



**flowCON E2**

**1800 V / 110 A**

**Topology features**

- Three-phase Rectifier

**Component features**

- High inrush current capability

**Housing features**

- Base isolation: Al<sub>2</sub>O<sub>3</sub>
- Convex shaped substrate for superior thermal contact
- Compact housing
- CTI600 housing material
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

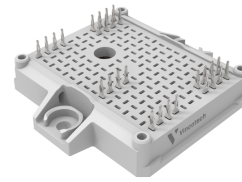
**Target applications**

- Industrial Drives
- Welding & Cutting

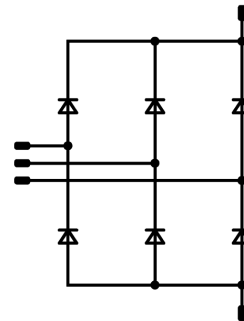
**Types**

- 10-EY186RA110RW-PL78H08T

**flow E2 12 mm housing**



**Schematic**





Vincotech

10-EY186RA110RW-PL78H08T  
datasheet

## Maximum Ratings

$T_j = 25\text{ °C}$ , unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
<b>Rectifier Diode</b>				
Peak repetitive reverse voltage	$V_{RRM}$		1800	V
Forward current (DC current)	$I_F$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	149	A
Surge (non-repetitive) forward current	$I_{FSM}$	Single Half Sine Wave, $t_p = 8,3\text{ ms}$ $T_j = 25\text{ °C}$	1320	A
Surge current capability	$I^2t$		8710	A <sup>2</sup> s
Total power dissipation	$P_{tot}$	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	170	W
Maximum junction temperature	$T_{jmax}$		150	°C

## Module Properties

### Thermal Properties

Storage temperature	$T_{stg}$		-40...+125	°C
Operation temperature under switching condition	$T_{jop}$		-40...+( $T_{jmax} - 25$ )	°C

### Isolation Properties

Isolation voltage	$V_{isol}$	DC Test Voltage* $t_p = 2\text{ s}$	6000	V
Creepage distance			>12,7	mm
Clearance			9,68	mm
Comparative Tracking Index	CTI		≥ 600	

\*100 % tested in production



Vincotech

### Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		$V_{GE}$ [V] $V_{GS}$ [V]	$V_{CE}$ [V] $V_{DS}$ [V] $V_F$ [V]	$I_C$ [A] $I_D$ [A] $I_F$ [A]	$T_j$ [°C]	Min	Typ	Max		

### Rectifier Diode

#### Static

Forward voltage	$V_F$				110	25 125		1,06 1,05	1,2 <sup>(1)</sup>	V
Reverse leakage current	$I_R$	$V_r = 1800$ V				25 150			10 2000	μA

#### Thermal

Thermal resistance junction to sink <sup>(2)</sup>	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,41		K/W
--	---------------	---------------------------------------	--	--	--	--	--	------	--	-----

<sup>(1)</sup> Value at chip level

<sup>(2)</sup> Only valid with pre-applied Vincotech thermal interface material.



## Rectifier Diode Characteristics

figure 1. Rectifier

Typical forward characteristics

$$I_F = f(V_F)$$

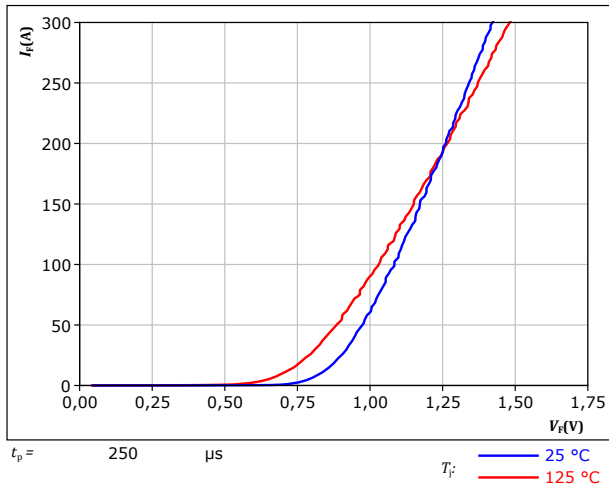
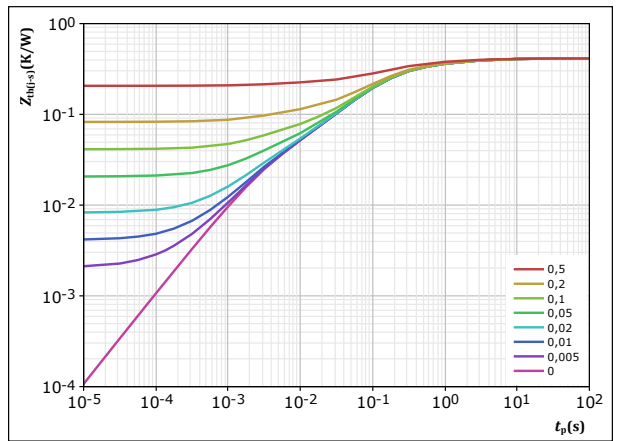


figure 2. Rectifier

Transient thermal impedance as a function of pulse width

$$Z_{th(j-s)} = f(t_p)$$



$D = t_p / T$

$R_{th(j-s)} = 0,413 \text{ K/W}$

Rectifier thermal model values

$R \text{ (K/W)}$	$\tau \text{ (s)}$
2,38E-02	6,49E+00
7,61E-02	1,10E+00
2,07E-01	1,72E-01
8,13E-02	4,62E-02
2,49E-02	3,22E-03




# 10-EY186RA110RW-PL78H08T

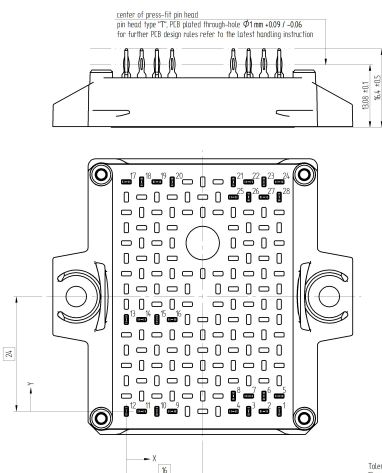
datasheet

Vincotech

Ordering Code	
<b>Version</b>	<b>Ordering Code</b>
Without thermal paste	10-EY186RA110RW-PL78H08T
With thermal paste (3,4 W/mK, PSX-P7)	10-EY186RA110RW-PL78H08T-/3/

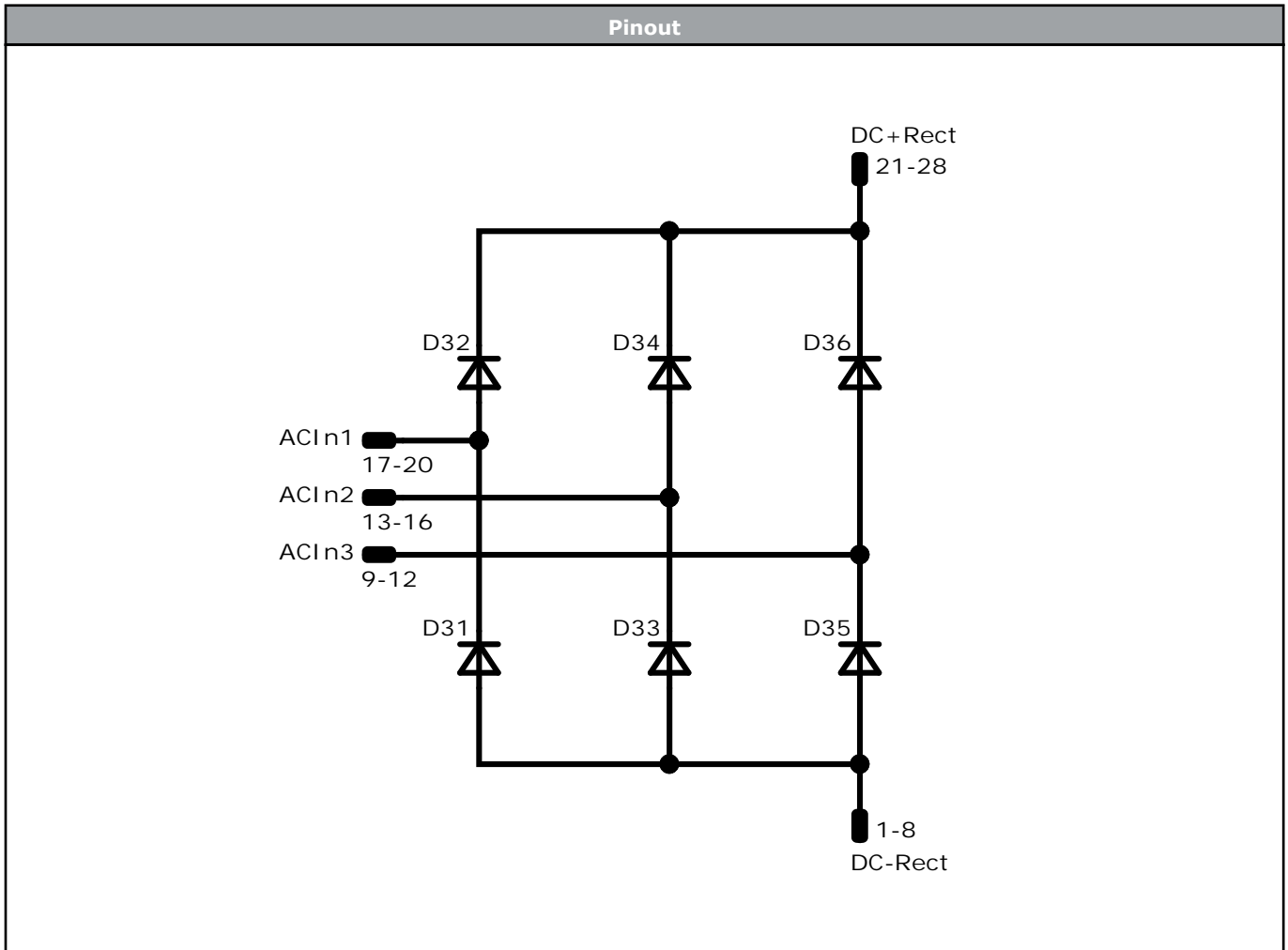
Marking						
	<b>Text</b>	<b>Name</b> NN-NNNNNNNNNNNNNN- TTTTTVV	<b>Date code</b> WWYY	<b>UL &amp; VIN</b> UL VIN	<b>Lot</b> LLLLL	<b>Serial</b> SSSS
	<b>Datamatrix</b>	<b>Type&amp;Ver</b> TTTTTTVV	<b>Lot number</b> LLLLL	<b>Serial</b> SSSS	<b>Date code</b> WWYY	

Outline				
Pin table [mm]				
Pin	X	Y	Function	
1	32	0	DC-Rect	
2	28,8	0	DC-Rect	
3	25,6	0	DC-Rect	
4	22,4	0	DC-Rect	
5	32	3,2	DC-Rect	
6	28,8	3,2	DC-Rect	
7	25,6	3,2	DC-Rect	
8	22,4	3,2	DC-Rect	
9	9,6	0	ACIn3	
10	6,4	0	ACIn3	
11	3,2	0	ACIn3	
12	0	0	ACIn3	
13	0	19,2	ACIn2	
14	3,2	19,2	ACIn2	
15	6,4	19,2	ACIn2	
16	9,6	19,2	ACIn2	
17	0	48	ACIn1	
18	3,2	48	ACIn1	
19	6,4	48	ACIn1	
20	9,6	48	ACIn1	
21	22,4	48	DC+Rect	
22	25,6	48	DC+Rect	
23	28,8	48	DC+Rect	
24	32	48	DC+Rect	
25	22,4	44,8	DC+Rect	
26	25,6	44,8	DC+Rect	
27	28,8	44,8	DC+Rect	
28	32	44,8	DC+Rect	



center of press-fit pin head  
pin head type T, PB plated through-hole  $\Phi 1.1 \text{mm} \pm 0.05$   
for further PCB design rules refer to the latest handling instruction

Tolerance of positions  $\pm 0.1 \text{mm}$  at the end of axis  
Dimension of coordinate axis is only offset without tolerance



Identification					
ID	Component	Voltage	Current	Function	Comment
D31, D32, D33, D34, D35, D36	Rectifier	1800 V	110 A	Rectifier Diode	



Vincotech

Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for <i>flow</i> E2 packages see vincotech.com website.

Package data
Package data for <i>flow</i> E2 packages see vincotech.com website.

Vincotech thermistor reference
See Vincotech thermistor reference table at vincotech.com website.

UL recognition and file number
This device is UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,op}=175^{\circ}\text{C}$ and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website.



Document No.:	Date:	Modification:	Pages
10-EY186RA110RW-PL78H08T-D1-14	21 May, 2024		

**DISCLAIMER**

The information, specifications, procedures, methods and recommendations herein (together "information") are presented by Vincotech to reader in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. Vincotech reserves the right to make any changes without further notice to any products to improve reliability, function or design. No representation, guarantee or warranty is made to reader as to the accuracy, reliability or completeness of said information or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe third parties rights or give desired results. It is reader's sole responsibility to test and determine the suitability of the information and the product for reader's intended use.

**LIFE SUPPORT POLICY**

Vincotech products are not authorised for use as critical components in life support devices or systems without the express written approval of Vincotech.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in labelling can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.