



Vincotech

30-EQ14NIA560H701-PS59F86T

target datasheet

flowNPC E3BP

1400 V / 560 A

Topology features

- Kelvin Emitter for improved switching performance
- Temperature sensor
- Neutral Point Clamped Topology (I-Type)

Component features

- High speed switching
- Low collector emitter saturation voltage
- Low turn-off losses
- Optimized for hard switching topologies
- Positive temperature coefficient

Housing features

- Base isolation: Si₃N₄ (Ag free)
- Cu baseplate
- Convex shaped baseplate for superior thermal contact
- CTI600 housing material
- Baseplate with rough surface
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

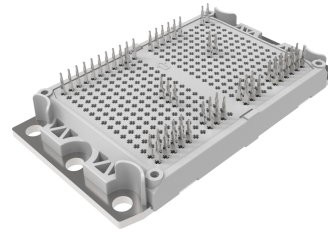
Target applications

- Solar Inverters

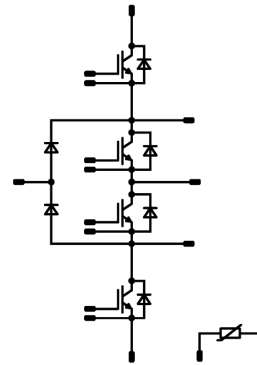
Types

- 30-EQ14NIA560H701-PS59F86T

flow E3BP 15 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Buck Switch				
Collector-emitter voltage	V_{CES}		1400	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	560	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1120	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	-	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	°C

Buck Diode

Peak repetitive reverse voltage	V_{RRM}		1400	V
Forward current (DC current) ⁽²⁾	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	240	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	1422	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 25\text{ °C}$	2700	A
Surge current capability	I^2t		36432	A ² s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	-	W
Maximum junction temperature	T_{jmax}		175	°C

⁽¹⁾Calculation based on chip supplier datasheet at $T_j=175\text{°C}$

Boost Switch

Collector-emitter voltage	V_{CES}		1400	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	560	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1120	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	-	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	°C



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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Boost Diode				
Peak repetitive reverse voltage	V_{RRM}		1400	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	300	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	600	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	-	W
Maximum junction temperature	T_{jmax}		175	°C

Boost Sw. Inv. Diode

Peak repetitive reverse voltage	V_{RRM}		1400	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	280	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	560	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	-	W
Maximum junction temperature	T_{jmax}		175	°C

Module Properties

Thermal Properties

Storage temperature	T_{stg}		-40...+125	°C
Operation temperature under switching condition	T_{jop}		-40...+175 *	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage $t_p = 2\text{ s}$	6800	V
Creepage distance			>12,7	mm
Clearance			>12,7	mm
Comparative Tracking Index	CTI		≥ 600	

* The chip temperature under switching has an impact on the total lifetime. Please request a lifetime calculation for your mission profile.



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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	

Buck Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0092	25	3,5	5,5	7	V
Collector-emitter saturation voltage	V_{CEsat}		15		560	25		1,8	3	V
Collector-emitter cut-off current	I_{CES}		0	1400		25			16	µA
Gate-emitter leakage current	I_{GES}		20	0		25			400	nA
Internal gate resistance	r_g							None		Ω

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,12		K/W
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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	

Buck Diode

Static

Forward voltage	V_F				240	25		1,35	1,6	V
Reverse leakage current	I_R	$V_r = 1400$ V				25		30	960	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,21		K/W
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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	

Boost Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0092	25	3,5	5,5	7	V
Collector-emitter saturation voltage	V_{CEsat}		15		560	25		1,8	3	V
Collector-emitter cut-off current	I_{CES}		0	1400		25			16	μA
Gate-emitter leakage current	I_{GES}		20	0		25			400	nA
Internal gate resistance	r_g							None		Ω

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,12		K/W
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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	

Boost Diode

Static

Forward voltage	V_F				300	25		3	4,5	V
Reverse leakage current	I_R	$V_r = 1400$ V				25			30	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,23		K/W
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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	

Boost Sw. Inv. Diode

Static

Forward voltage	V_F				280	25		3,35	4,5	V
Reverse leakage current	I_R	$V_r = 1400$ V				25			10	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						0,26		K/W
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Thermistor

Static

Rated resistance	R					25		22		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1484$ Ω				100	-5		5	%
Power dissipation	P					25		130		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ± 1 %						3962		K
B-value	$B_{(25/100)}$	Tol. ± 1 %						4000		K
Vincotech Thermistor Reference									I	



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Ordering Code	
Version	Ordering Code
Without thermal paste	30-EQ14NIA560H701-PS59F86T
With thermal paste (5,2 W/mK, PTM6000HV)	30-EQ14NIA560H701-PS59F86T-/7/

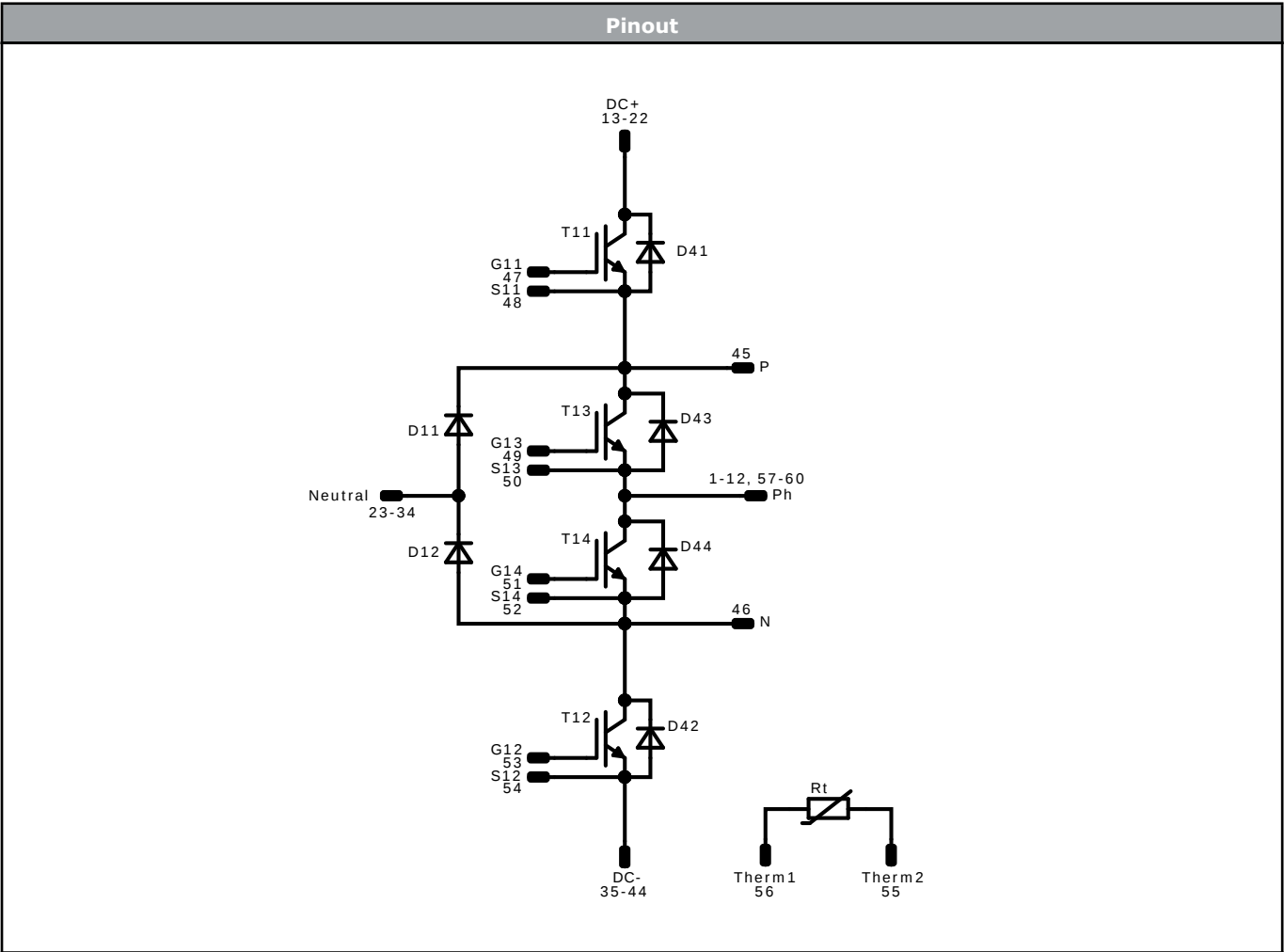
Marking							
	Text	Name		Date code	Logo	Lot	Serial
		NN-NNNNNNNNNNNN- TTTTTVV		WWYY	VIN	LLLL	SSSS
	Datamatrix	Type&Ver	Lot number	Serial	Date code		
		TTTTTVV	LLLL	SSSS	WWYY		

Outline							
Pin table [mm]							
Pin	X	Y	Function	31	46,56	3,2	Neutral
1	12,8	48	Ph	32	40,16	0	Neutral
2	16	48	Ph	33	43,36	0	Neutral
3	19,2	48	Ph	34	46,56	0	Neutral
4	22,4	48	Ph	35	56,16	3,2	DC-
5	28,8	48	Ph	36	59,36	3,2	DC-
6	32	48	Ph	37	68,96	3,2	DC-
7	40,16	48	Ph	38	72,16	3,2	DC-
8	43,36	48	Ph	39	56,16	0	DC-
9	46,56	48	Ph	40	59,36	0	DC-
10	49,76	48	Ph	41	62,56	0	DC-
11	52,96	48	Ph	42	65,76	0	DC-
12	56,16	48	Ph	43	68,96	0	DC-
13	0	3,2	DC+	44	72,16	0	DC-
14	3,2	3,2	DC+	45	22,4	22,4	P
15	6,4	3,2	DC+	46	52,96	28,8	N
16	9,6	3,2	DC+	47	22,4	19,2	G11
17	12,8	3,2	DC+	48	22,4	16	S11
18	0	0	DC+	49	25,6	44,8	G13
19	3,2	0	DC+	50	25,6	48	S13
20	6,4	0	DC+	51	56,16	32	G14
21	9,6	0	DC+	52	56,16	28,8	S14
22	12,8	0	DC+	53	62,56	3,2	G12
23	22,4	3,2	Neutral	54	65,76	3,2	S12
24	25,6	3,2	Neutral	55	68,96	48	Therm2
25	28,8	3,2	Neutral	56	72,16	48	Therm1
26	22,4	0	Neutral	57	0	48	Ph
27	25,6	0	Neutral	58	3,2	48	Ph
28	28,8	0	Neutral	59	6,4	48	Ph
29	40,16	3,2	Neutral	60	9,6	48	Ph
30	43,36	3,2	Neutral				



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Identification					
ID	Component	Voltage	Current	Function	Comment
T11, T12	IGBT	1400 V	560 A	Buck Switch	
D11, D12	FWD	1400 V	240 A	Buck Diode	
T13, T14	IGBT	1400 V	560 A	Boost Switch	
D42, D41	FWD	1400 V	300 A	Boost Diode	
D44, D43	FWD	1400 V	280 A	Boost Sw. Inv. Diode	
Rt	Thermistor			Thermistor	



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Packaging instruction				
Standard packaging quantity (SPQ) 24	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for <i>flow</i> E3BP packages see vincotech.com website.

Package data
Package data for <i>flow</i> E3BP packages see vincotech.com website.

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

UL recognition and file number
Certification pending. For more information see vincotech.com website.

Document No.:	Date:	Modification:	Pages
30-EQ14NIA560H701-PS59F86T-T3-14	4 Aug. 2026	Change Diode	

Product status definition		
Datasheet Status	Product Status	Definition
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.

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