

CBB60T 型 DC-Link 电容器(PCB, 125℃)

CBB60T Type DC-Link Capacitor (PCB, 125℃)

◆外形尺寸图及产品结构 Outline Drawing and Capacitor Construction

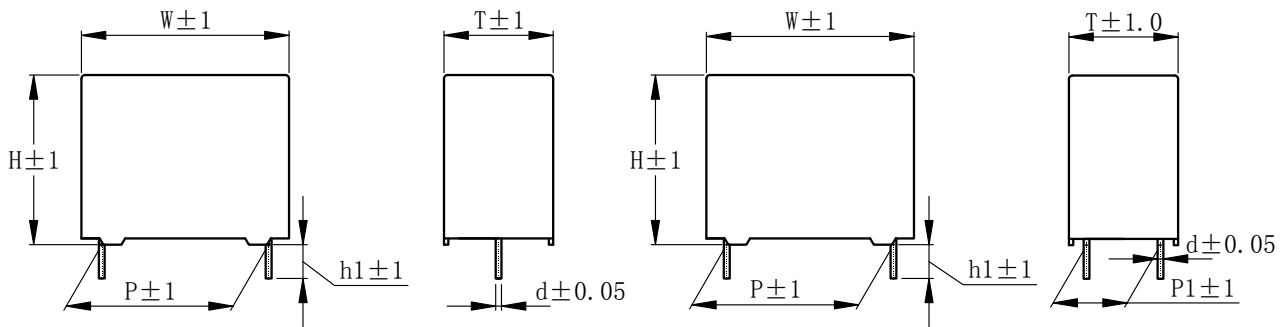


图 1: 2Pins

图 2: 4Pins

◆ 特点及用途 Application and Feature

自感小, 等效串联电阻小, 大纹波电流承受能力, 通常用于变频器、感应加热设备、UPS 等的直流母线滤波电路当中。

Low ESL, Low ESR, Support high ripple current, especially used in DC-Link circuit for UPS, inverter, induction heating equipment.

◆ 技术要求 Specifications

参照标准 Reference Standard	GB/T 17702、IEC 61071、AEC-Q200	
气候类别 Climatic Category	40/110/56	
额定电压 Rated Voltage	630Vdc、700Vdc、850Vdc、	
工作温度范围(热点) Operation Temperature Range(Hot Spot)	-40℃~125℃ (+85℃~+125℃: 0.7% /℃ of U _{OP} derating compared to U _{NDC} at 85℃)	
电容量 Capacitance Range	1.5μF~50μF	
电容量偏差 Capacitance Tolerance	±5%(J)、±10%(K) (20±5℃,1kHz)	
耐电压 Voltage Proof	极间 Between Terminals	U=1.5U _{NDC} (20℃, 10s)
	极壳 Between Terminals to Case	2000Vac (10s), 50Hz
绝缘电阻 Insulation Resistance	IR×C≥10 000s (20℃, 100Vdc, 1min)	
最大峰值电流 \hat{I} (A) Maximum Peak Current(A)	$\hat{I} = C_R \times dv/dt$	
预期寿命 Lifetime Expectancy	参照预期寿命曲线 Refer to Expected Lifetime Curves	
过电压 Over Voltage	一天之内的最长持续时间 Maximum Duration within Day	说明 Observation
	1.1U _{NDC} (30% of on-load-dur.)	系统调整 System Regulation
	1.15U _{NDC} (30min/day)	
	1.2U _{NDC} (5min/day)	
	1.3U _{NDC} (1min/day)	



CBB60T

CBB60T series

◆ 产品代码编写说明：Part number code system:

16 位产品代码如下：The 16 digits part number is formed as follow:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
C	6	0	T												

第 1~4 位	薄膜电容器系列代码 C60T=CBB60T	Digit 1~4	Series code of film capacitor C60T=CBB60T
第 5~7 位	标称容量代码 举例：105=10×10 ⁵ pF=1μF	Digit 5~7	Rated capacitance value code For example:105=10×10 ⁵ pF=1μF
第 8 位	容量等级代码 J=±5% K=±10%	Digit 8	Capacitance tolerance code J=±5% K=±10%
第 9~10 位	直流额定电压代码 2J=630V 1V=700V 2W=850V	Digit 9~10	DC rated voltage code 2J=630V 1V=700V 2W=850V
第 11 位	引线间距 B=27.5mm E=37.5mm G=52.5mm	Digit 11	Pitch B=27.5mm E=37.5mm G=52.5mm
第 12 位	内部特征码	Digit 12	Internal use
第 13~16 位	引出端代码 见表 1	Digit 13~16	Terminals code Referring to table 1
表 1	引线形式代码	Table 1	Lead form code

第13位 Digit13		第14~15位 Digit14~Digit15		第 16 位 Digit16	
引线形式及P1 Lead form and pitch P1		引线长度 Lead length		引线长度偏差 Length tolerance	
代码 Code	说明 explanation	代码 Code	说明 explanation	代码 Code	说明 explanation
0	2Pins P1=0mm	00	标准引线长度5.5mm standard lead length 5.5mm	0	引线长度偏差±1.0mm Length tolerance±1.0mm
1	4Pins P1=5.1mm				
2	4Pins P1=10.2mm				
3	4Pins P1=12.7mm				
4	4Pins P1=15.2mm				
5	4Pins P1=20.3mm				

◆ 产品尺寸及性能参数: Product Dimension and Characteristic Data:

U _{NDC} (85°C): 630Vdc												
C (μF)	W	H	T	P	P1	d	dv/dt (V/μs)	tgδ×(10 ⁻⁴)		ESR (mΩ)	I _{RMS} (A)	产品代码 Part number
								1KHz	10KHz			
1.5	32.0	20.0	11.0	27.5	-	0.8	50	5	35	22.3	3.5	C60T155-2JB00000
2.2	32.0	22.0	13.0	27.5	-	0.8	50	5	35	15.5	4.7	C60T225-2JB00000
3.0	32.0	25.0	14.0	27.5	-	0.8	50	5	35	11.5	6.0	C60T305-2JB00000
4.7	32.0	28.0	17.0	27.5	-	0.8	50	5	37	7.6	8.2	C60T475-2JB00000
6.8	32.0	33.0	18.0	27.5	-	0.8	50	6	39	5.4	10.4	C60T685-2JB00000
8.0	32.0	37.0	22.0	27.5	-	0.8	50	6	40	4.5	12.0	C60T805-2JB00000
5.0	42.0	26.0	15.0	37.5	-	1.0	35	9	69	13.4	6.0	C60T505-2JE00000
7.5	42.0	30.0	16.0	37.5	-	1.0	35	9	69	9.5	7.6	C60T755-2JE00000
10.0	42.0	33.5	18.5	37.5	-	1.0	35	9	72	7.0	9.6	C60T106-2JE00000
15.0	42.0	41.0	26.0	37.5	10.2	1.0	35	9	71	4.8	13.0	C60T156-2JE02000
20.0	42.0	41.0	26.0	37.5	10.2	1.0	35	9	71	3.6	16.0	C60T206-2JE02000
22.0	42.0	43.0	28.0	37.5	10.2	1.0	35	9	73	3.2	17.5	C60T226-2JE02000
25.0	42.0	45.0	30.0	37.5	20.3	1.2	35	9	74	2.9	19.5	C60T256-2JE05000
30.0	42.0	50.0	30.0	37.5	20.3	1.2	35	9	76	2.4	22.5	C60T306-2JE05000
35.0	57.0	45.0	30.0	52.5	20.3	1.2	25	16	143	4.0	18.5	C60T356-2JG05000
50.0	57.0	50.0	35.0	52.5	20.3	1.2	25	16	148	2.9	23.5	C60T506-2JG05000

U _{NDC} (85°C): 700Vdc												
C (μF)	W	H	T	P	P1	d	dv/dt (V/μs)	tgδ×(10 ⁻⁴)		ESR (mΩ)	I _{RMS} (A)	产品代码 Part number
								1KHz	10KHz			
1.5	32.0	20.0	11.0	27.5	-	0.8	75	5	32	20.3	3.6	C60T155-1VB00000
2.0	32.0	22.0	13.0	27.5	-	0.8	75	5	32	15.3	4.7	C60T205-1VB00000
3.3	32.0	28.0	17.0	27.5	-	0.8	75	5	33	9.6	7.3	C60T335-1VB00000
4.7	32.0	33.0	18.0	27.5	-	0.8	75	5	34	6.9	9.0	C60T475-1VB00000
7.0	32.0	37.0	22.0	27.5	-	0.8	75	5	37	5.0	11.8	C60T705-1VB00000
3.9	42.0	26.0	15.0	37.5	-	1.0	54	8	62	15.3	5.6	C60T395-1VE00000
5.0	42.0	30.0	16.0	37.5	-	1.0	54	8	63	12.1	6.8	C60T505-1VE00000
12.0	42.0	40.0	20.0	37.5	10.2	1.0	54	8	64	5.3	12.5	C60T126-1VE02000
14.0	42.0	41.0	26.0	37.5	10.2	1.0	54	8	64	4.4	14.5	C60T146-1VE02000
16.0	42.0	43.0	28.0	37.5	10.2	1.0	54	8	65	3.9	16.0	C60T166-1VE02000
20.0	42.0	45.0	30.0	37.5	20.3	1.2	54	8	66	3.2	19.0	C60T206-1VE05000
22.0	42.0	50.0	30.0	37.5	20.3	1.2	54	9	67	2.9	20.5	C60T226-1VE05000
30.0	57.0	45.0	30.0	52.5	20.3	1.2	35	15	129	4.2	18.5	C60T306-1VG05000
40.0	57.0	50.0	35.0	52.5	20.3	1.2	35	15	132	3.2	22.5	C60T406-1VG05000

备注:

“-”: 客户要求的容量偏差

ESR 值为 f=10KHz 下的典型值

I_{RMS} 值为 f=10KHz、T_{amb}=85°C、散热条件 10W/m²/°C、

△T_{case}≤15°C 的最大电流有效值。

“-”=custom's capacitor tolerance code, J=±5%, K=±10%

ESR is typical values at 10KHz

I_{RMS} is the maximum R.M.S current at 10KHz、T_{amb}=85°C、

△T_{case}≤15°C.(Coefficient of heat dissipation: 10W/m²/°C)



CBB60T

CBB60T series

◆ 产品尺寸及性能参数: Product Dimension and Characteristic Data:

UNDC (85°C): 850Vdc												
C (μF)	W	H	T	P	P1	d	dv/dt (V/μs)	tgδ×(10 ⁻⁴)		ESR (mΩ)	I _{RMS} (A)	产品代码 Part number
								1KHz	10KHz			
1.0	32.0	20.0	11.0	27.5	-	0.8	100	5	27	25.2	3.3	C60T105-2WB00000
1.5	32.0	22.0	13.0	27.5	-	0.8	100	5	27	17.2	4.4	C60T155-2WB00000
3.0	32.0	28.0	17.0	27.5	-	0.8	100	5	28	9.1	7.5	C60T305-2WB00000
5.0	32.0	37.0	22.0	27.5	-	0.8	100	5	30	5.8	12.0	C60T505-2WB00000
2.7	42.0	26.0	15.0	37.5	-	1.0	73	7	52	18.6	5.2	C60T275-2WE00000
3.5	42.0	30.0	16.0	37.5	-	1.0	73	7	52	14.3	6.2	C60T355-2WE00000
8.0	42.0	40.0	20.0	37.5	10.2	1.0	73	7	53	6.3	11.0	C60T805-2WE02000
10.0	42.0	41.0	26.0	37.5	10.2	1.0	73	7	53	5.1	13.5	C60T106-2WE02000
12.0	42.0	43.0	28.0	37.5	10.2	1.0	73	7	54	4.4	15.0	C60T126-2WE02000
14.0	42.0	45.0	30.0	37.5	20.3	1.2	73	7	55	3.8	17.0	C60T146-2WE05000
16.0	42.0	50.0	30.0	37.5	20.3	1.2	73	7	55	3.3	19.0	C60T166-2WE05000
20.0	57.0	45.0	30.0	37.5	20.3	1.2	50	12	106	5.1	16.5	C60T206-2WG05000
27.0	57.0	50.0	35.0	37.5	20.3	1.2	50	13	108	3.9	20.5	C60T276-2WG05000

备注:

“-”: 客户要求的容量偏差

ESR 值为 f=10KHz 下的典型值

I_{RMS} 值为 f=10KHz、T_{amb}=85°C、散热条件 10W/m²/°C、
ΔT_{case}≤15°C 的最大电流有效值。

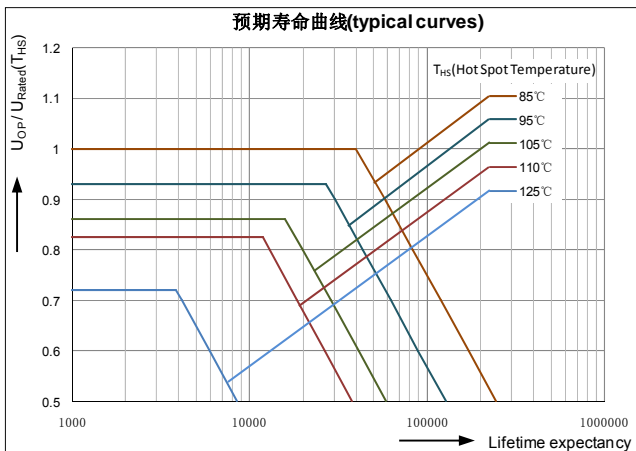
“-”=custom's capacitor tolerance code, J=±5%, K=±10%

ESR is typical values at 10KHz

I_{RMS} is the maximum R.M.S current at 10KHz、T_{amb}=85°C、
ΔT_{case}≤15°C.(Coefficient of heat dissipation: 10W/m²/°C)

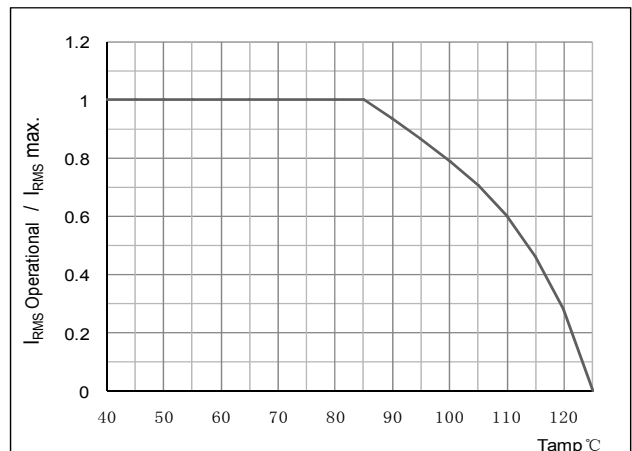
◆ 预期寿命曲线

Expected Lifetime Curves:



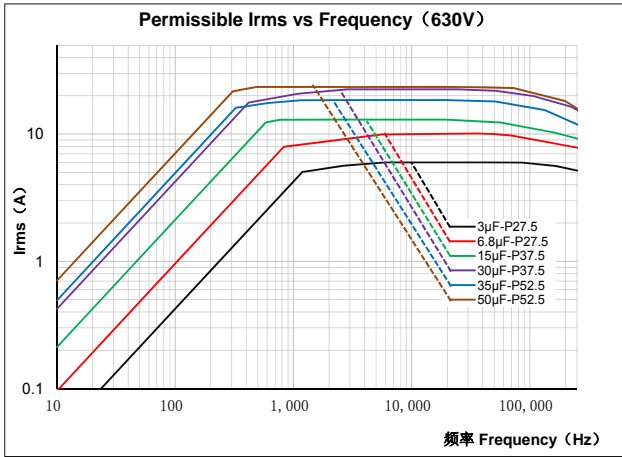
◆ 纹波电流降额曲线

I_{RMS} Derating vs Ambient Temperature:

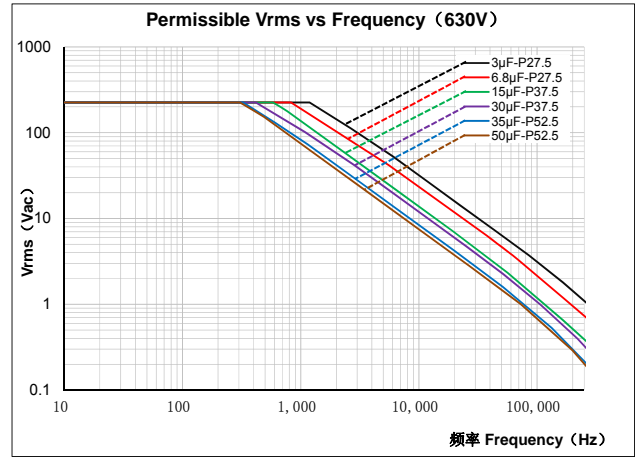


◆有效值交流电压&电流频率曲线 Permissible Vrms & Irms vs Frequency

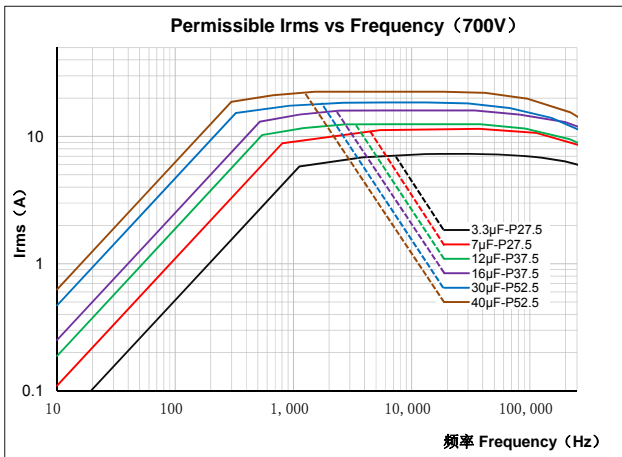
630Vdc-P27.5~P52.5mm (Irms):



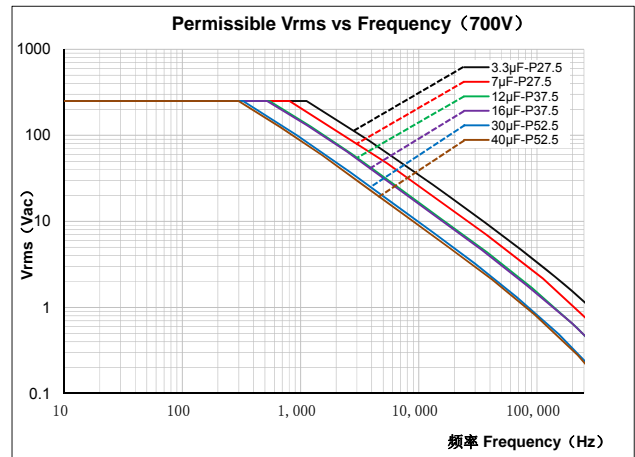
630Vdc -P27.5~P52.5mm (Vrms):



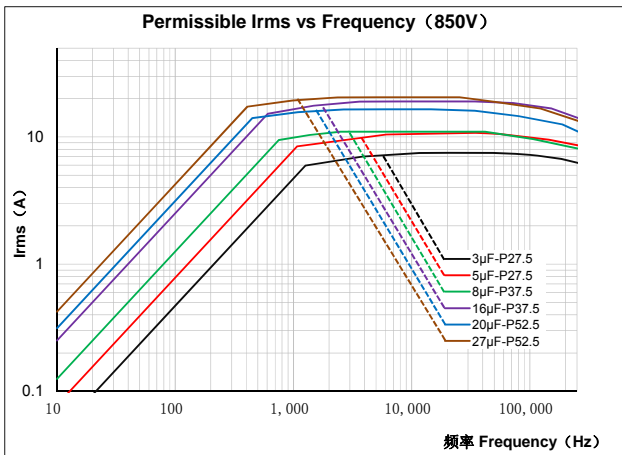
700Vdc -P27.5~P52.5mm (Irms):



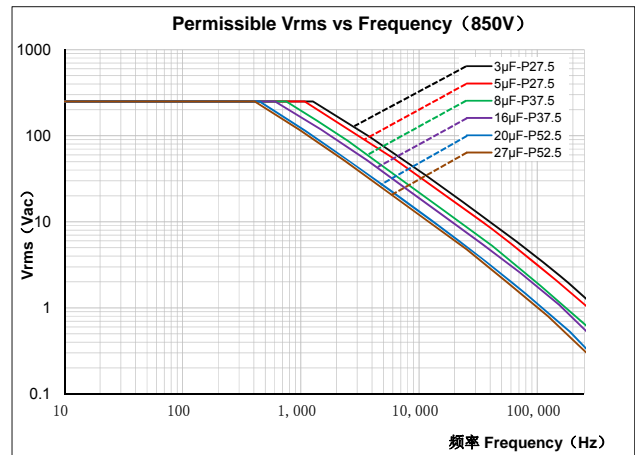
700Vdc -P27.5~P52.5mm (Vrms):



850Vdc -P27.5~P52.5mm (Irms):



850Vdc -P27.5~P52.5mm (Vrms):



注:
纹波电流或纹波电压值基于 $T_{amb}=85^{\circ}C$ 条件下;
产品散热系数: $10W/m^2/^{\circ}C$;

Note:
Permissible Vrms & Irms curves frequency f at $T_{amb}=85^{\circ}C$;
Coefficient of heat dissipation: $10W/m^2/^{\circ}C$;



CBB60T

CBB60T series

当 $f \geq 100\text{KHz}$, I_{rms} 和 V_{rms} 仅供参考。

At $f \geq 100\text{KHz}$, I_{rms} & V_{rms} are only for reference.

◆可靠性: Reliability:

Test description	Reference	Test conditions	Determine criteria
极间耐压 Voltage test between terminals	IEC 61071	$1.5 \times U_{NDC}$ at T_{amb} Duration: 60 s	No visible damage $ \Delta C/C : \leq 0.5 \%$ $\tan \delta: \leq 1.2 \text{ initial } \tan \delta + 1 \times 10^{-4}$ at 10KHz $R_{ins}: \geq 50\%$ of IR limit
耐焊接热 Resistance to soldering heat	IEC 60068-2-20	Solder bath temperature at $260^\circ\text{C} \pm 5^\circ\text{C}$, Immersion time: $10\text{s} \pm 1\text{s}$	No visible damage $ \Delta C/C : \leq 0.5 \%$ Increase of $\tan \delta: \leq 50 \times 10^{-4}$ at 10KHz
引出端强度 Robustness of terminations	IEC 60068-2-21	Wire diameter & Tensile force $0.5 < d_1 \leq 0.8 \text{ mm}$ 10N $0.8 < d_1 \leq 1.25 \text{ mm}$ 20N	No visible damage
放电实验 Surge discharge test	IEC 61071	$1.1 \times U_{NDC}$ Number of discharges: 5 (within 10 minutes)	No visible damage $ \Delta C/C : \leq 1.0 \%$ $\tan \delta: \leq 1.2 \text{ initial } \tan \delta + 1 \times 10^{-4}$ at 10KHz $R_{ins}: \geq 50\%$ of IR limit
温度冲击 Thermal shock	AEC-Q200	$T_{max.} = 85^\circ\text{C}$ $T_{min.} = -40^\circ\text{C}$ 1000 cycles	No visible damage $ \Delta C/C : \leq 2.0 \%$ $ \Delta \tan \delta : \leq 20 \times 10^{-4}$ at 1KHz $R_{ins}: \geq 50\%$ of IR limit
耐湿负荷 Biased humidity	AEC-Q200	1000 h / $40^\circ\text{C}/93\%\text{RH}/U_{NDC}$ 500 h / $60^\circ\text{C}/95\%\text{RH}/U_{NDC}$	No visible damage $ \Delta C/C : \leq 5.0 \%$ $ \Delta \tan \delta / \tan \delta : \leq 400\%$ at 1KHz $R_{ins}: \geq 50\%$ of IR limit
		$U_{NDC} = 630V_{dc}$: 1000 h / $85^\circ\text{C}/85\%\text{RH}/450V_{dc}$ $U_{NDC} = 700V_{dc}$: 1000 h / $85^\circ\text{C}/85\%\text{RH}/500V_{dc}$ $U_{NDC} = 850V_{dc}$: 1000 h / $85^\circ\text{C}/85\%\text{RH}/600V_{dc}$	No visible damage $ \Delta C/C : \leq 5.0 \%$ $ \Delta \tan \delta : \leq 50 \times 10^{-4}$ at 1KHz $R_{ins}: \geq 50\%$ of IR limit
耐久性 Endurance test between terminals	IEC 61071	$1.25 \times U_{NDC}/85^\circ\text{C}/1000\text{h}$ or $1.25 \times U_{OP}/105^\circ\text{C}/1000\text{h}$ or $1.25 \times U_{OP}/125^\circ\text{C}/1000\text{h}$	No visible damage $ \Delta C/C : \leq 5.0 \%$ Increase of $\tan \delta: \leq 150 \times 10^{-4}$ at 10KHz $R_{ins}: \geq 50\%$ of IR limit
自愈性测试 Self healing test	IEC 61071	$1.5 \times U_{NDC}$ Duration 10 sec, Number of Self healing ≤ 5 , increase the voltage at 100 V/s till 5, with a max. of $2.5 \times U_{NDC}$ for a duration of 10 sec	No visible damage $ \Delta C/C : \leq 0.5 \%$ $\tan \delta: \leq 1.1 \text{ initial } \tan \delta + 1 \times 10^{-4}$ at 10KHz $R_{ins}: \geq 50\%$ of IR limit
振动 Vibration	AEC-Q200	5g's for 20 minutes, 12 cycles each of 3 orientations Use 8"X5"PCB, .031" thick. 7 secure points on one 8" side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.	No visible damage