

### VN series

- **Downsizing, Low ESR** 小型化, 低等效串联电阻
- **Load life of 2000 hours at 105°C** 直流负载寿命 105°C-2000 小时
- **Compliant to the RoHS2.0 directive** 符合 RoHS2.0 规范
- **Suitable for Miniaturization of Electronics Device** 适合小型化电子设备



### Specifications 系列参数

Items 项目	Characteristics	
Operating Temp. Range 工作温度范围	-55°C ~ +105°C	
Capacitance Range 容量范围	18 ~ 1800 $\mu$ F	
Capacitance Tolerance 容量偏差	M : $\pm 20\%$	
Rated Voltage Range 额定电压范围	2.5V ~ 35V DC	
Dissipation Factor 损耗角正切	Not to exceed the value specified 不超过规格值	
Leakage Current 漏电流	Not to exceed the value specified (after 2 minutes) 不超过规格值 (充电 2 分钟后测试)	
ESR (100K~300KHz) 等效串联电阻	Not to exceed the value specified 不超过规格值	
Endurance 105°C, 2000h, at rated voltage 寿命: 105°C 加载额定电压连续工作 2000 小时	Capacitance Change 容量变化	Within $\pm 20\%$ of the value before test 初始值 $\pm 20\%$ 以内
	Dissipation Factor 损耗角正切	Not to exceed 150% of the value specified 不超过 1.5 倍规格值
	ESR 等效串联电阻	Not to exceed 150% of the value specified 不超过 1.5 倍规格值
	Leakage current 漏电流	Not to exceed the value specified 不超过规格值
Moisture Resistance 60°C, RH90~95%, 1000h, at rated voltage 耐湿性 60°C, RH90~95% 加载额定电压连续工作 1000 小时	Capacitance Change 容量变化	Within $\pm 20\%$ of the value before test 初始值 $\pm 20\%$ 以内
	Dissipation Factor 损耗角正切	Not to exceed 150% of the value specified 不超过 1.5 倍规格值
	ESR 等效串联电阻	Not to exceed 150% of the value specified 不超过 1.5 倍规格值
	Leakage Current 漏电流	Not to exceed the value specified 不超过规格值
Resistance to Soldering Heat After the recommended soldering conditions 耐焊接热 推荐焊接条件处理后测试	Capacitance Change 容量变化	Within $\pm 5\%$ of the value before test 初始值 $\pm 5\%$ 以内
	Dissipation Factor 损耗角正切	Not to exceed the value specified 不超过规格值
	ESR 等效串联电阻	Not to exceed the value specified 不超过规格值
	Leakage Current 漏电流	Not to exceed the value specified 不超过规格值 (Charging treatment 充电处理)

※When there is any doubt, measure after charging treatment below.

Charging treatment: at 105 °C, Rated voltage is loaded for 120 minutes continuously.

如有疑问, 请进行充电处理后再测试, 测试条件如下:

充电处理: 在 105°C 环境温度下连续施加额定直流电压 120 分钟。

### Dimensions 尺寸 (Unit单位:mm)

		$\Phi$ D	L	W	H	C	P	R	T <sub>1</sub> , T <sub>2</sub>
		5	5.8	5.3	5.3	5.9	1.4	0.5~0.8	0.2max.
		5	7.5	5.3	5.3	5.9	1.4	0.5~0.8	0.2max.
		6.3	5.8	6.6	6.6	7.2	2.1	0.5~0.8	0.2max.
		8	6.9	8.3	8.3	9.0	3.2	0.8~1.1	0.2max.
		8	7.7	8.3	8.3	9.0	3.2	0.8~1.1	0.2max.
		10	8	10.3	10.3	11.0	4.6	0.8~1.1	0.2max.

### Capacitance List 容量对照表

W.V (S.V) SIZE	2.5 (2.9)	4 (4.6)	6.3 (7.2)	10 (12)	16 (18)	25 (29)	35 (40)
5x5.8	220 ~ 390 $\mu$ F	150 ~ 220 $\mu$ F	120 ~ 180 $\mu$ F	82 ~ 120 $\mu$ F	56 ~ 100 $\mu$ F	39 ~ 56 $\mu$ F	18 ~ 33 $\mu$ F
5x7.5	390 ~ 470 $\mu$ F	220 ~ 330 $\mu$ F	180 ~ 270 $\mu$ F	120 ~ 180 $\mu$ F	82 ~ 120 $\mu$ F	56 ~ 82 $\mu$ F	33 ~ 47 $\mu$ F
6.3x5.8	390 ~ 680 $\mu$ F	270 ~ 470 $\mu$ F	220 ~ 390 $\mu$ F	180 ~ 270 $\mu$ F	120 ~ 220 $\mu$ F	82 ~ 120 $\mu$ F	27 ~ 68 $\mu$ F
8x6.9	560 ~ 1200 $\mu$ F	390 ~ 680 $\mu$ F	330 ~ 680 $\mu$ F	220 ~ 390 $\mu$ F	150 ~ 330 $\mu$ F	120 ~ 220 $\mu$ F	47 ~ 100 $\mu$ F
8x7.7	820 ~ 1800 $\mu$ F	560 ~ 1200 $\mu$ F	470 ~ 1000 $\mu$ F	390 ~ 560 $\mu$ F	220 ~ 470 $\mu$ F	180 ~ 330 $\mu$ F	68 ~ 150 $\mu$ F
10x8					390 ~ 820 $\mu$ F	220 ~ 470 $\mu$ F	100 ~ 270 $\mu$ F

### Characteristics List 规格特性表

W.V. 工作电压 (V)	Capacitance 容量 ( $\mu$ F)	L.C. 漏电流 ( $\mu$ A, 2min)	tg $\delta$ 损耗角正切 (120Hz, 20 $^{\circ}$ C)	ESR 等效串联电阻 (m $\Omega$ , 100kHz)	Rated Ripple Current 额定纹波电流 (mA, r.m.s)	Size 尺寸 $\Phi$ DxL(mm)	Part Number 物料编码
2.5	390	300	0.08	16	2200	5x5.8	PVN391M2R5C58TR□□□□
	470	300	0.08	14	2600	5x7.5	PVN471M2R5C75TR□□□□
	560	300	0.08	12	2900	6.3x5.8	PVN561M2R5E58TR□□□□
	1000	500	0.08	12	3400	8x6.9	PVN102M2R5F69TR□□□□
	1500	750	0.08	9	4200	8x7.7	PVN152M2R5F77TR□□□□
4	220	300	0.08	16	2200	5x5.8	PVN221M004C58TR□□□□
	330	300	0.08	16	2600	5x7.5	PVN331M004C75TR□□□□
	330	300	0.08	12	2900	6.3x5.8	PVN331M004E58TR□□□□
	560	448	0.08	12	3400	8x6.9	PVN561M004F69TR□□□□
	1000	800	0.08	9	4200	8x7.7	PVN102M004F77TR□□□□
6.3	150	300	0.08	20	2000	5x5.8	PVN151M6R3C58TR□□□□
	220	300	0.08	18	2300	5x7.5	PVN221M6R3C75TR□□□□
	330	415	0.08	15	2600	6.3x5.8	PVN331M6R3E58TR□□□□
	560	705	0.08	15	3100	8x6.9	PVN561M6R3F69TR□□□□
	820	1000	0.08	10	4000	8x7.7	PVN821M6R3F77TR□□□□
10	100	300	0.08	25	1900	5x5.8	PVN101M010C58TR□□□□
	180	300	0.08	22	2200	5x7.5	PVN181M010C75TR□□□□
	220	440	0.08	18	2500	6.3x5.8	PVN221M010E58TR□□□□
	330	660	0.08	18	3000	8x6.9	PVN331M010F69TR□□□□
	470	940	0.08	12	3800	8x7.7	PVN471M010F77TR□□□□
16	100	320	0.10	30	1700	5x5.8	PVN101M016C58TR□□□□
	100	320	0.10	25	2000	5x7.5	PVN101M016C75TR□□□□
	220	704	0.10	22	2200	6.3x5.8	PVN221M016E58TR□□□□
	330	1000	0.10	22	2600	8x6.9	PVN331M016F69TR□□□□
	470	1000	0.10	15	3300	8x7.7	PVN471M016F77TR□□□□
	680	1000	0.10	15	3600	10x8	PVN681M016G08TR□□□□
25	39	300	0.10	35	1600	5x5.8	PVN390M025C58TR□□□□
	56	300	0.10	30	1900	5x7.5	PVN560M025C75TR□□□□
	100	500	0.10	26	2100	6.3x5.8	PVN101M025E58TR□□□□
	150	750	0.10	26	2500	8x6.9	PVN151M025F69TR□□□□
	220	1000	0.10	20	3100	8x7.7	PVN221M025F77TR□□□□
	330	1000	0.10	20	3300	10x8	PVN331M025G08TR□□□□

W.V. 工作电压 (V)	Capacitance 容量 ( $\mu$ F)	L.C. 漏电流 ( $\mu$ A,2min)	tg $\delta$ 损耗角正切 (120Hz,20 $^{\circ}$ C)	ESR 等效串联电阻 (m $\Omega$ ,100kHz)	Rated Ripple Current 额定纹波电流 (mA,r.m.s)	Size 尺寸 $\Phi$ DxL(mm)	Part Number 物料编码
35	22	300	0.10	50	1400	5x5.8	PVN220M035C58TR□□□□
	33	300	0.10	36	1800	5x7.5	PVN330M035C75TR□□□□
	56	394	0.10	32	1900	6.3x5.8	PVN560M035E58TR□□□□
	82	574	0.10	32	2300	8x6.9	PVN820M035F69TR□□□□
	100	700	0.10	25	2800	8x7.7	PVN101M035F77TR□□□□
	220	1000	0.10	25	3000	10x8	PVN221M035G08TR□□□□

\* For the last 4 digits of the part number, please refer to the part number system on page 154.

物料编码的最后 4 位，请参考 154 页物料编码系统。

### Frequency Coefficient for Ripple Current 纹波电流频率系数

Frequency 频率	120Hz $\leq$ freq.<1KHz	1KHz $\leq$ freq.<10KHz	10KHz $\leq$ freq.<50KHz	50KHz $\leq$ freq.<100KHz	100KHz $\leq$ freq.<500KHz
Coefficient 系数 (C $\leq$ 47 $\mu$ F)	0.05	0.25	0.55	0.80	1.00
Coefficient 系数 (1000 $\mu$ F $\geq$ C>47 $\mu$ F)	0.05	0.30	0.70	0.85	1.00
Coefficient 系数 (C>1000 $\mu$ F)	0.10	0.33	0.85	1.00	1.00