



Vincotech

10-TY12NMB030SM-L394L08
10-PY12NMB030SM-L394L08Y
target datasheet

flow 3xNPFC

650 V / 30 A

Features

- 3 phase application in one housing
- Very high switching speed
- High efficiency with IGBT H5 and SiC diodes

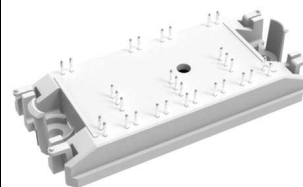
Target applications

- Power Supply
- UPS
- Charger

Types

- 10-TY12NMB030SM-L394L08
- 10-PY12NMB030SM-L394L08Y

flow 1 12mm housing

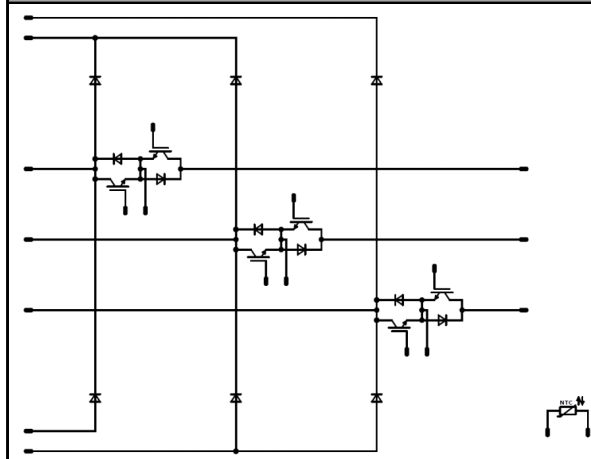


Solder Pin



Press-fit

Schematic



Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Boost Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_{C}	$T_j = T_{\text{jmax}}$ $T_s = 80^{\circ}\text{C}$	28	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	90	A
Total power dissipation	P_{tot}	$T_j = T_{\text{jmax}}$ $T_s = 80^{\circ}\text{C}$	57	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$



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Parameter	Symbol	Condition	Value	Unit
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Boost Diode

Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	28	A
Repetitive peak forward current	I_{FRM}		92	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	62	W
Maximum Junction Temperature	T_{jmax}		175	$^\circ\text{C}$

Parameter	Symbol	Condition	Value	Unit
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Buck Diode

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	38	A
Repetitive peak forward current	I_{FRM}		60	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	52	W
Maximum Junction Temperature	T_{jmax}		175	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
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Module Properties

Thermal Properties

Storage temperature	T_{stg}		-40...+125	$^\circ\text{C}$
Operation temperature under switching conditions	T_{jop}		-40...+($T_{jmax} - 25$)	$^\circ\text{C}$

Isolation Properties

Isolation voltage	V_{isol}	DC voltage $t_p=2s$	4000	V
Creepage distance			min 12,7	mm
Clearance		solder pins / Press-fit pins	11,89 / 8,38	mm
Comparative Tracking Index	CTI		>200	



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Characteristic Values

Boost Switch

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V]	V_{CE} [V]	I_C [A]	T_I [°C]	Min	Typ	Max	
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$			0,0003	25 125	3,3	4	4,7	V
Collector-emitter saturation voltage	V_{CEsat}		15		30	25 125 150		1,69 1,92	2,22	V
Collector-emitter cut-off current	I_{CES}		0	650		25 125			40	μA
Gate-emitter leakage current	I_{GES}		20	0		25 125			120	nA
Internal gate resistance	r_g							none		Ω
Input capacitance	C_{ies}	f=1MHz	0	25		25		2100		pF
Reverse transfer capacitance	C_{res}							7,7		
Gate charge	Q_g		15	520	30	25		70		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda=3,4W/mK$						1,67		K/W
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Boost Diode

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V]	V_{CE} [V]	I_C [A]	T_I [°C]	Min	Typ	Max	
Static										
Forward voltage	V_F				20	25 150		1,4 1,8	1,6	V
Reverse leakage current	I_r			1200		25 150			400	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$							1,54		K/W
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Buck Diode

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V]	V_{CE} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	

Static

Forward voltage	V_F				30	25 125 150		1,43 1,34 1,31	1,7	V
Reverse leakage current	I_r			650		25 150			1,6	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						1,82		K/W
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Thermistor

Parameter	Symbol	Conditions					Value			Unit
			V_{GE} [V]	V_{CE} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	
Rated resistance	R					25		22		kΩ
Deviation of R100	$\Delta_{R/R}$	R100=1486 Ω				100	-12		+14	%
Power dissipation	P					25		200		mW
Power dissipation constant						25		2		mW/K
B-value	$B_{(25/50)}$	Tol. ±3%				25		3950		K
B-value	$B_{(25/100)}$	Tol. ±3%				25		3998		K
Vincotech NTC Reference									B	



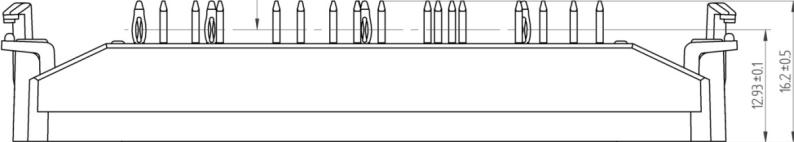
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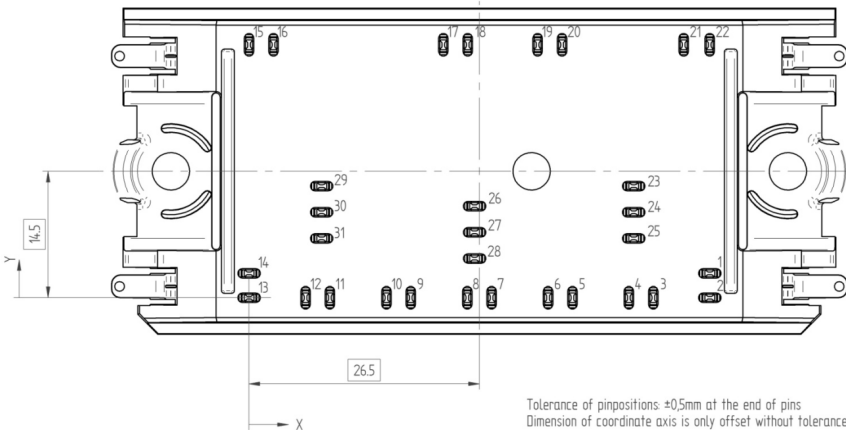
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Ordering Code & Marking									
Version			Ordering Code						
without thermal paste and 12mm housing solder pins			10-TY 12NMB030SM-L394L08						
with thermal paste and 12mm housing Press-fit pins			10-PY 12NMB030SM-L394L08Y-/3/						
NN-NNNNNNNNNNNNNN TTTTTIVV WWYY UL Vinco LLLLL SSSS 			Text	Name		Date code	UL & Vinco	Lot	Serial
				NN-NNNNNNNNNNNNNN-TTTTTIVV		WWYY	UL Vinco	LLLLL	SSSS
			Datamatrix	Type&Ver	Lot number	Serial	Date code		
				TTTTTIVV	LLLLL	SSSS	WWYY		

Pin table			
Pin	X	Y	Function
1	53	2,8	DC+2
2	53	0	DC+2
3	46,5	0	N3
4	43,7	0	N3
5	37,2	0	DC-2
6	34,4	0	DC-2
7	27,9	0	N2
8	25,1	0	N2
9	18,6	0	DC+1
10	15,8	0	DC+1
11	9,3	0	N1
12	6,5	0	N1
13	0	0	DC-1
14	0	2,8	DC-1
15	0	29	L1
16	2,8	29	L1
17	22,35	29	L2
18	25,15	29	L2
19	33,2	29	L3
20	36	29	L3
21	50	29	NTC1
22	53	29	NTC2
23	44,25	12,8	G5
24	44,25	9,8	E5
25	44,25	6,8	G6
26	25,95	10,5	G3
27	25,95	7,5	E3
28	25,95	4,5	G4
29	8,35	12,8	G1
30	8,35	9,8	E1
31	8,35	6,8	G2

center of press-fit pinhead
for connection parameter see the handling instruction

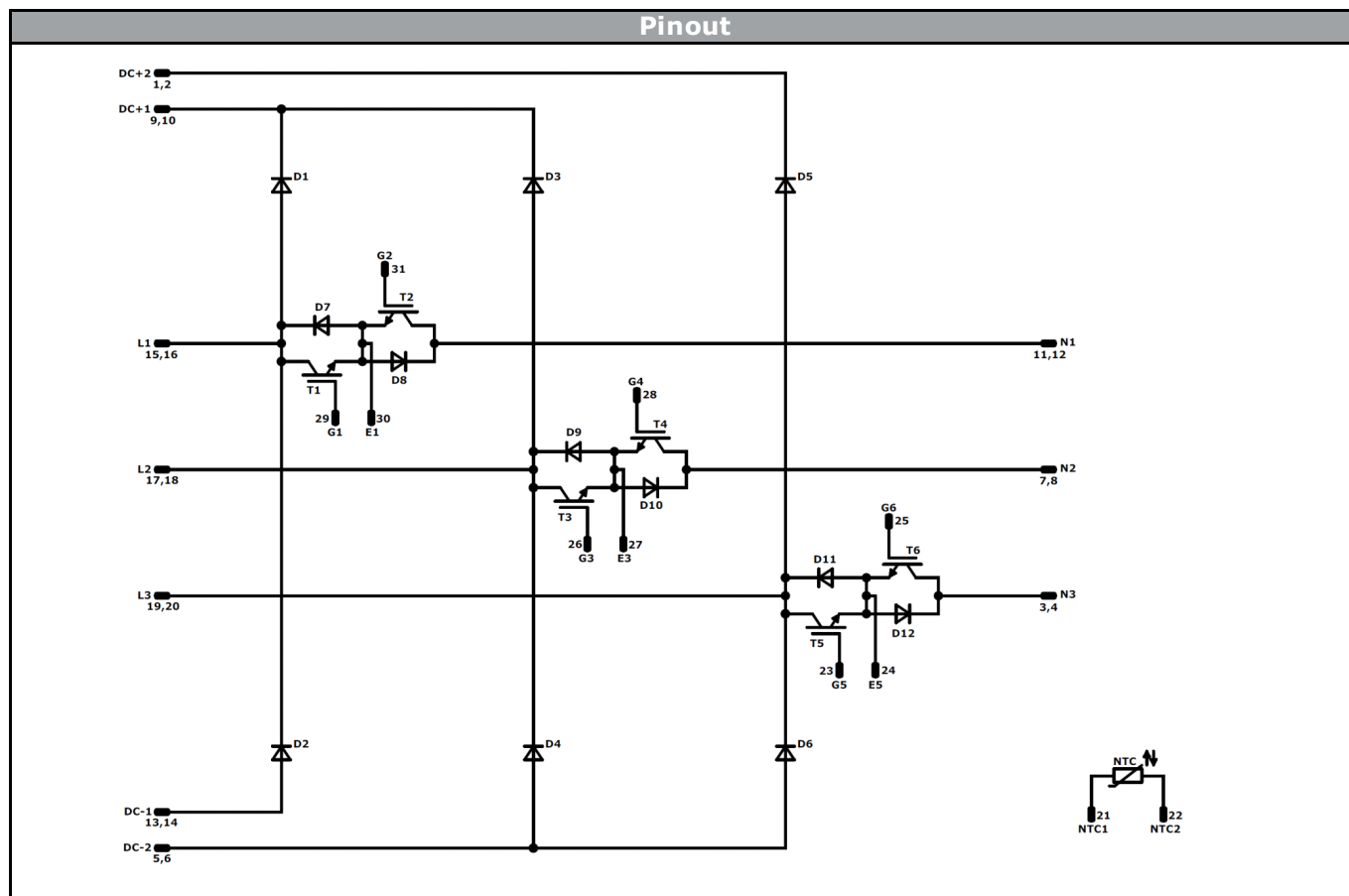






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Identification					
ID	Component	Voltage	Current	Function	Comment
T1,T2,T3,T4,T5,T6	IGBT	650V	30A	Boost Switch	
D1,D2,D3,D4,D5,D6	FWD	1200V	20A	Boost Diode	
D7,D8,D9,D10,D11,D12	FWD	650V	30A	Buck Diode	
NTC	NTC	-	-	Thermistor	



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

Handling instruction
Handling instructions for <i>flow</i> 1 packages see vincotech.com website.

Package data
Package data for <i>flow</i> 1 packages see vincotech.com website.

Document No.:	Date:	Modification:	Pages
10-xY12NMB030SM-L394L08x-T3-14	01 Jul. 2016		

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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