

# Thermal Jumper Chip

## TJC Series



### Features:

- High thermal conductivity
- Electrically isolated
- Aluminium nitride ceramic chips
- Compact thermal management
- Low capacitance
- Pb-free or SnPb finish



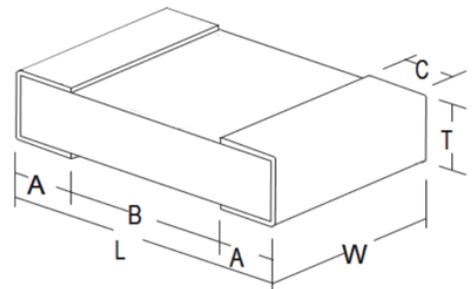
All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Functional Data

		0603	0505	0805	0508	1206	0612	2010	1020	2512	1225
Thermal resistance	°C/W	13.8	7.4	11.8	4.6	14.7	3.7	15	3.6	14.9	3.6
Thermal conductance	mW/°C	72.5	135	84.7	217	68	270	66.7	278	67.1	278
Capacitance typ. @1kHz	pF	0.16	0.27	0.16	0.4	0.11	0.43	0.07	0.31	0.05	0.46
Ambient temperature range	°C	-55 to +155									

## Physical Data

Dimensions in mm and weight in mg							
	L	W	T max.	A nom.	B min.	C nom.	Wt. nom.
0603	1.5 ± 0.1	0.8 ± 0.1	0.8	0.59	0.3	0.59	3.4
0505	1.21 ± 0.1	1.21 ± 0.1		0.54	0.1	0.54	4.2
0805	2 ± 0.15	1.25 ± 0.15		0.69	0.5	0.69	5.9
0508	1.25 ± 0.15	2 ± 0.15		0.55	0.12	0.55	5.9
1206	3.2 ± 0.2	1.6 ± 0.2		0.71	1.55	0.71	11.3
0612	1.6 ± 0.2	3.2 ± 0.2		0.63	0.15	0.63	12.1
2010	5.1 ± 0.3	2.5 ± 0.2		0.78	3.4	0.78	29.2
1020	2.5 ± 0.2	5.1 ± 0.3		0.74	1	0.74	31.9
2512	6.5 ± 0.3	3.2 ± 0.2		0.89	4.3	0.89	43.9
1225	3.2 ± 0.2	6.5 ± 0.3		0.9	1.1	0.9	49.7



### Construction

Ag terminations are screen printed onto an aluminium nitride (AlN) substrate. Parts are wrap-around terminated and plated with nickel then either 100% matt Sn or 60/40 SnPb.

### Marking

Components are not marked. Reels are marked with type, date code and quantity.

### Packing

2010, 1020, 2512 & 1225 sizes are supplied on 12mm plastic carrier tape. All smaller sizes are supplied on 8mm plastic carrier tape. All sizes are on 178mm (7 inch) reels as per IEC286-3. For packaging dimensions of sizes 0805 and larger in conventional and inverse formats

## Performance Data

Test	Method	Result
Temperature cycling	1000 cycles, -55/125°C, 60 seconds transition, 30 minutes dwell	No visual damage
Shear strength	18N shear force, performed before and after temperature cycling	No visual damage
Solderability	245 ± 5°C for 2 ± 0.5s	≥95% coverage

### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

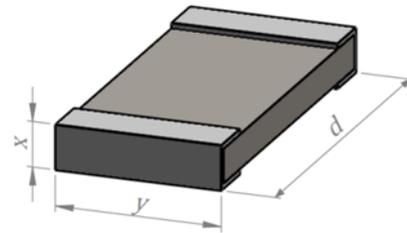
### Thermal Performance Calculation

The thermal data are based on the thermal resistivity of aluminium nitride, which is 170 W/m°C. Values for Thermal Resistance ( $T_R$ ) and Thermal Conductance ( $T_C$ ) are obtained as follows.

$$T_R = \frac{d}{k(x \cdot y)}$$

where  $k$  is the thermal resistivity of AlN, 170W/m°C

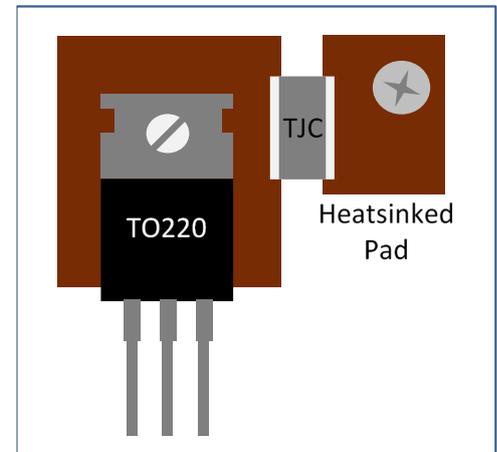
$$T_C = \frac{1}{T_R}$$



### Application Notes

TJC is designed to provide a thermally conductive pathway with electrical isolation. It may be used as a thermal management solution for cooling PCB hotspot areas. A typical application is pictured, in which a TO220 power device is cooled by linking it to a pad which is heatsinked by a fixing which connects to the equipment chassis. Electrical isolation from the chassis must be maintained, and direct connection to a large copper groundplane is undesirable as it could lead to excessive radiated EMI.

To select the optimum size of TJC, begin by defining the range of terminal widths (W) which best matches the pad or solder joint to be cooled. Then select the shortest length dimension (L) within the constraints of capacitance and clearance requirements. The capacitance must be controlled for circuits operating at high frequency and where coupling between the pad to be cooled and the heatsink pad is undesirable. The clearance is important where high voltages can exist between the pads, and this is given by dimension B. Since the surface of the insulated body of TJC is ceramic, surface tracking is not considered an issue, so this dimension may be compared to the air clearances required in the application design.



### Ordering Procedure

**Example: TJC1206LF-T3** (TJC in 1206 size, Pb-free)



1 Series	2 Size	3 Finish	4 Packing			
TJC	0603	LF = Pb-free	T4	0603	4000/reel	Standard
	0505	PB = SnPb	T3	0505, 0805, 0508, 1206, 0612, 2010, 1020	3000/reel	
	0805		T18	2512, 1225	1800/reel	Non-standard
	0508		T1	All sizes	1000/reel	
	1206					
	0612					
	2010					
	1020					
	2512					
	1225					