Comparison of Reliability Tests on Power Chip Bead

	TDK	MURATA	AEM
Operating temperature	-55 to 125 ºC	-55 to 125 ºC	-55 to 125 ºC
Storage	40 ºC & 70% max.	40 ºC & 70% max.	40 ºC & 70% max.
Bending	Board: 90x40x1.6 mm, bend 2 mm	Board: 90x40x1.6 mm, bend 1 mm for 30 s, 30% change max.	Board: 90x40x1.6 mm, bend 1 mm for 5 s
Solderability	230 ºC, 4 s, 90% covered	230 ºC, 4 s, 95% covered	245 ºC, 5 s, 95% covered
Soldering heat resistance	260 ºC, 10 s, 75% covered, 20% change max.	270 ºC, 10 s, 30% change max.	260 ºC, 10 s, 75% covered, 20% change max.
Pull test	0603 – 0.5 kg 0805 – 1.0 kg 1206 – 1.0 kg 1812 – 1.5 kg no damage	N/A	0603 – 0.5 kg 0805 – 1.0 kg ≥1206 – 1.0 kg no damage
Push test	N/A	0603 – 0.7 kg ≥0805 – 1.0 kg 5 s, 30% change max.	0603 – 1.4 kg min. 0805 – 1.8 kg min. ≥1206 – 2.3 kg min.
Life	85 ºC, 1008 h, rated current, no damage, 20% change max.	125 ºC, 500 h, rated current, no damage, 30% change max.	85 ºC, 1000 h, rated current, no damage, 15% change max.
Humidity	40 ºC, 1008 h, 95-95% RH, rated current, no damage, 20% change max.	40 ºC, 500 h, 95-95% RH, 0 current, no damage, 30% change max.	85 ºC, 1000 h, 85% RH, 10% rated current, no damage, 15% change max.
Thermal shock	-40 to 85 ºC, 100 cycles, no damage, 20% change max.	-55 to 125 ºC, 5 cycles, no damage, 30% change max.	-40 to 105 ºC, 500 cycles, no damage, 20% change max.
Low temperature	-40 ºC, 1008 h, no damage, 20% change max.	-55 ºC, 500 h, no damage, 30% change max.	N/A
Vibration	N/A	10 – 55 Hz, 1.5 mm double amplitude, 2 h in each of 3 directions, 30% change max.	10 – 2000 Hz, 1.5 mm double amplitude, 15 G peak, 4 h in each of 3 directions, 10% change max.
Shock	N/A	N/A	50 G, 3 drops in each of 6 directions, no damage, 10% change max
Leach	N/A	N/A	230 ºC, 5 dips, 5 s each, 5% leach max.

Terminology :

Bending:
Solder chips on board. Bend the board to specified displacement and maintain for specified time. The chips shall show (a) no damage and (b) good electrical continuity throughout the test or impedance change within certain limit.

Solderability:
Dip chips into solder at specified temperature for specified time. The percentage of the termination are covered by new solder shall meet the specified requirement.

Soldering:
Dip chips into solder at specified temperature for specified time. The percentage of the termination area covered by new solder shall meet the specified requirement and the impedance change shall not exceed specified amount.

Pull test:
Solder lead wires to the chips and hang specified load for 30 second. No change shall be observed.

Push test:
Solder chips on board. (a) Push with specified force for specified time and the impedance change shall not exceed specified amount, or (b) push the chips until they break and the forces needed shall be ≥ specified amount.

Life:
Apply specified current at specified temperature for specified time. The chips shall show no damage and the impedance change shall not exceed specified amount.

Humidity:
Apply specified current at specified temperature and humidity for specified time. The chips shall show no damage and the impedance change shall not exceed specified amount.

Thermal shock:
Subject chips to the specified high and low temperatures. The holding time of at each temperature shall be 30 minutes minimum. The transfer time shall be 0.5 minutes maximum. After the specified number of cycles, the chips shall show no damage and the impedance change shall not exceed specified amount.

Low temperature:
Subject chips to the specified temperature for specified time. The chips shall show no damage and the impedance change shall not exceed specified amount.

Vibration:
Subject chips to vibration covering specified frequency range with specified amplitude for specified duration. The impedance change shall not exceed specified amount.

Shock:
Subject chips to mechanical shock with specified acceleration for specified number of drops. The impedance change shall not exceed specified amount.

Leach:
Dip chips into solder at 230 ^{o}C 5 times, 5 seconds each time. The percentage of the leached away area shall not exceed specified amount.