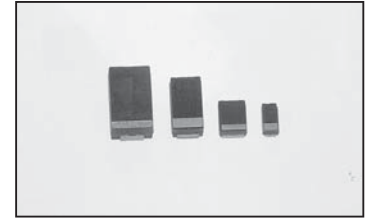


### FEATURES

- Low ESR and High Ripple Current Ratings
- Values from 10 $\mu$ F to 470 $\mu$ F
- Suitable for Flow and Reflow Soldering Processes
- Available in EIA B, C and D Case Sizes

**RoHS  
Compliant**  
includes all homogeneous materials

\*See Part Number System for Details

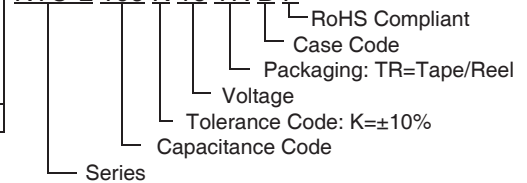


### SPECIFICATIONS

Capacitance Range	10 $\mu$ F to 470 $\mu$ F		
Capacitance Tolerance	$\pm$ 10% (K)		
Operating Temperature Range	-55 $^{\circ}$ C ~ +125 $^{\circ}$ C (voltage derating above 85 $^{\circ}$ C, see table below)		
Dissipation Factor @ 120Hz/25 $^{\circ}$ C	10 $\mu$ F~68 $\mu$ F 6% max.	100 $\mu$ F~150 $\mu$ F 8% max.	220 $\mu$ F~470 $\mu$ F 10% max.*
Capacitance Change Versus Temperature	-55 $^{\circ}$ C	+85 $^{\circ}$ C	+125 $^{\circ}$ C
	$\Delta$ C -10%	$\Delta$ C +10%	$\Delta$ C +12%
Soldering Heat Resistance (+260 $^{\circ}$ C for 5-10 sec.)	$\Delta$ C $\pm$ 10% Max., Leakage Current and Dissipation Factor will be less than value specified below.		
Moisture Resistance (500 hours; 90-95% RH @ 40 $^{\circ}$ C)			
Load Life Test @ at Rated Voltage 2,000 hours @ 85 $^{\circ}$ C			
Base Failure Rate (1.0 $\Omega$ /Volt)			

### PART NUMBER SYSTEM

NTC-L 106 K 16 TR B E



### STANDARD RATINGS AND CASE SIZE

Rated Voltage @ 85 $^{\circ}$ C	6.3Vdc	10Vdc	16Vdc	20Vdc	25Vdc	35Vdc	
Surge Voltage @ 85 $^{\circ}$ C	8	13	20	26	32	45	
Derated Voltage @ 125 $^{\circ}$ C	4	6.3	10	13	16	22	
Capacitance ( $\mu$ F)	Code	Case Size	Case Size	Case Size	Case Size	Case Size	Case Size
10	106	-	-	B	C	-	D
15	156	-	B	-	C	D	D
22	226	B	C	C	D	D	D
33	336	C	C	D	D	D	-
47	476	C	D	D	D	-	-
68	686	-	D	D	-	-	-
100	107	D	D	D	-	-	-
150	157	D	D	-	-	-	-
220	227	D	D	-	-	-	-
330	337	D	D(*18%)	-	-	-	-
470	477	D (*18%)	-	-	-	-	-

### MAXIMUM ESR (ohms) @ 25 $^{\circ}$ C/100Khz

Capacitance ( $\mu$ F)	6.3Vdc	10Vdc	16Vdc	20Vdc	25Vdc	35Vdc
10	-	-	0.60	0.60	-	0.30
15	-	0.60	-	0.50	0.30	0.30
22	0.50	0.50	0.40	0.35	0.30	0.50
33	0.35	0.35	0.25	0.30	0.30	-
47	0.35	0.25	0.20	0.20	-	-
68	-	0.20	0.15	-	-	-
100	0.15	0.10	0.10	-	-	-
150	0.10	0.10	-	-	-	-
220	0.10	0.10	-	-	-	-
330	0.10	0.15	-	-	-	-
470	0.20	-	-	-	-	-

### MAXIMUM RIPPLE CURRENT @ 25 $^{\circ}$ C (mA) @100Khz

Capacitance ( $\mu$ F)	6.3Vdc	10Vdc	16Vdc	20Vdc	25Vdc	35Vdc
10	-	-	400	400	-	630
15	-	400	-	440	630	630
22	440	440	500	580	630	490
33	530	530	690	630	630	-
47	530	690	770	830	-	-
68	-	770	890	-	-	-
100	890	1,100	1,100	-	-	-
150	1,100	1,100	-	-	-	-
220	1,100	1,100	-	-	-	-
330	1,100	890	-	-	-	-
470	770	-	-	-	-	-

### PRECAUTIONS

Please review the notes on correct use, safety and precautions found on our website at [www.niccomp.com/tantpc](http://www.niccomp.com/tantpc)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

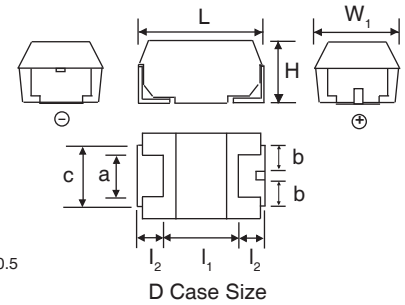
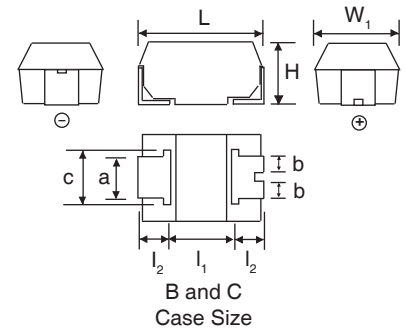


## MAXIMUM LEAKAGE CURRENT @25°C (µA)

Capacitance (µF)	6.3Vdc	10Vdc	16Vdc	20Vdc	25Vdc	35Vdc
10	0.7	1.0	1.6	2.0	2.5	3.5
15	1.0	1.5	2.4	3.0	3.8	5.3
22	1.4	2.2	3.5	4.4	5.5	7.7
33	2.1	3.3	5.3	6.6	8.3	-
47	3.0	4.7	7.5	9.4	-	-
68	4.3	6.8	11	-	-	-
100	6.3	1.	16	-	-	-
150	9.5	15	-	-	-	-
220	14	22	-	-	-	-
330	20.8	33	-	-	-	-
470	32.9	-	-	-	-	-

## CASE DIMENSIONS (mm)

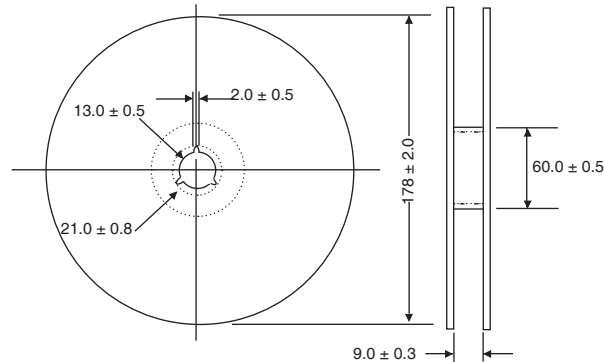
Case Code	L ±0.2	W ±0.2	HL ±0.2	I <sub>1</sub> ±0.2	I <sub>2</sub> ±0.2	a ±0.2	b ±0.2	c ±0.2
B	3.4	2.6	1.9	1.4	0.8	2.0	0.7	2.2
C	5.8	3.2	2.5	2.4	1.3	2.2	0.7	2.4
D	7.3	4.3±0.3	2.8	3.8	1.3	2.4	1.2	3.3



Terminations:  
100% Sn (Lead-Free)  
Standard

## TAPING SPECIFICATIONS (mm)

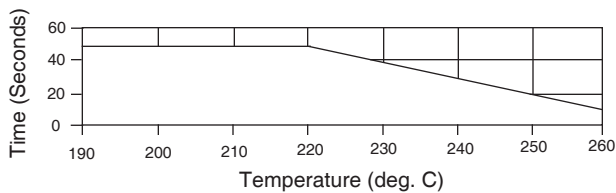
Case Code	A ±0.1	B ±0.1	C ±0.3	D ±0.1	E ±0.1	F ±0.1	G ±0.1	H ±0.1	J ±0.1	K max.	t max.	Reel Qty
B	3.1	3.8	8.0	3.5	1.75	4.0	2.0	4.0	1.5	2.5	0.2	2000
C	3.7	6.3	12.0	5.5	1.75	8.0	2.0	4.0	1.5	3.0	0.3	500
D	4.8	7.7	12.0	5.5	1.75	8.0	2.0	4.0	1.5	3.4	0.3	500



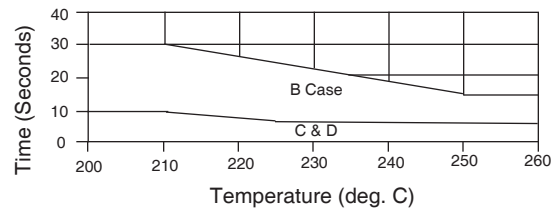
## RECOMMENDED SOLDERING PROFILES

Note: To avoid thermal shock a preheating stage, 130°C ~ 160°C for 1 minute, should be incorporated into the soldering process

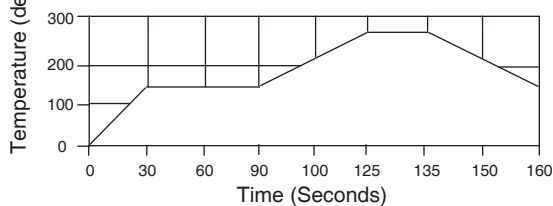
Reflow Soldering - Permitted Temperature/Time Range



Flow Soldering - Permitted Temperature/Time Range



Reflow Soldering - Recommended Profile Maximum Temperature/Time: 260°C/10 Sec.



Flow Soldering - Recommended Profile Maximum Temperature/Time: 245°C/5 Sec.

