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(12) **United States Design Patent**  
**Shibata et al.**

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(54) **CIRCUIT BOARD FOR POWER SEMICONDUCTOR MODULE**

H05K 1/181; H05K 1/182; H05K 1/026;  
H02B 1/015; H02B 1/00

See application file for complete search history.

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(56) **References Cited**

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U.S. PATENT DOCUMENTS

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5,347,160 A \* 9/1994 Sutrina ..... H01L 24/72  
257/678

(\*\*) Term: **15 Years**

5,471,089 A \* 11/1995 Nagatomo ..... H01L 23/50  
257/691

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FOREIGN PATENT DOCUMENTS

(30) **Foreign Application Priority Data**

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(51) **LOC (13) Cl.** ..... **13-03**

*Primary Examiner* — Elizabeth J Oswecki

(52) **U.S. Cl.**  
USPC ..... **D13/182**

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Mueller & Larson, P.C.

(58) **Field of Classification Search**

(57) **CLAIM**

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361/679.01, 713, 728, 736, 760, 761, 772,  
361/775, 783, 820; 174/250, 253;  
438/15, 25, 26, 51, 55, 63, 64, 106  
CPC . H01L 21/00; H01L 2224/42; H01L 2224/43;  
H01L 2021/00; H01L 2021/02; H01L  
2021/04; H01L 21/4814; H01L 21/4846;  
H01L 21/4871; H01L 21/67144; H01L  
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G02B 6/4256; G02B 6/4257; G02B  
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G02B 6/4281; H05K 1/14; H05K 1/141;  
H05K 1/142; H05K 1/144; H05K 1/18;

The ornamental design for a circuit board for power semi-conductor module, as shown and described.

**DESCRIPTION**

FIG. 1 is a front, top and left side perspective view of a circuit board for power semiconductor module showing our new design;

FIG. 2 is a front view thereof;

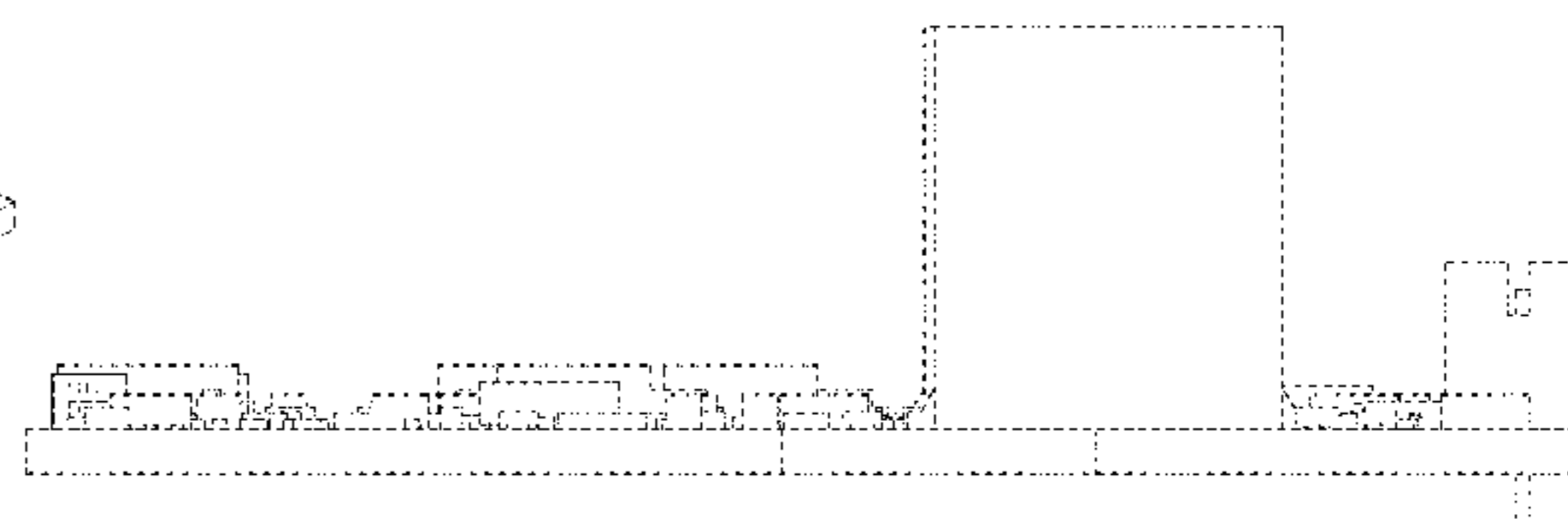
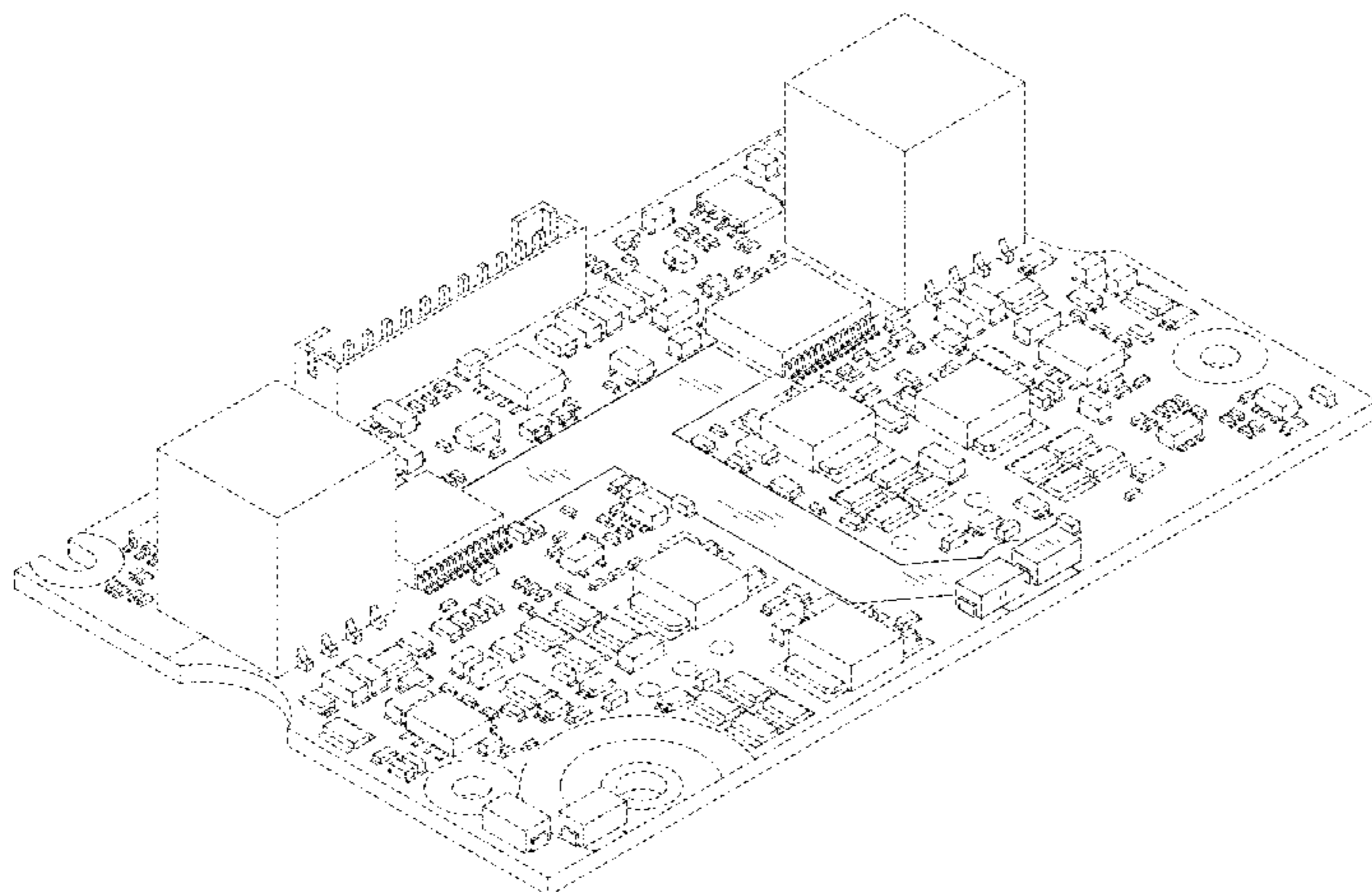
FIG. 3 is a top plan view thereof;

FIG. 4 is an enlarged right side view thereof; and,

FIG. 5 is an enlarged left side view thereof.

The even broken lines illustrate portions of the circuit board for power semiconductor module that form no part of the claimed design. The dash-dotted lines denote the boundary of the claim and form no part of the claimed design.

**1 Claim, 5 Drawing Sheets**



(56)

References Cited

U.S. PATENT DOCUMENTS

6,078,501 A 6/2000 Catrambone et al.  
 6,774,465 B2 8/2004 Lee et al.  
 D699,693 S \* 2/2014 Otsuka ..... D13/182  
 D748,595 S 2/2016 Bertalan et al.  
 D754,084 S 4/2016 Kawase  
 D762,185 S 7/2016 Muehlensiep et al.  
 D762,597 S 8/2016 Bertalan et al.  
 9,418,975 B1 8/2016 Yoneyama et al.  
 D766,851 S 9/2016 Yoneyama et al.  
 D772,184 S 11/2016 Soyano et al.  
 D774,479 S 12/2016 Soyano et al.  
 D775,091 S 12/2016 Edenharter et al.  
 D775,593 S 1/2017 Edenharter et al.  
 D776,071 S 1/2017 Edenharter et al.  
 D785,577 S 5/2017 Kawase  
 9,660,356 B1 5/2017 Nakamura  
 D790,491 S 6/2017 Hayashida et al.  
 D798,832 S 10/2017 Hayashida et al.  
 D799,439 S 10/2017 Hayashiguchi  
 D805,485 S 12/2017 Kawase  
 D810,706 S 2/2018 Soyano et al.  
 D847,103 S 4/2019 Sawada  
 D847,104 S 4/2019 Sawada  
 D858,467 S 9/2019 Sawada  
 D864,132 S 10/2019 Sawada  
 D875,058 S \* 2/2020 Sawada ..... D13/182

D883,240 S \* 5/2020 Fathauer ..... H05K 1/115  
 D13/182  
 D887,998 S \* 6/2020 Krasnopolski ..... D13/182  
 D887,999 S \* 6/2020 Chen ..... D13/182  
 D888,674 S \* 6/2020 Chen ..... D13/182  
 D892,754 S 8/2020 Beckedahl et al.  
 D903,611 S 12/2020 Sannai et al.  
 D903,612 S 12/2020 Soyano et al.  
 D904,325 S \* 12/2020 Omichi ..... D13/182  
 D909,319 S \* 2/2021 Nordeen ..... D13/182  
 2001/0038143 A1 11/2001 Sonobe et al.  
 2008/0142948 A1 6/2008 Matsumoto  
 2014/0168900 A1 \* 6/2014 Korich ..... H05K 7/1432  
 361/709  
 2016/0190915 A1 6/2016 Horiuchi et al.  
 2016/0276927 A1 \* 9/2016 Das ..... H01L 23/3735  
 2016/0284618 A1 9/2016 Tsukamoto et al.  
 2016/0336245 A1 11/2016 Egusa et al.  
 2016/0372392 A1 \* 12/2016 Sakamoto ..... H01L 23/055

FOREIGN PATENT DOCUMENTS

JP 1536360 10/2015  
 JP 1585830 9/2017  
 JP 1585831 9/2017  
 JP 1585962 9/2017  
 JP 1603793 5/2018  
 JP 1603980 5/2018  
 JP 1605558 6/2018

\* cited by examiner

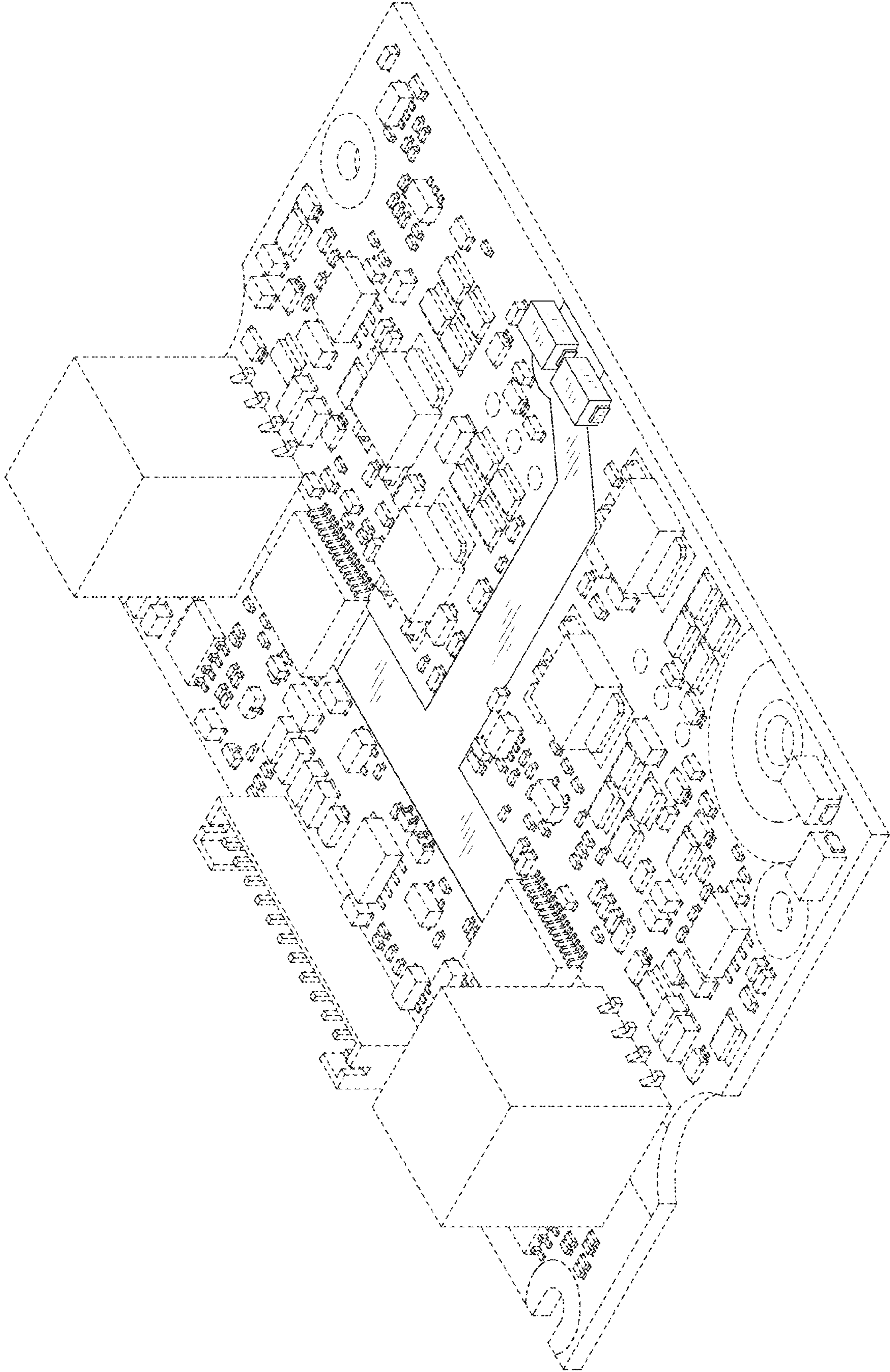


FIG. 1

FIG.2

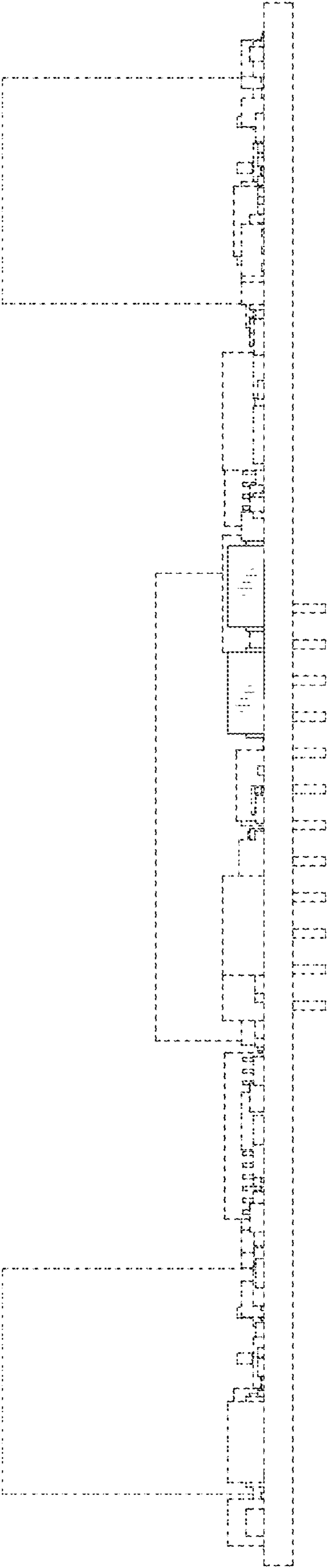


FIG.3

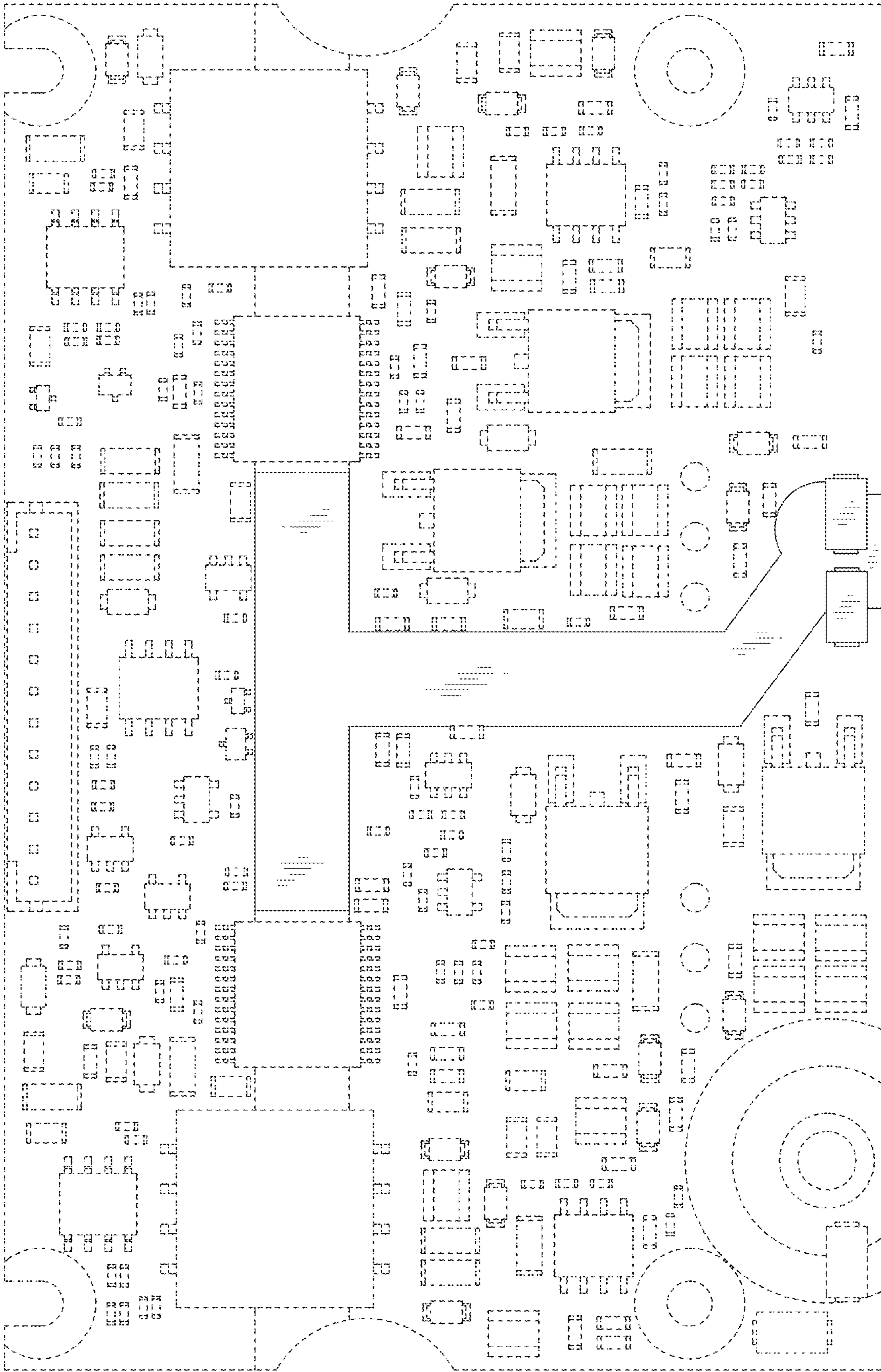


FIG.4

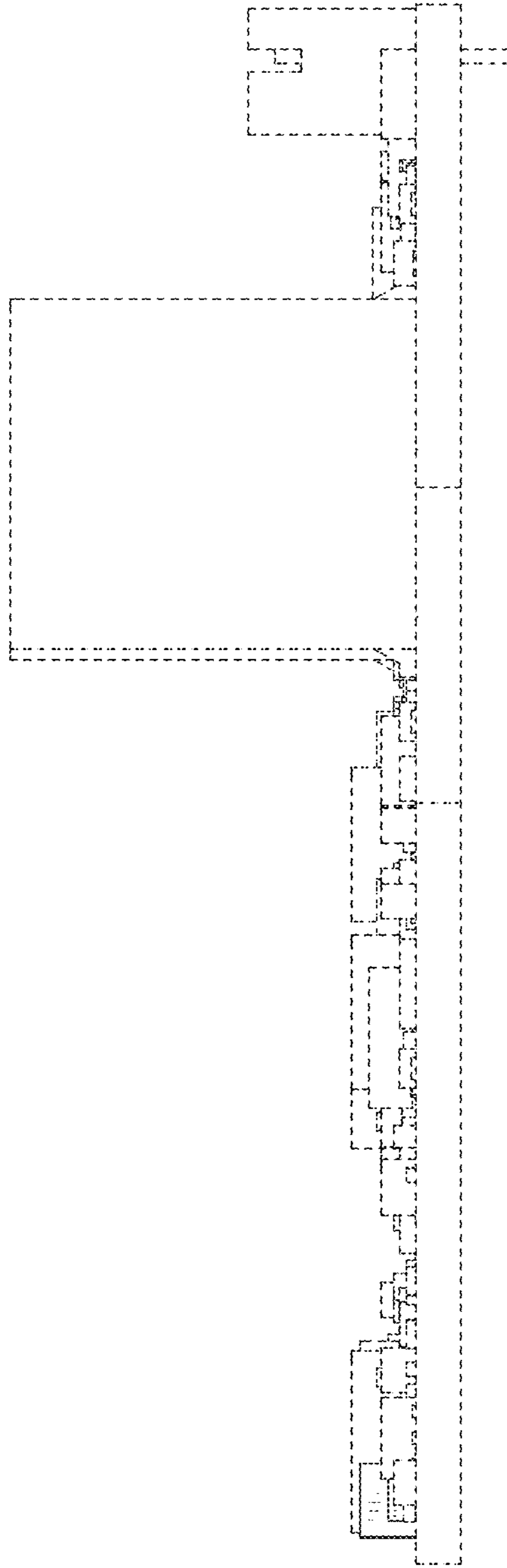


FIG. 5

