



Vincotech

# 10-PZ06O2A060FW-LH04J08Y

datasheet

flowCON 0

600 V / 60 A

## Features

- Single-phase Rectifier
- High speed diodes
- Low inductive design
- Integrated thermistor

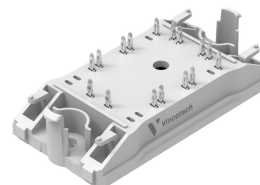
## Target applications

- Charging Stations
- Power Supply

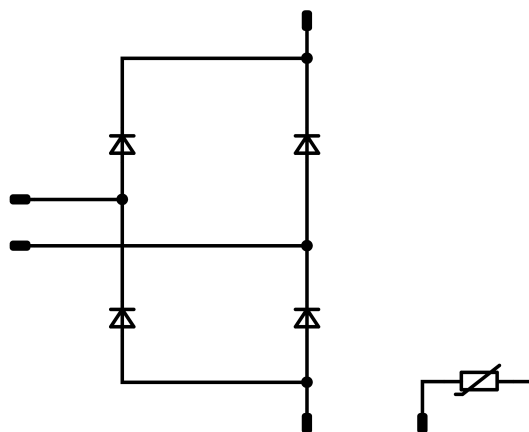
## Types

- 10-PZ06O2A060FW-LH04J08Y

## flow 0 12 mm housing



## Schematic





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## Maximum Ratings

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

| Parameter                              | Symbol     | Conditions                                                           | Value | Unit |
|----------------------------------------|------------|----------------------------------------------------------------------|-------|------|
| <b>Rectifier Diode</b>                 |            |                                                                      |       |      |
| Peak repetitive reverse voltage        | $V_{RRM}$  |                                                                      | 600   | V    |
| Continuous (direct) forward current    | $I_F$      | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$                                | 57    | A    |
| Surge (non-repetitive) forward current | $I_{FSM}$  | Single Half Sine Wave,<br>$t_p = 8,3\text{ ms}$ $T_j = 25\text{ °C}$ | 600   | A    |
| Total power dissipation                | $P_{tot}$  | $T_j = T_{jmax}$ $T_s = 80\text{ °C}$                                | 72    | 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  |
| Isolation voltage          | $V_{isol}$ | AC Voltage $t_p = 1\text{ min}$     | 2500       | V  |
| Creepage distance          |            |                                     | min. 12,7  | mm |
| Clearance                  |            |                                     | 9,15       | mm |
| Comparative Tracking Index | CTI        |                                     | $\geq 200$ |    |

\*100 % tested in production



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## Characteristic Values

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

### Rectifier Diode

#### Static

|                         |       |               |  |  |    |                  |     |                      |           |  |    |
|-------------------------|-------|---------------|--|--|----|------------------|-----|----------------------|-----------|--|----|
| Forward voltage         | $V_F$ |               |  |  | 60 | 25<br>125<br>150 | 1,4 | 1,55<br>1,33<br>1,28 | 1,83      |  | V  |
| Reverse leakage current | $I_R$ | $V_i = 600$ V |  |  |    | 25<br>125        |     |                      | 10<br>500 |  | μA |

#### Thermal

|                                      |               |                                       |  |  |  |  |  |      |  |  |     |
|--------------------------------------|---------------|---------------------------------------|--|--|--|--|--|------|--|--|-----|
| Thermal resistance junction to sink* | $R_{th(j-s)}$ | $\lambda_{paste} = 3,4$ W/mK<br>(PSX) |  |  |  |  |  | 0,98 |  |  | K/W |
|--------------------------------------|---------------|---------------------------------------|--|--|--|--|--|------|--|--|-----|

\*Only valid with pre-applied Vincotech thermal interface material.

### Thermistor

#### Static

|                                |                |                    |  |  |  |     |    |      |   |  |      |
|--------------------------------|----------------|--------------------|--|--|--|-----|----|------|---|--|------|
| Rated resistance               | $R$            |                    |  |  |  | 25  |    | 22   |   |  | kΩ   |
| Deviation of $R_{100}$         | $\Delta_{R/R}$ | $R_{100} = 1484$ Ω |  |  |  | 100 | -5 |      | 5 |  | %    |
| Power dissipation              | $P$            |                    |  |  |  |     |    | 5    |   |  | mW   |
| Power dissipation constant     | $d$            |                    |  |  |  | 25  |    | 1,5  |   |  | mW/K |
| B-value                        | $B_{(25/50)}$  | Tol. $\pm 1$ %     |  |  |  |     |    | 3962 |   |  | K    |
| B-value                        | $B_{(25/100)}$ | Tol. $\pm 1$ %     |  |  |  |     |    | 4000 |   |  | K    |
| Vincotech Thermistor Reference |                |                    |  |  |  |     |    |      | I |  |      |



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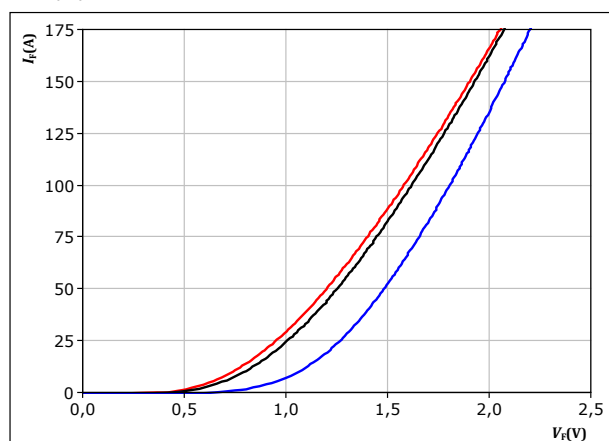
## Rectifier Diode Characteristics

figure 1.

FWD

Typical forward characteristics

$$I_F = f(V_F)$$



$t_p = 250 \mu s$

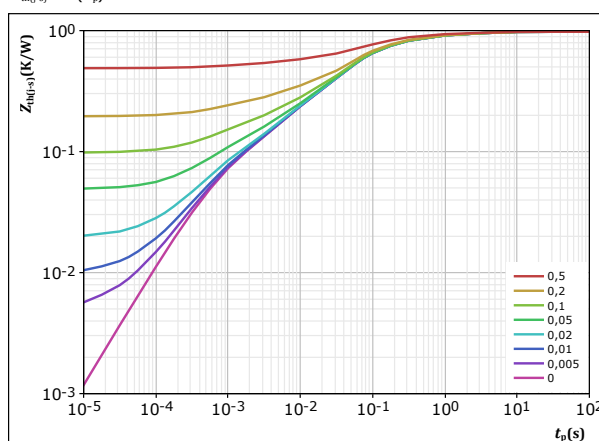
$T_j$ :  
— 25 °C  
— 125 °C  
— 150 °C

figure 2.

FWD

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$   
 $R_{th(j-s)} = 0,978 \text{ K/W}$   
IGBT thermal model values  

| $R \text{ (K/W)}$ | $\tau \text{ (s)}$ |
|-------------------|--------------------|
| 7,63E-02          | 2,92E+00           |
| 2,00E-01          | 3,50E-01           |
| 5,29E-01          | 6,10E-02           |
| 1,14E-01          | 6,10E-03           |
| 5,96E-02          | 6,59E-04           |



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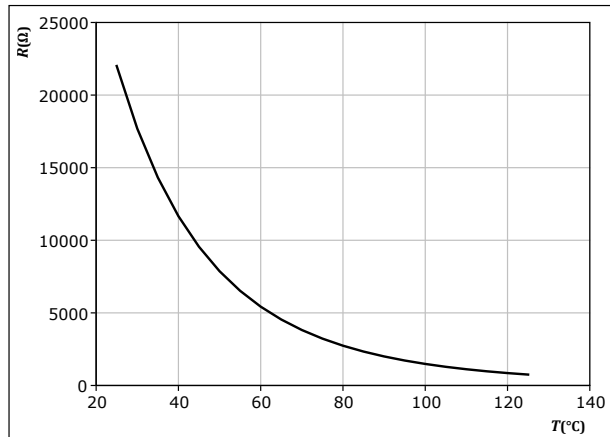
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## Thermistor Characteristics

**figure 3.** Thermistor

Typical NTC characteristic as function of temperature

$$R_T = f(T)$$





datasheet

| Ordering Code         |                              |
|-----------------------|------------------------------|
| Version               | Ordering Code                |
| Without thermal paste | 10-PZ0602A060FW-LH04J08Y     |
| With thermal paste    | 10-PZ0602A060FW-LH04J08Y-/3/ |

| Marking                                                                                                                                                                                                                                                                     |            |                                     |            |           |           |       |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------|------------|-----------|-----------|-------|--------|
| <div><div>NN-NNNNNNNNNNNNNNNNNNNN<br/>TTTTTTVVVVV UL<br/>VIN LLLLL SSSS</div><div></div><div></div></div> | Text       | Name                                |            | Date code | UL & VIN  | Lot   | Serial |
|                                                                                                                                                                                                                                                                             |            | NN-NNNNNNNNNNNNNNNNNNNN<br>TTTTTTVV |            | WWYY      | UL VIN    | LLLLL | SSSS   |
|                                                                                                                                                                                                                                                                             | Datamatrix | Type&Ver                            | Lot number | Serial    | Date code |       |        |
|                                                                                                                                                                                                                                                                             |            | TTTTTTTVV                           | LLLLL      | SSSS      | WWYY      |       |        |

| Pin table [mm] |      |      |               |
|----------------|------|------|---------------|
| Pin            | X    | Y    | Function      |
| 1              |      |      | not assembled |
| 2              |      |      | not assembled |
| 3              | 8,3  | 22,5 | DC+Rect       |
| 4              | 10,8 | 22,5 | DC+Rect       |
| 5              | 19,6 | 22,5 | DC-Rect       |
| 6              | 22,1 | 22,5 | DC-Rect       |
| 7              |      |      | not assembled |
| 8              | 32   | 22,5 | ACIn1         |
| 9              | 33,5 | 17,8 | ACIn1         |
| 10             | 33,5 | 15,3 | ACIn1         |
| 11             | 33,5 | 7,2  | ACIn2         |
| 12             | 33,5 | 4,7  | ACIn2         |
| 13             | 32   | 0    | ACIn2         |
| 14             |      |      | not assembled |
| 15             | 22,1 | 0    | DC-Rect       |
| 16             | 19,6 | 0    | DC-Rect       |
| 17             | 10,8 | 0    | DC+Rect       |
| 18             | 8,3  | 0    | DC+Rect       |
| 19             |      |      | not assembled |
| 20             |      |      | not assembled |
| 21             | 0    | 8    | Therm1        |
| 22             | 0    | 14,5 | Therm2        |

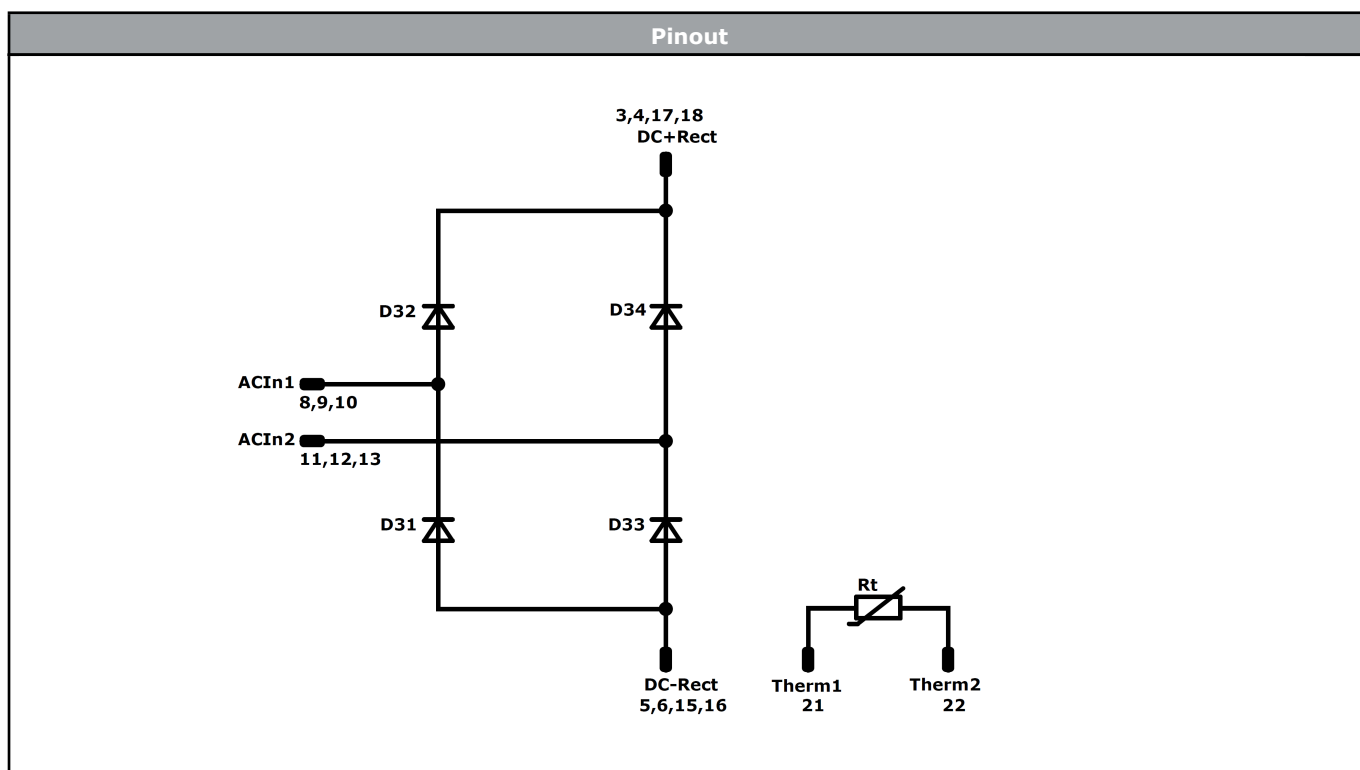
The figure includes two technical drawings of the sensor module:

- Top View:** Shows the rectangular footprint of the module with a central circular feature. Dimensions include a total width of 125 mm, a height of 16 mm, and a central horizontal offset of 16.75 mm from the left edge to the centerline.
- Side View:** Shows the profile of the module with pins along the top edge. A dimension of 19.6 ± 0.1 mm indicates the distance from the base to the top of the pin array.



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| Identification     |           |         |         |                 |         |
|--------------------|-----------|---------|---------|-----------------|---------|
| ID                 | Component | Voltage | Current | Function        | Comment |
| D31, D32, D33, D34 | FWD       | 600 V   | 60 A    | Rectifier Diode |         |
| Rt                 | NTC       |         |         | Thermistor      |         |



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| Packaging instruction                                                                                                           |      |          |      |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------|------|----------|------|-------------------------------------------------------------------------------------|
| Standard packaging quantity (SPQ) 135                                                                                           | >SPQ | Standard | <SPQ | Sample                                                                              |
| Handling instruction                                                                                                            |      |          |      |                                                                                     |
| Handling instructions for <i>flow 0</i> packages see vincotech.com website.                                                     |      |          |      |                                                                                     |
| Package data                                                                                                                    |      |          |      |                                                                                     |
| Package data for <i>flow 0</i> packages see vincotech.com website.                                                              |      |          |      |                                                                                     |
| UL recognition and file number                                                                                                  |      |          |      |                                                                                     |
| This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website. |      |          |      |  |

| Document No.:                  | Date:       | Modification: | Pages |
|--------------------------------|-------------|---------------|-------|
| 10-PZ06O2A060FW-LH04J08Y-D1-14 | 3 Apr. 2020 |               |       |

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