

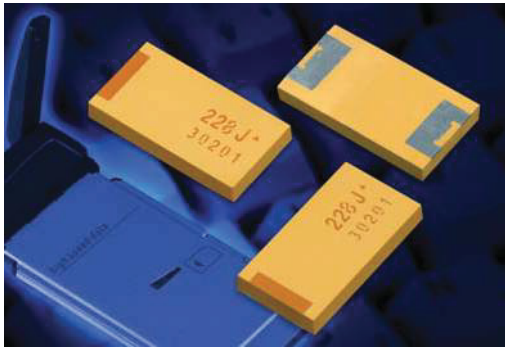


**THE DATASHEET OF  
TF08A226M016APE200**



# TLN PulseCap™ Series

## High Capacitance Tantalum Solid Electrolytic Chip Capacitors Undertab Series



### FEATURES

- Large Case Size for Maximum Capacitance
- 3x Reflow 260°C Compatible
- 100% Surge Current Tested
- Low Profile Solution
- Consumer Applications (e.g. PCMCIA/USB Wireless Express Cards etc.)
- CV Range: 1000-3300µF / 4-10V
- 2 Case Sizes Available

### APPLICATIONS

- Data Transfer Modems
- SSD Backup Circuits



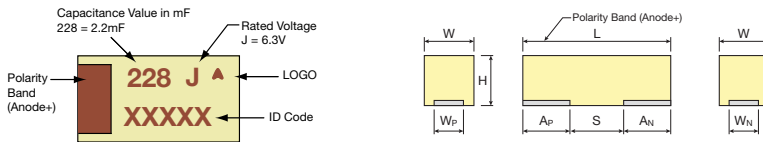
### CASE DIMENSIONS:

millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H max.	W <sub>P</sub> ±0.10 (0.004)	W <sub>N</sub> ±0.10 (0.004)	A <sub>P</sub> ±0.10 (0.004)	A <sub>N</sub> ±0.10 (0.004)	S Min.
4	2924	7361-20	7.30 (0.287)	6.10 (0.240)	2.00 (0.079)	4.75 (0.187)	4.75 (0.187)	2.00 (0.079)	3.20 (0.126)	2.10 (0.083)
6	5831	14878-20	14.80 (0.583)	7.80 (0.307)	2.00 (0.079)	5.50 (0.217)	5.50 (0.217)	2.45 (0.096)	2.45 (0.096)	9.90 (0.390)

### MARKING

#### 4, 6 CASE



### HOW TO ORDER

**TLN**

Type

**6**

Case Size  
See table above

**228**

Capacitance Code  
pF code: 1st two digits represent significant figures, 3rd digit represents multiplier

**M**

Tolerance  
M = ±20%

**006**

Rated DC Voltage  
004 = 4Vdc  
006 = 6.3Vdc  
010 = 10Vdc

**R**

Packaging  
R = Pure Tin 7" Reel

**0055**

ESR in mΩ

### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C				
Capacitance Range:	1000 µF to 3300 µF				
Capacitance Tolerance:	±20%				
Leakage Current DCL:	0.01CV				
Rated Voltage (V <sub>R</sub> )	-55°C ≤ +40°C:	4	6.3	10	
Category Voltage (V <sub>C</sub> )	at 85°C:	2	3.2	5	
Category Voltage (V <sub>C</sub> )	at 125°C:	0.8	1.3	2	
Temperature Range:	-55°C to +125°C with category voltage				
Reliability:	0.2% per 1000 hours at 85°C, 0.5xV <sub>R</sub> with 0.1Ω/V series impedance with 60% confidence level				

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### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (VR) to 85°C		
µF	Code	4V (G)	6.3V (J)	10V (A)
680	687			
1000	108			4(100)/6(55)
1500	158		4(100)	6(55)
2200	228		6(55)	
3300	338	6(55)		

Released ratings (ESR ratings in mOhms in parentheses)

Note: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher voltage ratings in the same case size, to the same reliability standards.

### RATINGS & PART NUMBER REFERENCE

Part Number	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL Max. (µA)	ESR Max. @ 100kHz (mΩ)	100kHz RMS Current (mA)			MSL
									25°C	85°C	125°C	
<b>4 Volt @ 40°C</b>												
TLN6338M004#0055	6	3300	4	40	0.8	125	132	55	2045	1840	818	3
<b>6.3 Volt @ 40°C</b>												
TLN4158M006#0100	4	1500	6.3	40	1.3	125	90	100	1285	1156	514	3
TLN6228M006#0055	6	2200	6.3	40	1.3	125	132	55	2045	1840	818	3
<b>10 Volt @ 40°C</b>												
TLN4108M010#0100	4	1000	10	40	2	125	100	100	1285	1156	514	3
TLN6108M010#0055	6	1000	10	40	2	125	100	55	2045	1840	818	3
TLN6158M010#0055	6	1500	10	40	2	125	150	55	2045	1840	818	3

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts.

DCL is measured at rated voltage after 5 minutes.

ESR allowed to move up to 1.25 times catalogue limit post mounting

DCL allowed to move up to 2.00 times catalogue limit post mounting

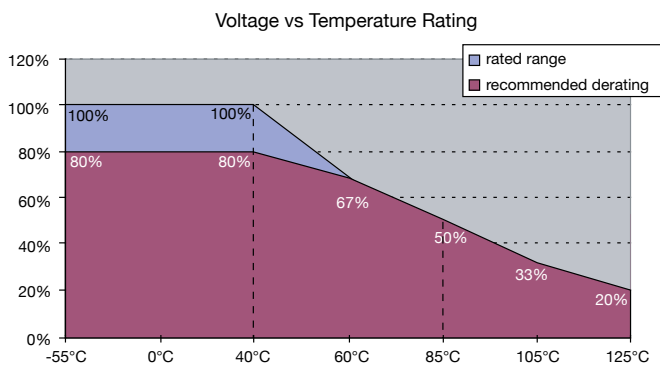
For typical weight and composition, refer to the *Product Safety Information Datasheet* at the end of the Polymer, Tantalum and Niobium Oxide Capacitors catalog.

**NOTE: KYOCERA AVX reserves the right to supply higher voltage ratings or tighter tolerance part in the same case size, to the same reliability standards.**

### QUALIFICATION TABLE

TEST	TLN PulseCap™ series (Temperature range -55°C to +125°C)									
	Condition			Characteristics						
<b>Endurance</b>	Apply rated voltage (Ur) at 40°C and / or category voltage (Uc) at 85°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$ . Stabilize at room temperature for 1-2 hours before measuring.			Visual examination	no visible damage					
				DCL	2 x initial limit					
				$\Delta C/C$	within +5/-30% of initial value					
				ESR	1.25 x initial limit					
<b>Humidity</b>	Store at 65°C and 90-95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.			Visual examination	no visible damage					
				DCL	2 x initial limit					
				$\Delta C/C$	within $\pm 10\%$ of initial value					
				ESR	1.25 x initial limit					
<b>Temperature Stability</b>	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C
	1	+20	15	DCL	2 x IL*	n/a	2 x IL*	20 x IL*	25 x IL*	2 x IL*
	2	-55	15	$\Delta C/C$	n/a	+5/-20%	$\pm 10\%$	+20/-0%	+25/-0%	$\pm 10\%$
	3	+20	15	ESR	1.25xIL*	2.5 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25xIL*
	4	+85	15							
	5	+125	15							
<b>Surge Voltage</b>	Apply 1.3x rated voltage (Ur) at 40°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 $\Omega$			Visual examination	no visible damage					
				DCL	2 x initial limit					
				$\Delta C/C$	within $\pm 5\%$ of initial value					
				ESR	1.25 x initial limit					
<b>Mechanical Shock</b>	MIL-STD-202, Method 213, Condition C			Visual examination	no visible damage					
				DCL	initial limit					
				$\Delta C/C$	within $\pm 5\%$ of initial value					
				DF	initial limit					
				ESR	initial limit					
<b>Vibration</b>	MIL-STD-202, Method 204, Condition D			Visual examination	no visible damage					
				DCL	initial limit					
				$\Delta C/C$	within $\pm 5\%$ of initial value					
				DF	initial limit					
				ESR	initial limit					

\*Initial Limit

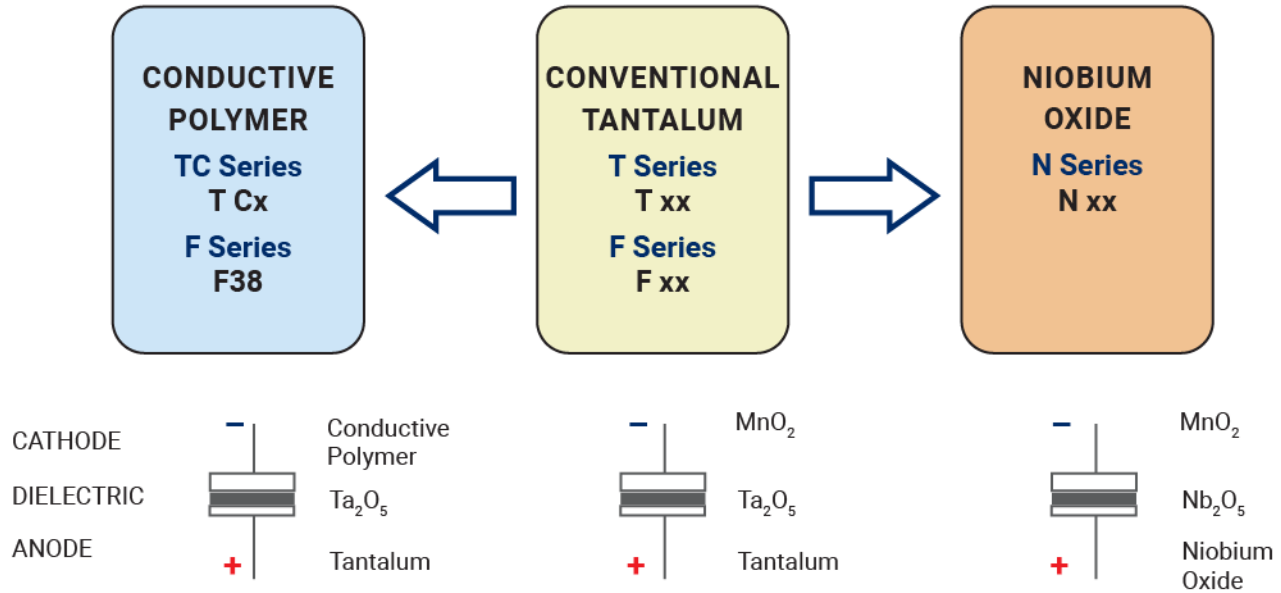


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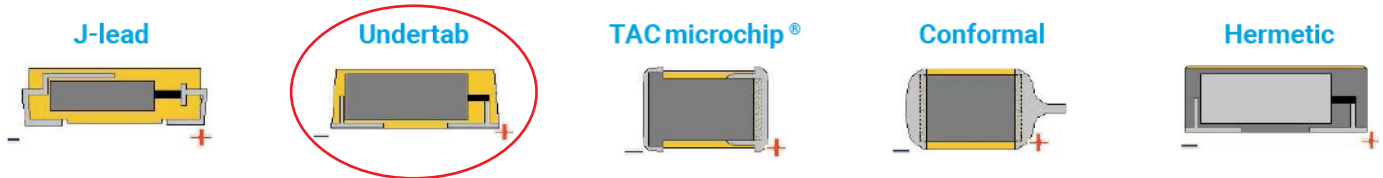
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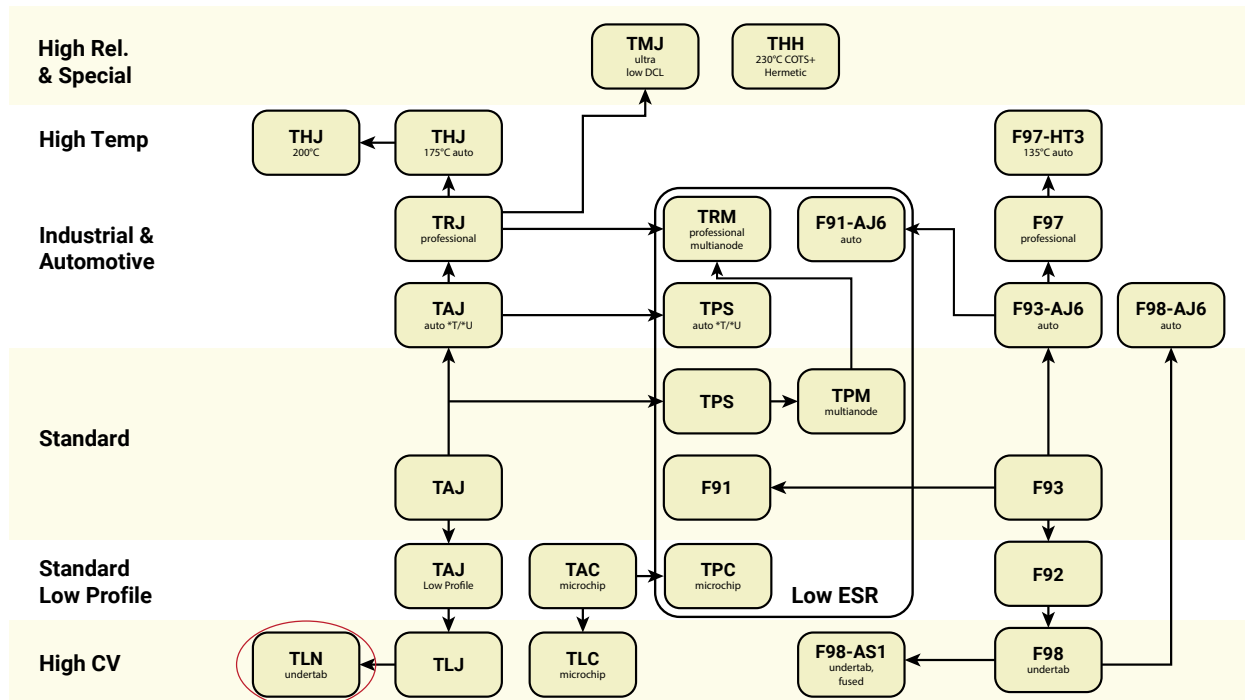
### SOLID ELECTROLYTIC CAPACITOR ROADMAP



### FIVE CAPACITOR CONSTRUCTION STYLES



### SERIES LINE UP : CONVENTIONAL SMD MnO<sub>2</sub>



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at [www.kyocera-avx.com/disclaimer/](http://www.kyocera-avx.com/disclaimer/) by reference and should be reviewed in full before placing any order.

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