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(12) United States Design Patent

Soyano et al.

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(54) **SEMICONDUCTOR MODULE**

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(73) Assignee: **FUJI ELECTRIC CO., LTD.**, Kawasaki (JP)

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

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(30) **Foreign Application Priority Data**

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(51) **LOC (12) Cl.** **13-03**

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

(58) **Field of Classification Search**
USPC D13/182; 257/678, 684, 690, 691; 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 23/02; H01L 23/13; H01L 23/14; H01L 23/147; H01L 2924/171; H01L 2924/1711; H01L 2924/1715; H01L 2924/17151; H01L 2924/181; H01L 2924/1811; H01L 2924/1815; H01L 2924/19042; H01L 2924/1905; H01L 2224/08054; H01L 23/58; H05B 41/14; H02B 6/4201; G02B 6/4256; G02B 6/4257; G02B 6/4261; G02B 6/4262; G02B 6/428; G02B 6/4281; H05K 1/14; H05K 1/141; H05K 1/142; H05K 1/144; H05K 1/18; H05K 1/181; H05K 1/182; H05K 1/026
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,347,160 A * 9/1994 Sutrina H01L 24/72 257/678
D357,671 S * 4/1995 Terasawa D13/182
D396,450 S * 7/1998 Nishiura D13/182
(Continued)

Primary Examiner — Elizabeth J Oswecki

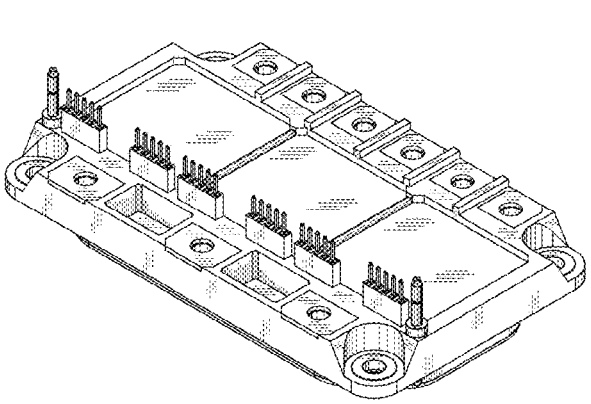
(57) **CLAIM**

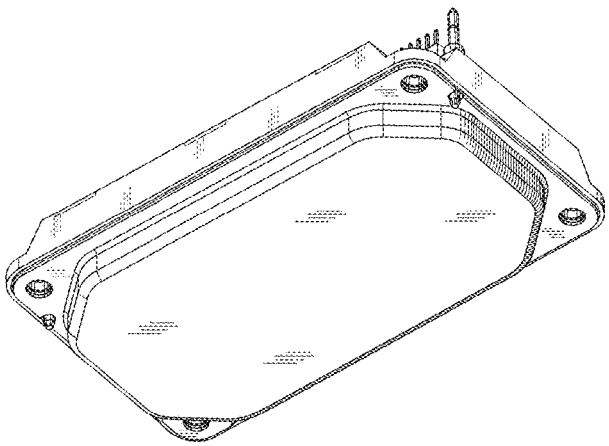
The ornamental design for a semiconductor module, as shown and described.

DESCRIPTION

FIG. **1** is a front view of a semiconductor module showing our new design;
FIG. **2** is a rear view of the semiconductor module of FIG. **1**;
FIG. **3** is a left side view of the semiconductor module of FIG. **1**;
FIG. **4** is a right side view of the semiconductor module of FIG. **1**;
FIG. **5** is a top view of the semiconductor module of FIG. **1**;
FIG. **6** is a bottom view of the semiconductor module of FIG. **1**;
FIG. **7** is a front, top and left side perspective view of the semiconductor module of FIG. **1**;
FIG. **8** is a front, bottom and right side perspective view of the semiconductor module of FIG. **1**;
FIG. **9** is a rear, top and left side perspective view of the semiconductor module of FIG. **1**; and,
FIG. **10** is a rear, bottom and right side perspective view of the semiconductor module of FIG. **1**.

1 Claim, 10 Drawing Sheets





(56) **References Cited**

U.S. PATENT DOCUMENTS

6,521,983	B1 *	2/2003	Yoshimatsu	H01L 25/072 257/678
D556,686	S *	12/2007	Matsuo	D13/110
D587,662	S *	3/2009	Soutome	D13/182
D606,951	S *	12/2009	Soyano	D13/182
D653,633	S *	2/2012	Soyano	D13/182
D653,634	S *	2/2012	Soyano	D13/182
D686,174	S *	7/2013	Soyano	D13/182
D689,446	S *	9/2013	Soyano	D13/180
D759,604	S *	6/2016	Yoneyama	D13/182
D762,185	S *	7/2016	Muehlensiep	D13/182
9,418,975	B1 *	8/2016	Yoneyama	H01L 23/5386
D766,851	S *	9/2016	Yoneyama	D13/182
D767,516	S *	9/2016	Yoneyama	D13/182
D772,184	S *	11/2016	Soyano	D13/182
D773,412	S *	12/2016	Yoneyama	D13/182
D773,413	S *	12/2016	Yoneyama	D13/182
D774,479	S *	12/2016	Soyano	D13/182
D775,091	S *	12/2016	Edenharter	D13/182
D775,593	S *	1/2017	Edenharter	D13/182
D776,071	S *	1/2017	Edenharter	D13/182
D790,491	S *	6/2017	Hayashida	D13/182
D798,832	S *	10/2017	Hayashida	D13/182
D799,439	S *	10/2017	Hayashiguchi	D13/182
D814,431	S *	4/2018	Matsumoto	D13/182
D814,433	S *	4/2018	Soyano	D13/182
D864,884	S *	10/2019	Yoneyama	D13/182
D888,673	S *	6/2020	Furutani	D13/182
2001/0038143	A1 *	11/2001	Sonobe	H01L 24/49 257/690
2004/0227231	A1 *	11/2004	Maly	H01L 25/072 257/724
2010/0149774	A1 *	6/2010	Matsumoto	H01L 23/055 361/783
2016/0276234	A1 *	9/2016	Sugiyama	H01L 23/053

* cited by examiner

FIG.1

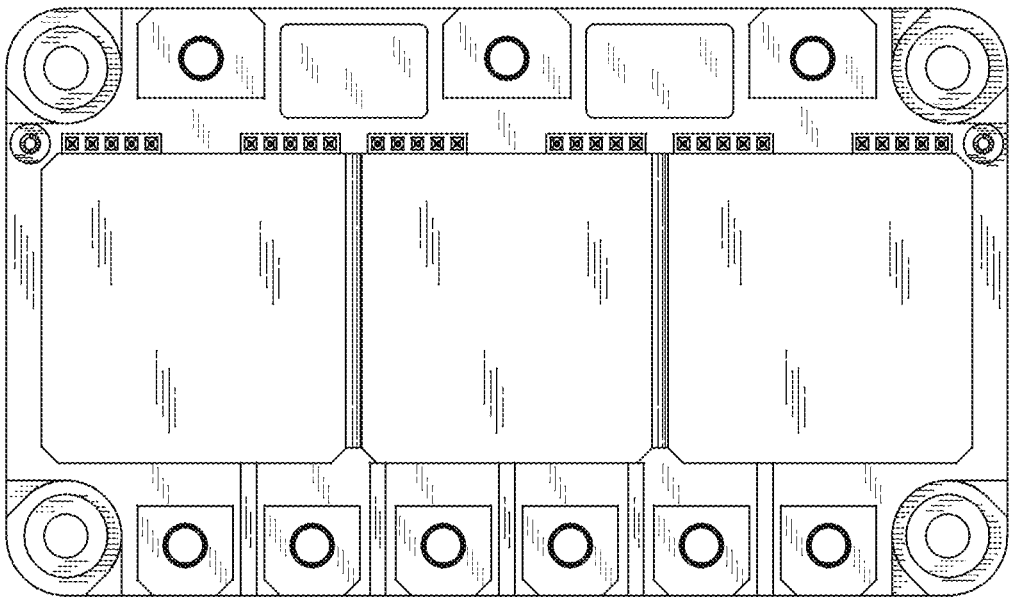


FIG.2

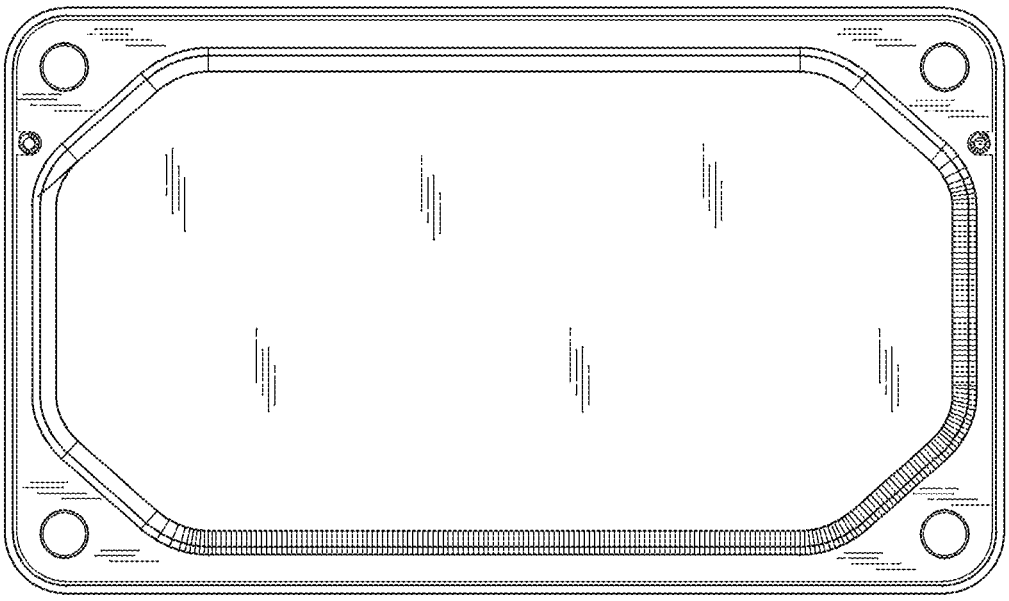


FIG.3

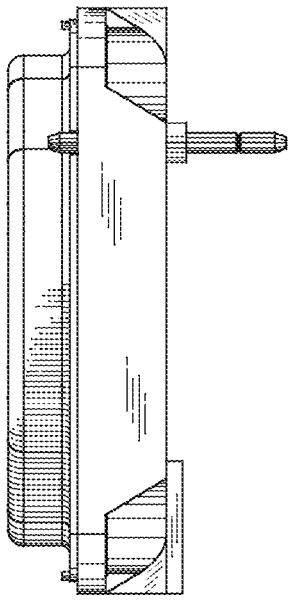


FIG.4

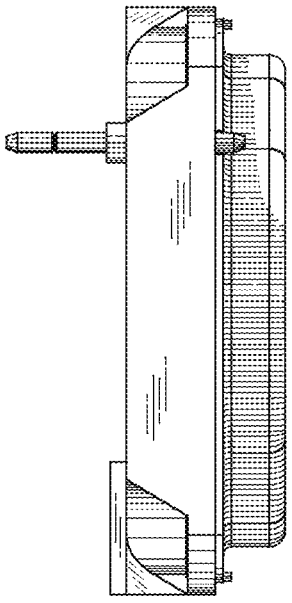


FIG.5

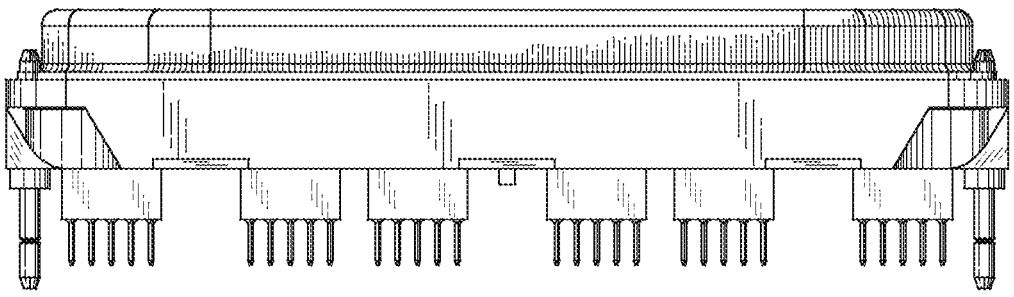


FIG.6

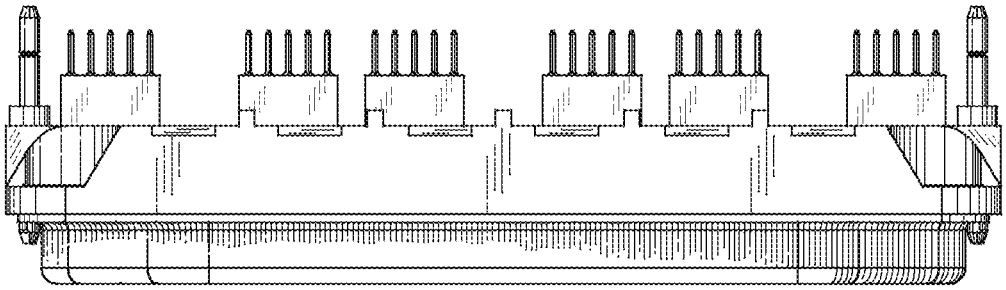


FIG.7

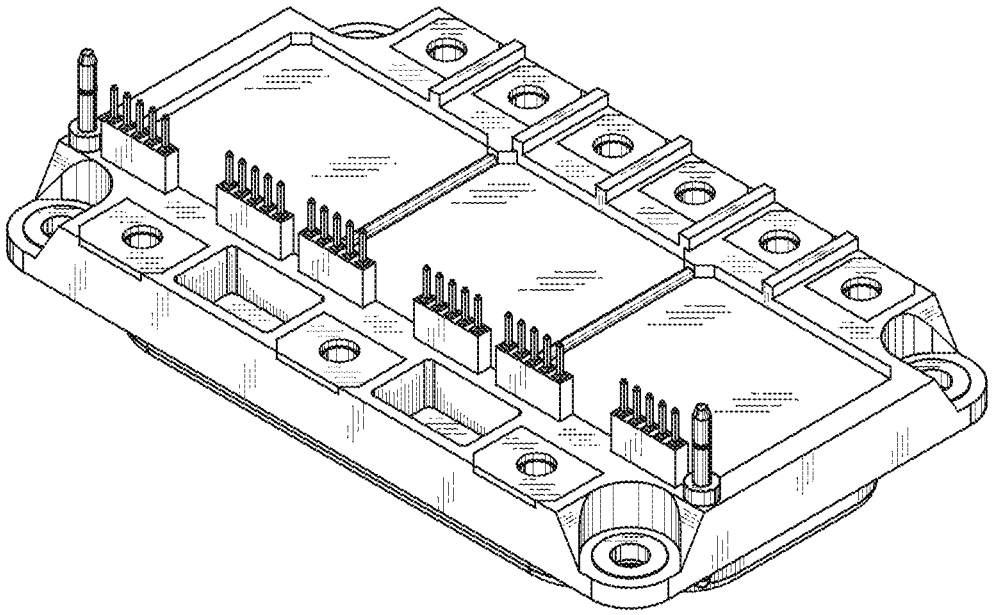


FIG.8

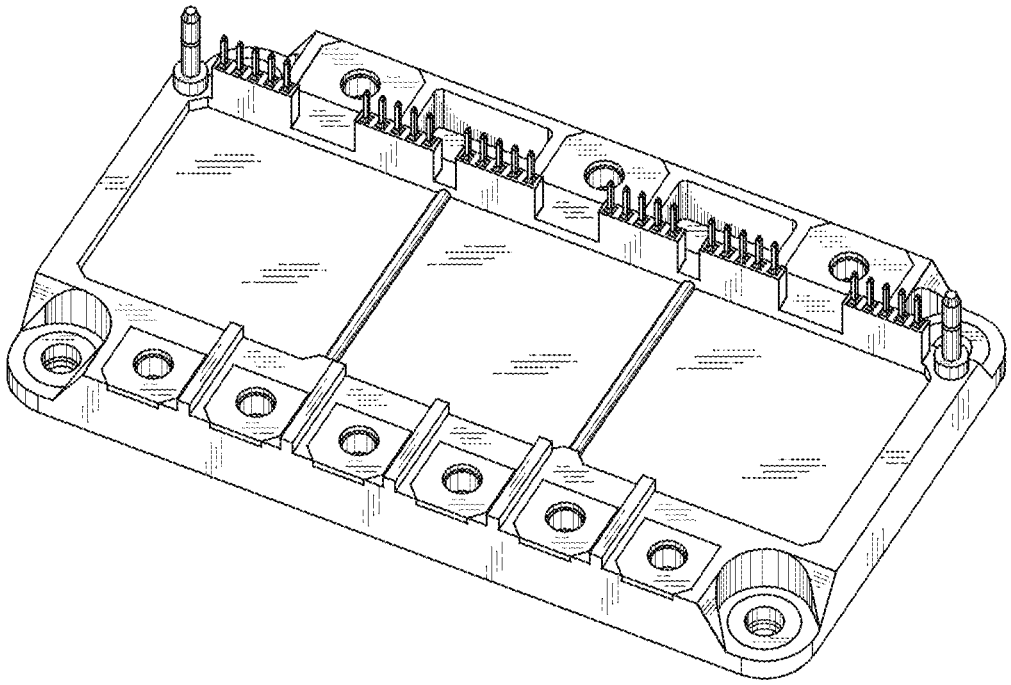


FIG.9

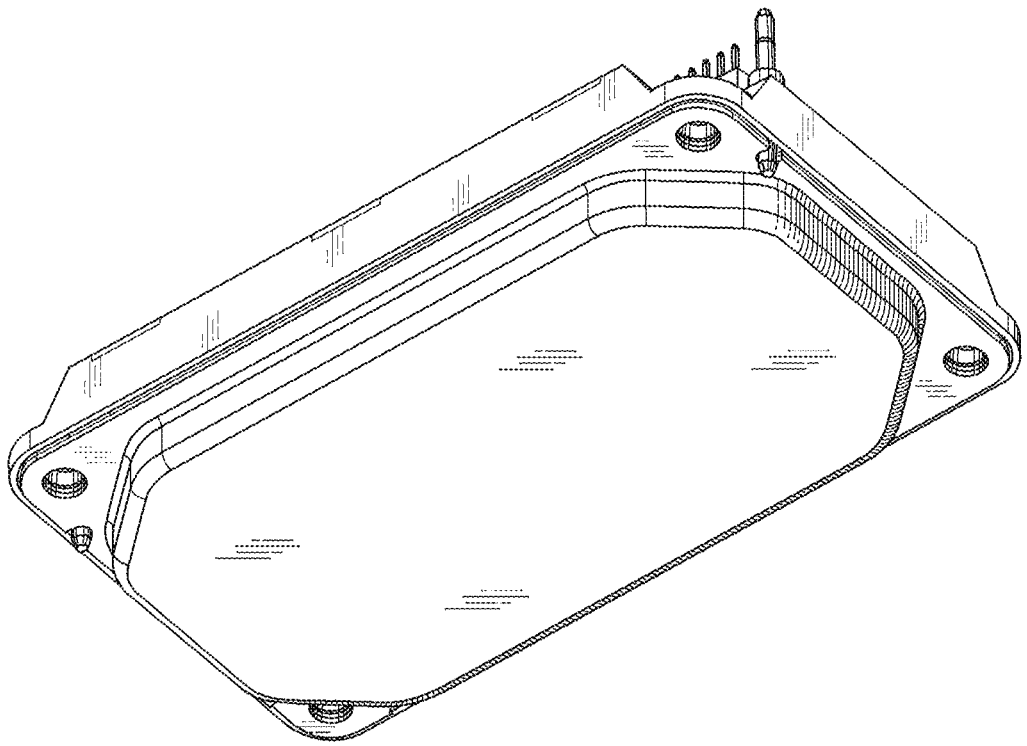


FIG.10