*
- BB V B – Tripping voltage, Part B*

*Nominal Tripping voltage values (A is for Part A, B is for Part B):

04V9^{A,B} / 05V3^{A,B} / 05V7^{A,B} / 06V2^{A,B} / 06V8^{A,B} / 07V4^{A,B} / 08V1^{A,B} / 08V8^{A,B} / 09V7^{A,B} / 10V6^{A,B} / 11V6^{A,B} / 12V6^{A,B} / 14V0^{A,B} / 17V0^{A,B} / 19V0^{A,B} / 21V0^{A,B} / 23V0^{A,B} / 25V0^{A,B} / 28V0^B / 31V0^B / 34V5^B / 37V5^B / 40V5^B / 45V0^B / 49V0^B / 53V0^B

4 Block Diagram



5 Electrical Characteristics

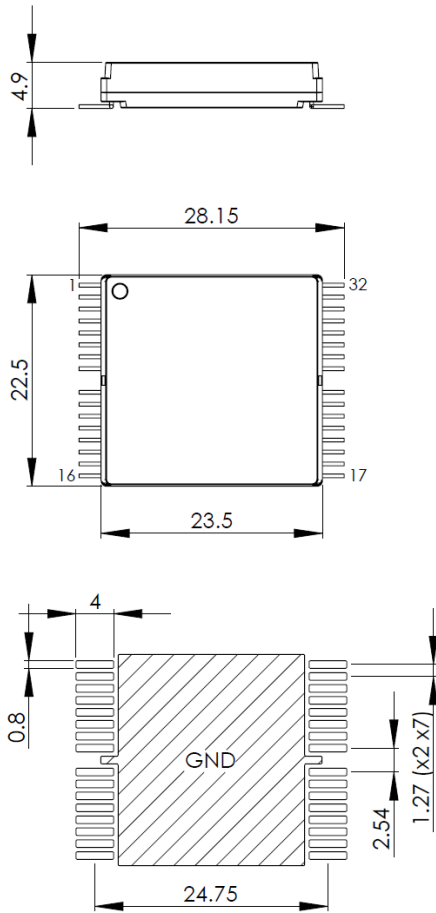
Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating temperature range	T_A	-55	-	+125	°C
Absolute maximum input voltage range	V_{IN_MAX}	-0.6	-	90	V
Operating input voltage range	V_{IN}	0	-	60	V
Nominal tripping voltage, Part A ¹	V_{TA}	4.9	-	25	V
Nominal tripping voltage, Part B ¹	V_{TB}	4.9	-	53	V
Series resistance ²	R_S	-	-	20	mΩ
Total internal capacitance	C_{TOT}	-	-	440	nF
Reverse Diode Forward Voltage	V_{SD}	-	-	1	V
Max. Reverse Diode Continuous Current	I_S	-	-	30.5	A

All values are defined on 25 °C ambient temperature unless other conditions are specified.

¹ Value depends on part number.

² All pins soldered.

6 Mechanical Dimensions, Footprint:

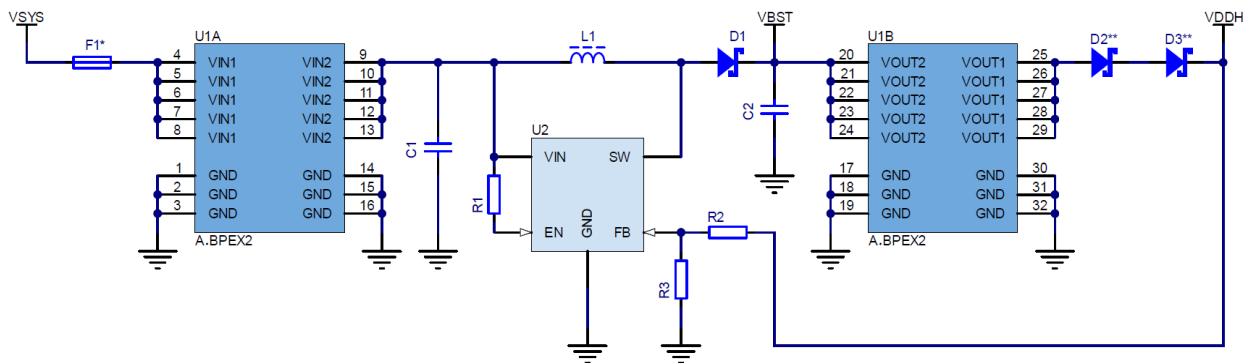


7 Pinout:

Part A			
4	VIN1	VIN2	9
5	VIN1	VIN2	10
6	VIN1	VIN2	11
7	VIN1	VIN2	12
8	VIN1	VIN2	13
1	GND	GND	14
2	GND	GND	15
3	GND	GND	16

Part B			
20	VOUT2	VOUT1	25
21	VOUT2	VOUT1	26
22	VOUT2	VOUT1	27
23	VOUT2	VOUT1	28
24	VOUT2	VOUT1	29
17	GND	GND	30
18	GND	GND	31
19	GND	GND	32

8 Typical Application



9 Intrinsic Safety:

9.1 Schedule of Limitations

- PCB outermost layer under the component must be GND (see [Footprint](#))
- This module must be encapsulated according to IEC 60079-11
- In the application of this module, keep required separation distances to the module according to IEC 60079-11
- Enclosure of the equipment in which the module is to be used must be at least IP2x
- It is not allowed to attempt to repair or disassemble the module
- This module is ensuring a limited voltage on its input and output. However, for application of the module, further consideration is required to ensure that the combination of voltages, currents and components (e.g. capacitors, inductors) that are to be connected to the module, will maintain the safety of the equipment (e.g. via Annex A of IEC 60079-11 or spark assessment).
- Fuse is mandatory for current protection of crowbar inside Part A. Fuse value of 2A or less must be used.
- Reverse blocking diodes are mandatory for current protection of crowbar inside Part B. Reverse voltage of the diodes must be at least 1.5 times higher, than the tripping voltage of Part B.

9.2 Markings:

ADOTT Solutions

A.BPEX *X* - *AAVA* - *BBVB*

IECEX: BK1 20.0003U

Ex ib IIC Gb

Ex ib IIIC Db

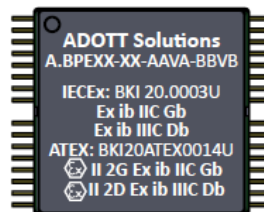
ATEX: BK120ATEX0014U

 II 2G **Ex ib IIC Gb**

 II 2D **Ex ib IIIC Db**

www.adott.solutions

Top side



Bottom side

