SYSTEM FOR MOUNTING A TEST SOCKET AND A TEST BOARD TO EACH OTHER, TEST BOARD AND TEST SOCKET

FIELD OF THE INVENTION

The invention relates to a system for mounting a test socket and a test board to each other. Further, the invention relates to a test board. Furthermore, the invention relates to a test socket.

BACKGROUND OF THE INVENTION

Test sockets are used on test boards to test various parameters and/or components of semiconductor devices. Electronic devices have become smaller yet more powerful, resulting crowded and complex circuit boards. Given the complexity and size constraints of test boards, it can be difficult and time-consuming to mount the test socket, particularly by humans. In particular, it may be time consuming to change the test sockets by using screws for fastening.

OBJECT AND SUMMARY OF THE INVENTION

There may be a need to accelerate the change of test sockets and to make the change of the test sockets less error-prone.

In order to achieve the object defined above, a system, a test board, and a test socket having the features according to the independent claims, are provided.

According to a first aspect of the invention a system is used for mounting a test socket and a test board to each other, wherein the test socket and the test board are used in an automated test equipment to test

electronic components. The system comprises: a test board wherein the test board comprises a printed circuit board and a locking pin extending from the printed circuit board. Further, the system comprises a test socket wherein the test socket comprises a socket body and a lock member coupled to the socket body. The locking pin and the lock member can lock with each other so that the test socket and the test board are fixed to each other. The system also comprises a mounting tool comprising a force transmission element, wherein the lock member comprises an opposite force transmission element, and wherein the force transmission element and the opposite force transmission element engage with each other so that the mounting tool enables to move the lock member by hand from the locking position to the release position, and from the release position to the locking position.

According to a second aspect of the invention a test socket for testing electronic components in an automated test equipment comprises:
a lock member and a socket body, the lock member being coupled to the socket body, wherein the lock member is adapted to lock with a locking pin extending from a printed circuit board so that the test socket and the test board are fixed to each other, wherein a mounting tool comprises a force transmission element, and wherein the lock member comprises an opposite force transmission element, wherein the opposite force transmission element is configured such that the force transmission element and the opposite force transmission element engage with each other so that the mounting tool enables to move the lock member by hand from the locking position to the release position, and from the release position to the locking position.

According to a third aspect of the invention a test board for testing electronic components in an automated test equipment comprises:
a printed circuit board and a locking pin extending from the printed circuit board, wherein the locking pin is adapted to lock with the lock member

of the test socket according to the second aspect, so that the test socket and the test board are fixed to each other.

The following terms, definitions and explanations may apply to the system, the test board, and the test socket, as well.

The term “system” may denote a regularly interacting or interdependent group of items forming a unified whole. The system may be a locking system. The term “locking” may particularly denote fastening (as for a door) operated by a combination of parts. In accordance with a regular use of the term “locking”, merely using a screw for screwing something on something else may not be called “locking” or is not locking something with something else.

bringing the lock member in the release position. The locked condition of the test socket may be an end position of the lock member relative to the socket body and may be opposite to an end position of the released condition.

As shown in the first aspect, the system further comprises a mounting tool comprising a force transmission element. The lock member comprises an opposite force transmission element. The force transmission element and the opposite force transmission element may engage with each other so that the mounting tool enables to move the lock member by hand from the locking position to the release position, and vice versa.

The term “tool” may particularly denote a handheld device that aids in accomplishing a task. The mounting tool may comprise a force transmission element which may be a bolt or a pin or anything that could engage with an opposite force transmission element which then may be a groove or sleeve. The force transmission element and the opposite force transmission element engage in a way like as “slot and key” and it is not important which part works as slot and which part works as as key. The force transmission element may be the groove and the opposite force transmission element may be the key as well.

Furthermore, the mounting tool may comprise a hook and the socket body further comprises a latch, wherein the hook and the latch do not engage with each other when the test socket is in the locked condition so that the mounting tool and the test socket are removable from each other. The mounting tool may comprise a handle being fixedly coupled to a base plate of the mounting tool, so that shifting of the handle shifts the mounting tool. Moreover, the hook and the latch do engage when test socket is in the released condition so that the mounting tool and the test socket are fixed to each other.

C l a i m s

1. A system for mounting a test socket and a test board to each other, wherein the test socket and the test board are usable in an automated test equipment to test electronic components, wherein the system comprises:

a test board comprising a printed circuit board and a locking pin extending from the printed circuit board,

a test socket comprising a socket body and a lock member coupled to the socket body, wherein

the locking pin and the lock member can lock with each other so that the test socket and the test board are fixed to each other, and

a mounting tool comprising a force transmission element, wherein the lock member comprises an opposite force transmission element, and wherein

the force transmission element and the opposite force transmission element engage with each other so that the mounting tool enables to move the lock member by hand from the locking position to the release position, and from the release position to the locking position.

2. The system according to claim 1, wherein

the lock member is slidably coupled to the socket body, and

if the lock member is slid in a locking position relative to the socket body so that the test socket is in a locked condition, then the locking pin and the lock member lock with each other.

3. The system according to claim 1 or 2, wherein

the lock member is slidably coupled to the socket body, and

if the lock member is slid in a release position so that the test socket is in a released condition, then the locking pin unlocks with the lock member, so that the test socket can be removed from and lowered to the test board.

4. The system according to any one of the claims 1 to 3, wherein the system further comprises:

a stop mechanism arranged between the lock member and the socket body, the stop mechanism being configured for locking the lock member in a locking position and in a release position.

5. The system according to any one of claims 1 to 4, wherein
the mounting tool further comprises a hook and the socket body further comprises a latch,
wherein the hook and the latch do not engage with each other when the test socket is in the locked condition so that the mounting tool and the test socket are removable from each other.

6. The system according to claim 5, wherein
the hook and the latch do engage when test socket is in the released condition so that the mounting tool and the test socket are fixed to each other.

7. A test socket for testing electronic components in an automated test equipment, wherein the test socket comprises:

a lock member and a socket body, the lock member being coupled to the socket body, wherein the lock member is adapted to lock with a locking pin extending from a printed circuit board so that the test socket and the test board are fixed to each other,

wherein a mounting tool comprises a force transmission element, and

wherein the lock member comprises an opposite force transmission element,

wherein the opposite force transmission element is configured such that the force transmission element and the opposite force transmission element engage with each other so that the mounting tool enables to move the lock member by hand from the locking position to the release position,

and from the release position to the locking position.

8. A test board for testing electronic components in an automated test equipment, wherein the test board comprises:

a printed circuit board and a locking pin extending from the printed circuit board, wherein the locking pin is adapted to lock with the lock member of the test socket according to claim 7, so that the test socket and the test board are fixed to each other.