TECHSEM

Comparison of Pressure and Solder Contact Modules

	Pressure Contact Module	Solder Contact Module
Brief	The used semiconductor chips are normally round chips fabricated with Mesa process. The electrodes, chips, DBC and ground plate are directly stacked and fastened by using screws and elastic plates.	The used chips are normally square chips fabricated with Planar process. The electrical connection between the components is realized by aluminum bonding wires. The chips, DBC and ground plate are connected by vacuum or reflow soldering.
Reserve Voltage	Can be very high, such as 6500V.	Limited to 2200V because of the bottleneck of Planar process.
Forward Current	Can be very high, such as 1200A.	Difficult to break 200A (single chip area can not be too large).
Voltage Drop	Due to many components and contact surfaces in the module, it can easily cause additional voltage drop and instability related.	Low and stable.
Thermal Resistance	Very low.	Low.
Overload Current	Very good because the effective electrical contact surface is bigger and the mechanical stress and the thermal expansion stress is smaller.	Good.
Operating Frequency	High because of low components inductance.	Ordinary.
Reliability	Better.	Good (no advantage due to lower fatigue resistance and overload current).
Weight	Heavier due to many parts.	Light due to fewer parts.
Cost	Higher.	Lower (fewer parts, process time period shorter, more suitable for automatic and mass production).
Special Attention	The contact surface between the components must be clean and the contact must be tight, otherwise its superiority cannot be fully reflected.	The reliability may be affected by the lower fatigue resistance and the different thermal expansion coefficients of materials.