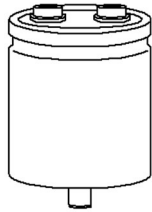




AP -



APU -

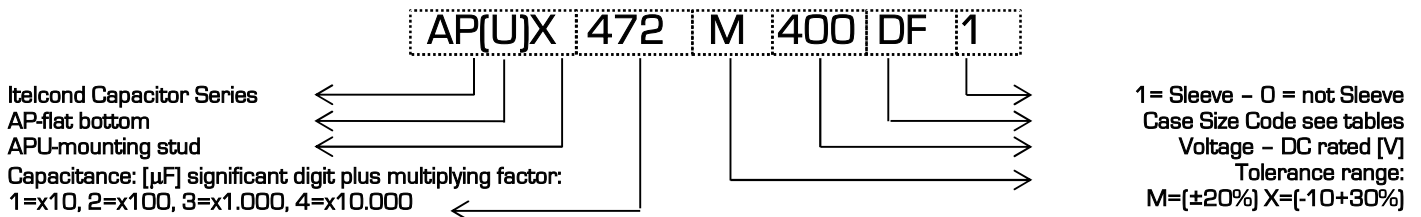
### Capacitors screw terminal type -Heavy Transient

- AP- Flat Bottom
- APU- Mounting Stud
- Capacitance Tolerance: -20 + 20% - standard [M]
- Capacitance Tolerance: -10 + 30% - on request [X]
- Climatic category: 40/85/56
- Case: 51x83 - 90x222
- Temperature - 40°C + 85°C
- All welded construction reliable electrical contact

### Mechanical Outlines

- Case: aluminium made
- Terminals: screw
- Sealing: hermetic by EPR gasket, on a resin cover
- Pressure Release Vent: silicone-rubber
- Sleeve: self-extinguishing thermo shrinkable
- Size: see enclosed drawings
- Mounting Hardware: see hardware section
- External Material UL94-V0

### Ordering Code: Example



### Ripple Current

The allowable values of ripple current in Ampères, are related to the temperature and frequency by following equation:

$$I_{\text{Ripple}} = K_t \cdot K_f \cdot I_{\text{Ripple@85}^\circ\text{C}}$$

Where:

- $I_{\text{Ripple@85}^\circ\text{C}}$  is the limit given by tables, @ 85°C/100HZ
- $K_t$  is the Temperature Correlation Factor
- $K_f$  is the Frequency Correlation Factor

Note .Superimposed alternating voltage summed to DC volage must not exceed rated voltage, rated ripple current must not be exceeded and no reverse polarity is allowed

°C	40	55	65	75	85
$K_t$	1.65	1.50	1.40	1.20	1.00

Table 1- $K_t$  Values

$V_n/\text{Hz}$	$K_f$
	$V>300$ Diameter Code C, D, E
50	0.72
100	1.00
120	1.03
200	1.14
300	1.24
400	1.29
500	1.32
>1000	1.37

Table 2- $K_f$  Values

### Expected Lifetime End of Life Criteria

During useful life typical electrical parameters of electrolytic capacitor are subject to change.

End of Life criteria, when rated temperature, voltage and ripple are applied, are:

$$\frac{\Delta C}{C_{t0}} \leq 30\% \quad \text{Equation 1}$$

$$ESR \leq 3 \cdot ESR_{t0} \quad \text{Equation 2}$$

$$I_f \leq I_{f0} \quad \text{Equation 3}$$

where  $t_0$  is the initial value

### Voltage Endurance Test Requirements

On Voltage Endurance Test are based Expected Lifetime Curves.

End of Life criteria, when rated temperature, and voltage are applied for 2'000hrs, are

$$\frac{\Delta C}{C_{t0}} \leq 10\% \quad \text{Equation 4}$$

$$ESR \leq 1,3 \cdot ESR_{t0} \quad \text{Equation 5}$$

$$I_f \leq I_{f0} \quad \text{Equation 6}$$

where  $t_0$  is the initial value

### Expected Lifetime Vs Temperature and Ripple Current

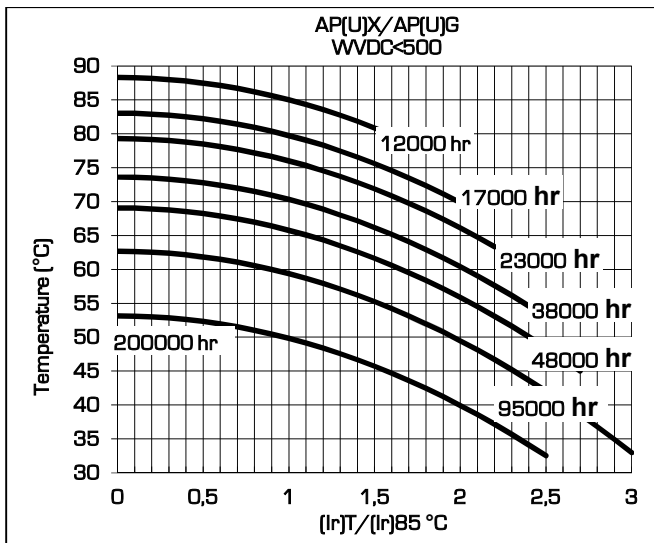


Table 3

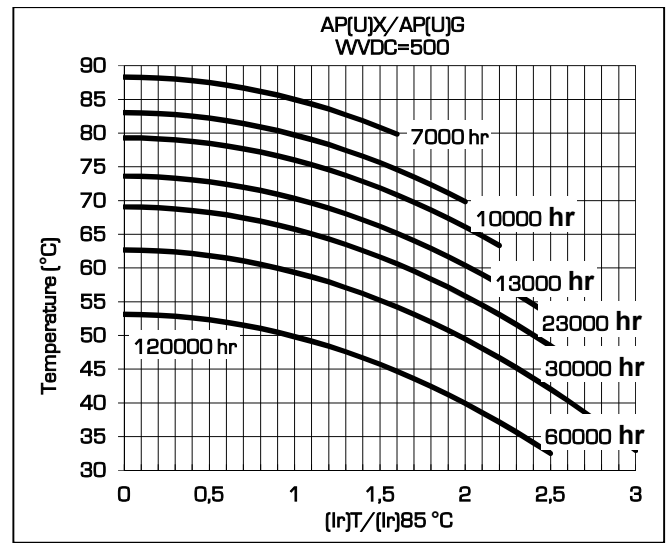


Table 4

### Leakage Current

After the rated voltage has been applied to the capacitor for 5 minutes the leakage current must be within those limits.

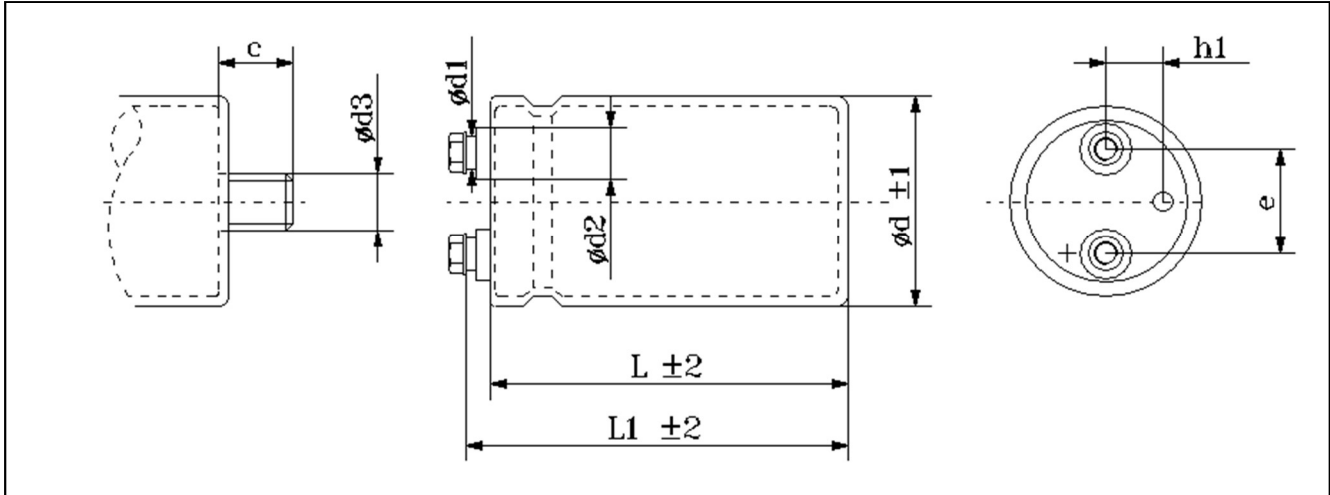
Maximum limit	@25°C	$I_f \leq 0,001 \times C \times V$
Operating limit	@25°C	$I_f \leq 0,0005 \times C \times V$

Where:  $I_f$ =leakage current [ $\mu$ A],  $C$ =capacitance [ $\mu$ F],  
 $V$ =rated voltage [V]

### Surge Voltage

Working Voltage	350	400	450	500
Surge Voltage	385	440	495	550

	Capacitance	Case	Diam	Height	Tanδ	ESRmax   typ		Zmax	Iripple @100Hz		Ordering Code
	[μF]@100Hz		[mm]	[mm]	[%]@100Hz	[mΩ]@100Hz	[mΩ]@10KHz	[mΩ]@10KHz	[A]@55°C	[A]@85°C	[U] for mounting stud
350	2220	CC	63	105	0,09	65	52	49	12,4	8,2	AP{U}X222M350CC1
	3300	DF	76	145	0,09	43	35	33	19,3	12,9	AP{U}X332M350DF1
	4700	DF	76	145	0,09	30	24	23	23,1	15,4	AP{U}X472M350DF1
	6800	DF	76	145	0,10	23	19	18	26,3	17,6	AP{U}X682M350DF1
		DJ	76	222	0,10	23	19	18	31,7	21,1	AP{U}X682M350DJ1
	10000	DJ	76	222	0,10	16	13	12	38,5	25,6	AP{U}X103M350DJ1
		EF	90	145	0,10	16	13	12	35,1	23,4	AP{U}X103M350EF1
15000	EJ	90	222	0,10	11	8	8	51,6	34,4	AP{U}X153M350EJ1	
400	1500	DC	76	105	0,10	106	85	80	10,8	7,2	AP{U}X152M400DC1
	2220	DC	76	105	0,11	80	64	60	12,4	8,3	AP{U}X222M400DC1
	3300	DC	76	105	0,12	58	46	43	14,6	9,7	AP{U}X332M400DC1
		DF	76	145	0,12	58	46	43	16,7	11,2	AP{U}X332M400DF1
	4700	DF	76	145	0,12	41	33	30	20,0	13,3	AP{U}X472M400DF1
	6800	DF	76	145	0,12	28	22	21	24,0	16,0	AP{U}X682M400DF1
		DJ	76	222	0,12	28	22	21	29,0	19,3	AP{U}X682M400DJ1
	8200	DJ	76	222	0,12	23	19	17	31,8	21,2	AP{U}X822X400DJ1
	10000	DJ	76	222	0,12	19	15	14	35,1	23,4	AP{U}X103M400DJ1
		EF	90	145	0,12	19	15	14	32,0	21,4	AP{U}X103M400EF1
15000	EJ	90	222	0,12	13	10	10	47,1	31,4	AP{U}X153M400EJ1	
450	1500	CC	63	105	0,10	106	85	80	9,7	6,5	AP{U}X152M450CC1
	2220	CC	63	105	0,12	87	69	65	10,7	7,1	AP{U}X222M450CC1
	3300	DC	76	105	0,12	58	46	43	14,6	9,7	AP{U}X332M450DC1
		DF	76	145	0,10	48	39	36	18,3	12,2	AP{U}X332M450DF1
	4700	DF	76	145	0,12	41	33	30	20,0	13,3	AP{U}X472M450DF1
		EF	90	145	0,12	41	33	30	22,0	14,6	AP{U}X472M450EF1
		DJ	76	222	0,12	41	33	30	24,1	16,0	AP{U}X472M450DJ1
	6800	EF	90	145	0,12	28	22	21	26,4	17,6	AP{U}X682M450EF1
		DJ	76	222	0,12	28	22	21	29,0	19,3	AP{U}X682M450DJ1
	8200	DJ	76	222	0,12	23	19	17	31,8	21,2	AP{U}X822M450DJ1
10000	EJ	90	222	0,11	18	14	13	40,2	26,8	AP{U}X103M450EJ1	
500	1500	DC	76	105	0,13	138	110	104	9,4	6,3	AP{U}X152M500DC1
	2220	DC	76	105	0,13	94	75	71	11,4	7,6	AP{U}X222M500DC1
		DF	76	145	0,13	94	75	71	13,1	8,8	AP{U}X222M500DF1
	3300	DC	76	105	0,13	63	50	47	14,0	9,3	AP{U}X332M500DC1
		DF	76	145	0,13	63	50	47	16,1	10,7	AP{U}X332M500DF1
	3900	DF	76	145	0,13	53	42	40	17,5	11,7	AP{U}X392M500DF1
	4400	DF	76	145	0,13	47	38	35	18,6	12,4	AP{U}X442M500DF1
	4700	DF	76	145	0,13	44	35	33	19,2	12,8	AP{U}X472M500DF1
	5600	DJ	76	222	0,13	37	30	28	25,2	16,8	AP{U}X562M500DJ1
	6800	EF	90	145	0,13	30	24	23	25,4	16,9	AP{U}X682M500EF1
		DJ	76	222	0,13	30	24	23	27,8	18,5	AP{U}X682M500DJ1
10000	EJ	90	222	0,13	21	17	16	37,0	24,7	AP{U}X103M500EJ1	

**Dimension, Quantity and Weight for box**


Case				Connections							Mounting Stud			Packaging	
Code	DxL	L1	h1	d1	d2	e	Terminal	Screw			Screw			Pcs/Box	Weight/box
							Code	Thread	Torque	Lenght	d3	c	Torque		
BB	51x83	85	13	8	13	22.2	X	M5	2,0	10	M12	16	10Nm	30	6-9
BB	51x83	85	13	13	18	22.2	X	M5	2,0	10	M12	16	10Nm	30	6-9
BC	51x105	109	13	8	13	22.2	X	M5	2,0	10	M12	16	10Nm	30	6-9
BC	51x105	109	13	13	18	22.2	X	M5	2,0	10	M12	16	10Nm	30	6-9
CC	63x105	111	16	8	13	28.6	X	M5	2,0	10	M12	16	10Nm	20	6-8
CC	63x105	111	16	13	18	28.6	X	M5	2,0	10	M12	16	10Nm	20	6-8
DC	76x105	111	19	13	18	31.8	X	M5	2,0	10	M12	16	10Nm	12	5-7
DF	76x145	151	19	13	18	31.8	X	M5	2,0	10	M12	16	10Nm	12	6-14
				18	23		G	M6	2,5						
DK	76x165	173	19	13	18	31.8	X	M5	2,0	10	M12	16	10Nm	12	6-14
				18	23		G	M6	2,5						
DJ	76x222	222	19	13	18	31.8	X	M5	2,0	10	M12	16	10Nm	8	9-11
				18	23		G	M6	2,5						
EC	90x105	112	19	18	23	31,8	G	M6	2,5	10	M12	16	10Nm	6	7-9
EF	90x145	153	19	18	23	31,8	G	M6	2,5	10	M12	16	10Nm	6	9-11
EJ	90x222	227	19	18	23	31,8	G	M6	2,5	10	M12	16	10Nm	6	8-12

All dimensions in mm, torque in Nm, weight in kg