Vincotech

80-M2166RA075RS-K738H
datasheet

MiniSKiiP® CON 2 **1600 V / 75 A**

Features

- 3-phase rectifier
- Thermal sensor integrated

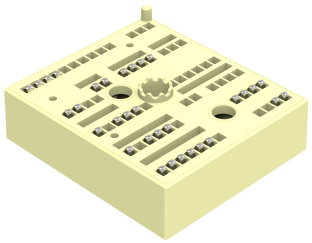
Target applications

- Industrial Drives

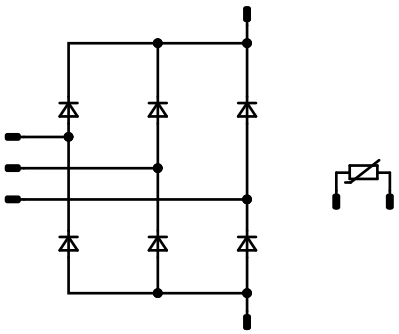
Types

- 80-M2166RA075RS-K738H

MiniSKiiP® 2 16 mm housing



Schematic



Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Rectifier Diode					
Peak repetitive reverse voltage	V_{RRM}			1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	104	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	890	A
Surge current capability	I^2t			3960	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	119	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 s	5500	V
Creepage distance		With std lid For more informations see handling instructions		6,3	mm
Clearance		With std lid For more informations see handling instructions		6,3	mm
Comparative Tracking Index	CTI			≥ 600	

*100 % tested in production

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				45	25 125 150		1,01 0,929 0,92	1,21(1) 1,1(1)	V
Reverse leakage current	I_R	V_r = 1600 V				25			50	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 2,5 W/mK (HPTP)						0,59		K/W
Thermistor										
Static										
Rated resistance	R					25		1		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 1670 Ω				100	-2		2	%
Maximum Current	I_{max}							3		mA
Power dissipation constant	d					25		0,76		mW/K
A-value	A							$7{,}635 \times 10^{-3}$		1/K
B-value	B							$1{,}73 \times 10^{-5}$		$1/K^2$
Vincotech Thermistor Reference									E	

(1) Value at chip level

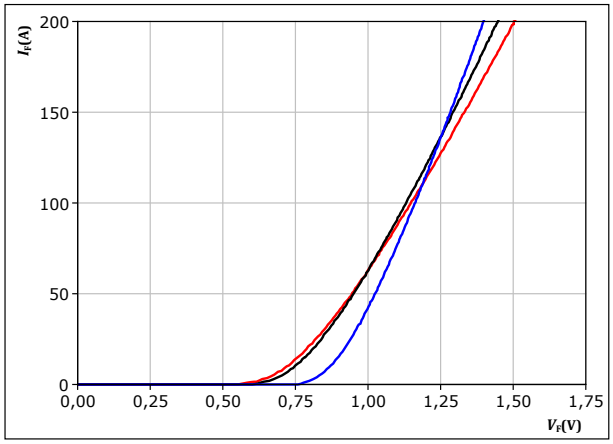
(2) Only valid with pre-applied Vincotech thermal interface material.

Rectifier Diode Characteristics

figure 1. **Rectifier**

Typical forward characteristics

$I_F = f(V_F)$



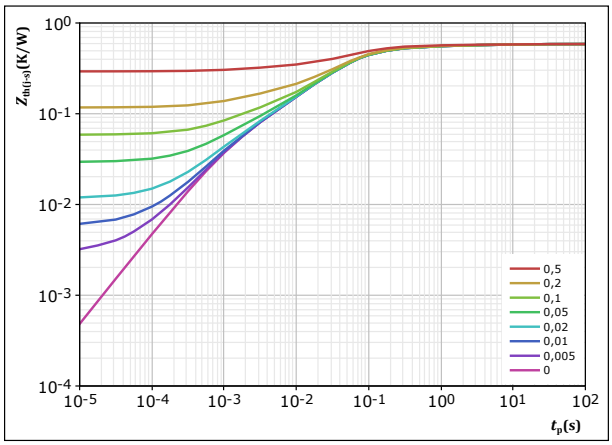
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 2. **Rectifier**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 0,586 K/W

Rectifier thermal model values

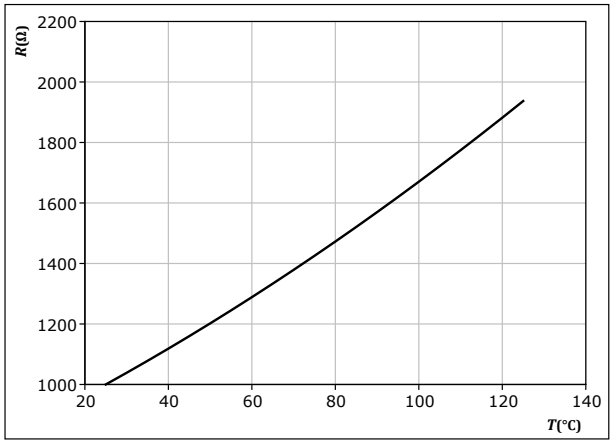
R (K/W)	τ (s)
2,18E-02	8,76E+00
4,09E-02	7,46E-01
1,08E-01	1,33E-01
3,14E-01	4,45E-02
5,85E-02	8,66E-03
3,93E-02	1,33E-03
2,71E-03	6,42E-04

Thermistor Characteristics

figure 3. **Thermistor**

Typical PTC characteristic as function of temperature

$R_T = f(T)$



Ordering Code

Version	Ordering Code
With std lid (6.5mm height) + no thermal grease	80-M2166RA075RS-K738H-/0A/
With thin lid (2.8mm height) + no thermal grease	80-M2166RA075RS-K738H-/0B/
With std lid (6.5mm height) + thermal grease (0,8 W/mK, P12, silicone-based)	80-M2166RA075RS-K738H-/1A/
With thin lid (2.8mm height) + thermal grease (0,8 W/mK, P12, silicone-based)	80-M2166RA075RS-K738H-/1B/
With std lid (6.5mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free)	80-M2166RA075RS-K738H-/4A/
With thin lid (2.8mm height) + thermal grease (2,5 W/mK, TG20032, silicone-free)	80-M2166RA075RS-K738H-/4B/
With std lid (6.5mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based)	80-M2166RA075RS-K738H-/5A/
With thin lid (2.8mm height) + thermal grease (2,5 W/mK, HPTP, silicone-based)	80-M2166RA075RS-K738H-/5B/

Marking

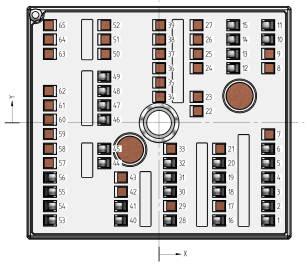
	Name	Date code	UL & VIN	Lot	Serial
Text	NN-NNNNNNNNNNNNNN-TTTTTTVV	WWYY	UL VIN	LLLLL	SSSS

	Type&Ver	Lot number	Serial	Date code		
Datamatrix	TTTTTTVV	LLLLL	SSSS	WWYY		

Outline

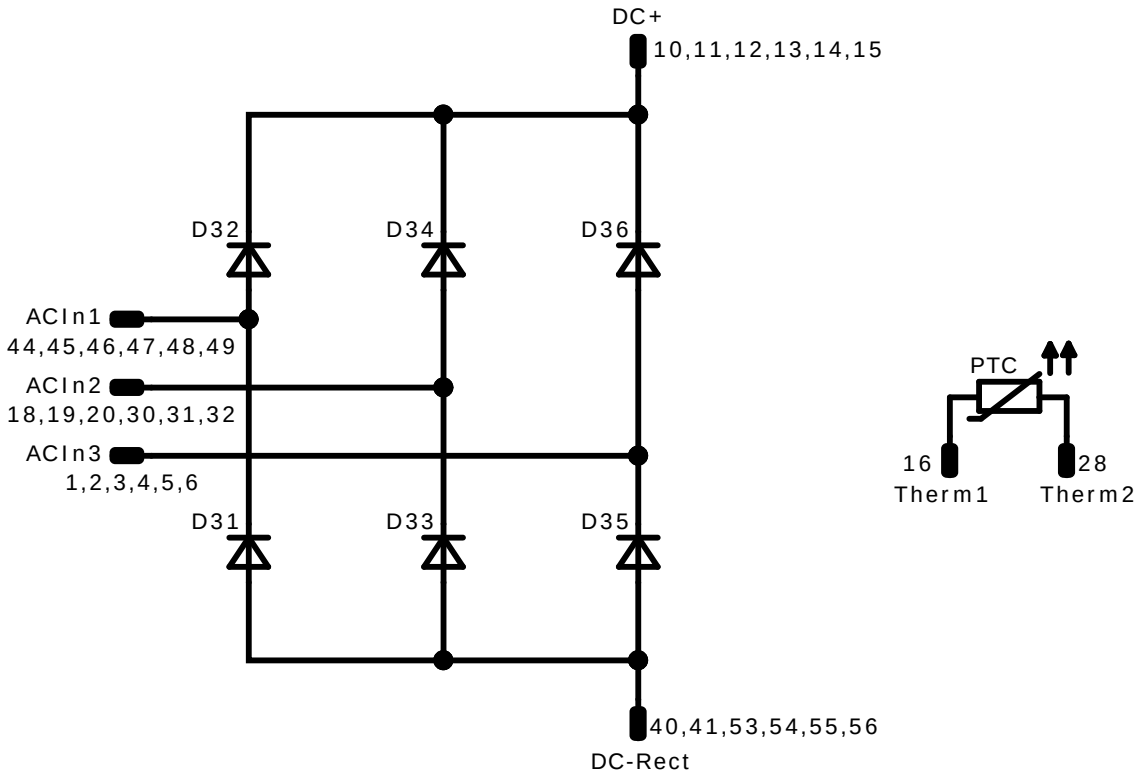
Pin table [mm]

Pin	X	Y	Function	Pin	X	Y	Function
1	24,38	-21,8	ACIn3	34	not assembled		
2	24,38	-18,6	ACIn3	35	not assembled		
3	24,38	-15,4	ACIn3	36	not assembled		
4	24,38	-12,2	ACIn3	37	not assembled		
5	24,38	-9	ACIn3	38	not assembled		
6	24,38	-5,8	ACIn3	39	not assembled		
7	not assembled			40	-8,5	-21,8	DC-Rect
8	not assembled			41	-8,5	-18,6	DC-Rect
9	not assembled			42	not assembled		
10	24,38	18,6	DC+	43	not assembled		
11	24,38	21,8	DC+	44	-12,22	-9	ACIn1
12	16,58	12,2	DC+	45	-12,22	-5,8	ACIn1
13	16,58	15,4	DC+	46	-12,22	-2,599999999999999	ACIn1
14	16,58	18,6	DC+	47	-12,22	3,9	ACIn1
15	16,58	21,8	DC+	48	-12,22	7,1	ACIn1
16	13,42	-21,8	Therm1	49	-12,22	10,3	ACIn1
17	not assembled			50	not assembled		
18	13,42	-15,4	ACIn2	51	not assembled		
19	13,42	-12,2	ACIn2	52	not assembled		
20	13,42	-9	ACIn2	53	-24,38	-21,8	DC-Rect
21	not assembled			54	-24,38	-18,6	DC-Rect
22	not assembled			55	-24,38	-15,4	DC-Rect
23	not assembled			56	-24,38	-12,2	DC-Rect
24	not assembled			57	not assembled		
25	not assembled			58	not assembled		
26	not assembled			59	not assembled		
27	not assembled			60	not assembled		
28	2,46	-21,8	Therm2	61	not assembled		
29	not assembled			62	not assembled		
30	2,46	-15,4	ACIn2	63	not assembled		
31	2,46	-12,2	ACIn2	64	not assembled		
32	2,46	-9	ACIn2	65	not assembled		
33	not assembled						



Pad positions refers to center point. For more informations on pad design please see package data

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
D31, D32, D33, D34, D35, D36	Rectifier	1600 V	75 A	Rectifier Diode	
PTC	Thermistor			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 72	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for MiniSKiiP® 2 packages see vincotech.com website.

Package data
Package data for MiniSKiiP® 2 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 certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website.

Document No.:	Date:	Modification:	Pages
80-M2166RA075RS-K738H-D3-14	28 Sep. 2021	Change of Rth value from P12 to HPTP Change of Isolation voltage Change of Creepage and Clearance distances	