



Guang Zhou Nan Cai Electronic CO.,LTD.  
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# 規格承認書

## (SPECIFICATION FOR APPROVAL)

File No.: Q/BH .TS16949.13TECH1303

Product Name: Snubber Capacitor for IGBT (Lug terminals)

Product Type: C38(MKP81 , 接线片式 IGBT 吸收电容器)

Product Code: C38

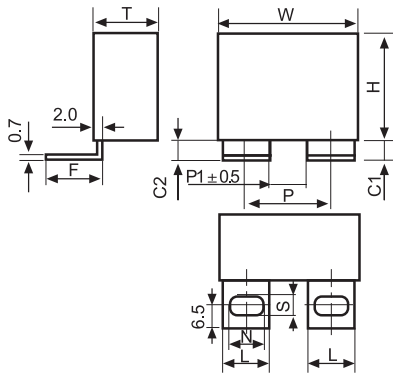
Customer:

Customer Code:

Issue Date: (V3.0)

## IGBT吸收电容器(接线片) Snubber capacitor for IGBT(Lug terminals)

### ■ 外形图 Outline Drawing



L x F x N x S=14.0 x 16.0 x 10.2 x 6.2

图1 (Style 1)

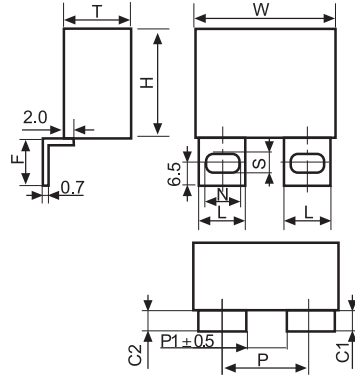
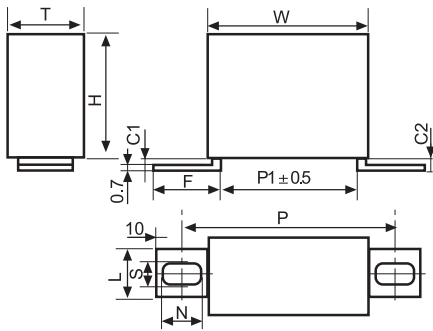


图2 (Style 2)



L x F x N x S=14.0 x 22.0 x 11.2 x 6.2  
 or  
 L x F x N x S=12.0 x 22.0 x 11.2 x 6.2

图3 (Style 3)

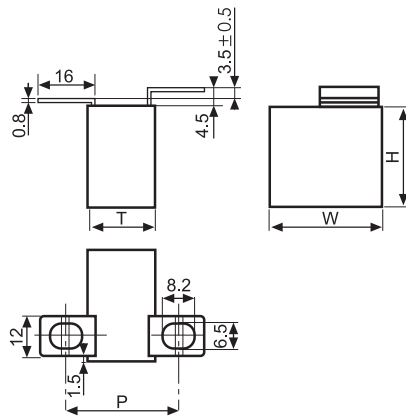
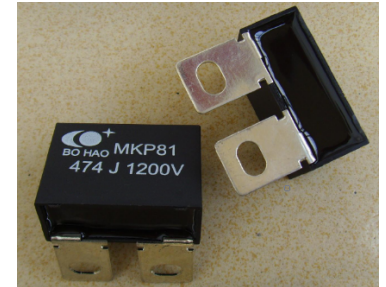


图4 (Style 4)




### ■ 特点

- 广泛应用于高压高频脉冲电路中
- 损耗小, 内部温升小
- 优异的阻燃性能
- 适合作为IGBT的吸收电容

### ■ Features

- Widely used in high voltage, high frequency circuit
- Low loss and small inherent temperature rise
- Excellent active and passive flame resistant circuit
- Especially designed as snubber capacitor for IGBT

### ■ 安全认证 Safety Approvals

●		UL(美国)	UL 810 (construction only) 证书号(Certificate No.): E256238, CCN: CZD
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## ■ 技术要求 Specifications

引用标准 Reference Standard	IEC 61071
气候类别 Climatic Category	40/85/56
工作温度范围(外壳最高温度点) Operating temperature range (Max. temperature of case surface)	-40°C ~ 85°C
额定电压 Rated Voltage	630Vdc ~ 3 000Vdc
电容量范围 Capacitance Range	0.047μF~9.0μF
电容量偏差 Capacitance Tolerance	J(± 5%), K(± 10%), M(± 20%)
耐电压 Voltage Proof	1.6U <sub>N</sub> (10s)
损耗角正切 Dissipation Factor	≤ 0.0005 (1KHz, 20°C)
绝缘电阻 Insulation Resistance	≥ 100 000MΩ, C <sub>N</sub> ≤ 0.33μF ≥ 30 000s C <sub>N</sub> > 0.33μF (20°C, 100Vdc, 1min)
工作寿命 Operation life time	≥ 100,000 hours at U <sub>N</sub>

## 产品编码说明 Part number system

### ■ 18位产品代码如下:

**The 18 digits part number is formed as follow:**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	3	8															

第1~3位	型号代码 C38	Digit 1 to 3	Series code C38
第4~5位	直流额定电压 2J=630V 1V=700V 1W=850V 3A=1 000V 3L=1 200V 3C=1 600V 7M=1 700V 3D=2 000V 3E=2 500V 4Q=3 000V	Digit 4 to 5	D.C. rated voltage 2J=630V 1V=700V 1W=850V 3A=1 000V 3L=1 200V 3C=1 600V 7M=1 700V 3D=2 000V 3E=2 500V 4Q=3 000V
第6~8位	标称容量 举例: 105=10 × 10 <sup>5</sup> pF=1.0μF	Digit 6 to 8	Rated capacitance value For example: 105=10 × 10 <sup>5</sup> pF=1.0μF
第9位	容量等级 J=± 5%,K=± 10%, M=± 20%	Digit 9	Capacitance tolerance J=± 5%, K=± 10%, M=± 20%
第10位	安装孔距P 见表1	Digit 10	Distance of hole for fixing Referring to table 1
第11位	内部特征码	Digit 11	Internal use
第12位	外壳宽度 1=37mm 2=42mm 3=57mm	Digit 12	Width of case 1=37mm 2=42mm 3=57mm
第13~15位	引出端代码 见表2	Digit 13 to 15	Terminals code Referring to table 2
第16~18位	内部特征码	Digit 16 to 18	Internal use

■ Table 1.1 安装孔距的选择 Selecting for distance of hole for fixing

单位: mm

额定电压 D.C. rated voltage	焊片的引出方式 Style of solder slice	外壳宽度 Width of case	安装孔距 Distance of hole for fixing		焊片间距 The distance of solder slice	
		W	P	Code	P1	
630Vdc 700Vdc 850Vdc 1 000Vdc	图1(Style 1) 或 图2(Style 2)	37/42	17~25	B	7	
			22~30	C	12	
		57	30~38	D	20	
	图3(Style 3)	57	35~43	E	25	
			37	52~62	K	33
			42	57~67	L	38
57	70~80	7	51			
1 200Vdc 1 600Vdc 1 700Vdc 2 000Vdc 2 500Vdc 3 000Vdc	图1(Style 1) 或 图2(Style 2)	37/42	16~24	1	6	
			21~29	2	11	
		57	31~39	3	21	
	图3(Style 3)	57	36~44	4	26	
			37	51~61	5	32
			42	56~66	6	37
57	71~81	J	52			

■ Table 1.2 安装孔距的选择 Selecting for distance of hole for fixing

单位: mm

额定电压 D.C. rated voltage	焊片的引出方式 Style of solder slice	外壳厚度 Thickness of case	安装孔距 Distance of hole for fixing		焊片间距 The distance of solder slice
		T	P	Code	P1
630Vdc ~ 3 000Vdc	图4(Style 4)	19	30~34	F	15
25		36~40	G	21	
30		41~45	H	26	

注: 图4引出方式适用的具体规格, 需根据客户要求设计才能确定。Whether or not the forth style of solder slice is valid, must be designed on request of customer.

■ Table 2 引出端代码 Terminals code

单位: mm

第13位 Digit 13		第14位 Digit 14		第15位 Digit 15		Note (Case dimension of T)
C高度 Height for C		焊片的引出方式 Style of solder slice		焊片的尺寸 Size for solder slice		
Code	C1	C2	Code	图 (Style)	Code	L x F x N x S
0	(C1=C2) < 3		1	图 1(Style 1)	1	14.0 x 16.0 x 10.2 x 6.2
1	C1=C2=6		2	图 2(Style 2)		
			3	图 3(Style 3)	2	14.0 x 22.0 x 11.2 x 6.2
					6	12.0 x 22.0 x 11.2 x 6.2

注: C1、C2尺寸可以按用户需要商定。Dimensions of C1 and C2 available on request.

■ 技术参数 Technical data(mm)

630Vdc/700Vdc (420Vac) <sup>#</sup>									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	İ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70℃ (A)	Part number
0.68	37.0	25.0	15.0	900	612	5.0	23	13	C381V684-*01****++
1.0	37.0	30.0	16.0	900	900	5.0	23	14	C381V105-*01****++
1.2	37.0	30.0	16.0	900	1 080	4.5	23	16	C381V125-*01****++
1.5	37.0	34.0	20.0	900	1 350	4.5	23	17	C381V155-*01****++
1.8	37.0	34.0	20.0	900	1 620	4.5	23	18	C381V185-*01****++
2.0	42.0	40.0	20.0	600	1 200	4.0	29	18	C381V205-*02****++
2.2	42.0	40.0	20.0	600	1 320	4.0	29	18.5	C381V225-*02****++
2.5	42.0	40.0	20.0	600	1 500	4.0	29	19	C381V255-*02****++
3.0	42.0	44.0	24.0	600	1 800	4.0	29	20	C381V305-*02****++
3.3	42.0	44.0	24.0	600	1 980	3.5	29	20	C381V335-*02****++
4.0	42.0	44.0	24.0	600	2 400	3.5	29	21	C381V405-*02****++
4.7	42.0	45.0	30.0	600	2 820	3.5	29	23	C381V475-*02****++
5.0	42.0	45.0	30.0	600	3 000	3.0	29	23.5	C381V505-*02****++
6.0	42.0	43.0	42.0	600	3 600	3.0	29	25	C381V605-*02****++
6.5	42.0	43.0	42.0	600	3 900	3.0	29	26	C381V655-*02****++
6.5	57.0	45.0	30.0	360	2 340	2.5	33	24	C381V655-*03****++
7.0	57.0	45.0	30.0	360	2 520	2.5	33	25	C381V705-*03****++
8.0	57.0	50.0	35.0	360	2 880	2.5	33	27	C381V805-*03****++
9.0	57.0	50.0	35.0	360	3 240	2.5	33	29	C381V905-*03****++

850Vdc (450Vac)									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	İ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70℃ (A)	Part number
0.47	37.0	25.0	15.0	1 200	564	5.0	23	15	C381W474-*01****++
0.68	37.0	30.0	16.0	1 200	816	5.0	23	16	C381W684-*01****++
1.0	37.0	34.0	20.0	1 200	1 200	5.0	23	17	C381W105-*01****++
1.2	37.0	34.0	20.0	1 200	1 440	5.0	23	17.5	C381W125-*01****++
1.5	37.0	34.0	20.0	1 200	1 800	5.0	23	18	C381W155-*01****++
1.5	42.0	40.0	20.0	750	1 125	4.5	29	18.5	C381W155-*02****++
2.0	42.0	40.0	20.0	750	1 500	4.5	29	19	C381W205-*02****++
2.2	42.0	40.0	20.0	750	1 650	4.5	29	19.5	C381W225-*02****++
2.5	42.0	44.0	24.0	750	1 875	4.5	29	20	C381W255-*02****++
3.0	42.0	44.0	24.0	750	2 250	4.5	29	21	C381W305-*02****++
3.3	42.0	45.0	30.0	750	2 475	4.5	29	21.5	C381W335-*02****++
4.0	42.0	43.0	42.0	750	3 000	4.5	29	22	C381W405-*02****++
4.0	57.0	45.0	30.0	450	1 800	4.0	33	23	C381W405-*03****++
4.7	57.0	45.0	30.0	450	2 115	4.0	33	24.5	C381W475-*03****++
5.0	57.0	45.0	30.0	450	2 250	4.0	33	25	C381W505-*03****++
6.0	57.0	50.0	35.0	450	2 700	4.0	33	26	C381W605-*03****++
6.5	57.0	50.0	35.0	450	2 925	4.0	33	27	C381W655-*03****++

■ 技术参数 Technical data(mm)

1 000 Vdc (500 Vac)									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	İ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70°C (A)	Part number
0.47	37.0	25.0	15.0	1 300	611	5.0	23	14	C383A474-*01****++
0.47	32.0	29.0	19.0	2 200	1 034	4.0	15	21	C383A474K029A40+++
0.68	37.0	30.0	16.0	1 300	884	5.0	23	15	C383A684-*01****++
0.82	37.0	30.0	16.0	1 300	1 066	5.0	23	16	C383A824-*01****++
1.0	37.0	34.0	20.0	1 300	1 300	4.5	23	17	C383A105-*01****++
1.2	37.0	34.0	20.0	1 300	1 560	4.5	23	17	C383A125-*01****++
1.2	42.0	40.0	20.0	850	1 020	4.5	29	16	C383A125-*02****++
1.5	42.0	40.0	20.0	850	1 275	4.5	29	16	C383A155-*02****++
2	42.0	44.0	24.0	850	1 700	4.5	29	17	C383A205-*02****++
2.2	42.0	44.0	24.0	850	1 870	4.0	29	20	C383A225-*02****++
2.5	42.0	45.0	30.0	850	2 125	4.0	29	21	C383A255-*02****++
3.0	42.0	45.0	30.0	850	2 550	4.0	29	21.5	C383A305-*02****++
3.3	42.0	43.0	42.0	850	2 805	4.0	29	22	C383A335-*02****++
3.3	57.0	45.0	30.0	500	1 650	4.0	33	20	C383A335-*03****++
4.0	57.0	45.0	30.0	500	2 000	4.0	33	21	C383A405-*03****++
4.7	57.0	50.0	35.0	500	2 350	4.0	33	22	C383A475-*03****++
5.0	57.0	50.0	35.0	500	2 500	4.0	33	23	C383A505-*03****++

1 200 Vdc (600 Vac)									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	İ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70°C (A)	Part number
0.33	37.0	25.0	15.0	1 500	495	4.5	23	15	C383L334-*01****++
0.47	37.0	30.0	16.0	1 500	705	4.5	23	16	C383L474-*01****++
0.68	37.0	34.0	20.0	1 500	1 020	4.5	23	17	C383L684-*01****++
0.75	37.0	34.0	20.0	1 500	1 125	4.5	23	18	C383L754-*01****++
0.82	42.0	40.0	20.0	950	779	4.0	29	18	C383L824-*02****++
1.0	42.0	40.0	20.0	950	950	4.0	29	19	C383L105-*02****++
1.2	42.0	44.0	24.0	950	1 140	4.0	29	19	C383L125-*02****++
1.5	42.0	44.0	24.0	950	1 425	4.0	29	19.5	C383L155-*02****++
2.0	42.0	45.0	30.0	950	1 900	4.0	29	20	C383L205-*02****++
2.2	42.0	43.0	42.0	950	2 090	4.0	29	21	C383L225-*02****++
2.5	42.0	43.0	42.0	950	2 375	4.0	29	22	C383L255-*02****++
2.2	57.0	45.0	30.0	600	1 320	3.8	33	20	C383L225-*03****++
2.5	57.0	45.0	30.0	600	1 500	3.8	33	21	C383L255-*03****++
3.0	57.0	45.0	30.0	600	1 800	3.8	33	22	C383L305-*03****++
3.3	57.0	50.0	35.0	600	1 980	3.8	33	23	C383L335-*03****++
4.0	57.0	50.0	35.0	600	2 400	3.8	33	24	C383L405-*03****++

■ 技术参数 Technical data(mm)

1 600 Vdc (650 Vac)									
$C_N$ ( $\mu F$ )	W $\pm$ 1.0	H $\pm$ 1.0	T $\pm$ 1.0	dV/dt (V/ $\mu s$ )	$\hat{I}$ (A)	ESR max@100kHz (m $\Omega$ )	$L_s$ (nH)	$I_{rms}$ 100kHz@70 $^{\circ}C$ (A)	Part number
0.22	37.0	25.0	15.0	1 900	418	6.0	23	15	C383C224-*01*****
0.33	37.0	30.0	16.0	1 900	627	6.0	23	15.5	C383C334-*01*****
0.39	37.0	34.0	20.0	1 900	741	5.5	23	16	C383C394-*01*****
0.47	37.0	34.0	20.0	1 900	893	5.5	23	17	C383C474-*01*****
0.68	42.0	40.0	20.0	1 250	850	3.5	29	18	C383C684-*02*****
0.82	42.0	44.0	24.0	1 250	1 025	3.5	29	19	C383C824-*02*****
1.0	42.0	45.0	30.0	1 250	1 250	3.5	29	19.5	C383C105-*02*****
1.2	42.0	45.0	30.0	1 250	1 500	3.5	29	20	C383C125-*02*****
1.5	42.0	43.0	42.0	1 250	1 875	3.5	29	21	C383C155-*02*****
1.5	57.0	45.0	30.0	750	1 125	3.0	33	22	C383C155-*03*****
2.0	57.0	50.0	35.0	750	1 500	3.0	33	24	C383C205-*03*****

1 700 Vdc (675 Vac)									
$C_N$ ( $\mu F$ )	W $\pm$ 1.0	H $\pm$ 1.0	T $\pm$ 1.0	dV/dt (V/ $\mu s$ )	$\hat{I}$ (A)	ESR max@100kHz (m $\Omega$ )	$L_s$ (nH)	$I_{rms}$ 100kHz@70 $^{\circ}C$ (A)	Part number
0.15	37.0	25.0	15.0	2 000	300	7.0	23	14	C387M154-*01*****
0.22	37.0	30.0	16.0	2 000	440	6.0	23	15	C387M224-*01*****
0.33	37.0	34.0	20.0	2 000	660	5.5	23	15.5	C387M334-*01*****
0.39	37.0	34.0	20.0	2 000	780	5.5	23	16	C387M394-*01*****
0.47	42.0	36.0	24.0	1 260	592	4.0	29	16	C387M474-*02*****
0.56	42.0	36.0	24.0	1 260	706	4.0	29	17	C387M564-*02*****
0.68	42.0	44.0	24.0	1 260	857	3.5	29	18	C387M684-*02*****
0.82	42.0	44.0	24.0	1 260	1 033	3.5	29	19	C387M824-*02*****
1.0	42.0	45.0	30.0	1 260	1 260	3.5	29	20	C387M105-*02*****
1.2	42.0	43.0	42.0	1 260	1 512	3.5	29	21	C387M125-*02*****
1.0	57.0	45.0	25.0	780	780	3.5	33	18	C387M105-*03*****
1.2	57.0	43.5	29.5	780	936	3.5	33	19	C387M125-*03*****
1.5	57.0	50.0	35.0	780	1 170	3.0	33	22	C387M155-*03*****
2.0	57.0	50.0	35.0	780	1 560	3.0	33	24	C387M205-*03*****
3.0	57.0	55.0	45.0	780	2 340	3.0	33	28	C387M305-*03*****

**■ 技术参数 Technical data(mm)**

2 000 Vdc (700 Vac)									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	İ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70℃ (A)	Part number
0.10	37.0	25.0	15.0	2 241	224	8.0	23	14	C383D104-*01***+++
0.15	37.0	25.0	15.0	2 241	336	8.0	23	15	C383D154-*01***+++
0.22	37.0	30.0	16.0	2 241	493	6.0	23	15.5	C383D224-*01***+++
0.33	37.0	34.0	20.0	2 241	740	6.0	23	16	C383D334-*01***+++
0.47	42.0	40.0	20.0	1 300	611	4.0	29	17	C383D474-*02***+++
0.56	42.0	44.0	24.0	1 300	728	4.0	29	18	C383D564-*02***+++
0.68	42.0	44.0	24.0	1 300	884	3.5	29	18.5	C383D684-*02***+++
0.82	42.0	45.0	30.0	1 300	1 066	3.5	29	19	C383D824-*02***+++
1.0	42.0	43.0	42.0	1 300	1 300	3.5	29	21	C383D105-*02***+++
1.0	57.0	45.0	30.0	850	850	4.0	33	24	C383D105-*03***+++
1.2	57.0	45.0	30.0	850	1 020	4.0	33	23	C383D125-*03***+++
1.5	57.0	50.0	35.0	850	1 275	4.0	33	24	C383D155-*03***+++

2 500 Vdc (725 Vac)									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	İ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70℃ (A)	Part number
0.068	37.0	25.0	15.0	3 230	220	8.5	23	14	C383E683-*01***+++
0.10	37.0	30.0	16.0	3 230	323	8.5	23	15	C383E104-*01***+++
0.15	37.0	34.0	20.0	3 230	485	8.0	23	16	C383E154-*01***+++
0.18	37.0	34.0	20.0	3 230	581	7.5	23	17	C383E184-*01***+++
0.22	42.0	40.0	20.0	2 100	462	4.0	29	17	C383E224-*02***+++
0.33	42.0	44.0	24.0	2 100	693	4.0	29	17.5	C383E334-*02***+++
0.47	42.0	45.0	30.0	2 100	987	3.5	29	18	C383E474-*02***+++
0.68	42.0	43.0	42.0	2 100	1 428	3.5	29	18.5	C383E684-*02***+++
0.68	57.0	45.0	30.0	1 200	816	3.5	33	19	C383E684-*03***+++
1.0	57.0	50.0	35.0	1 200	1 200	3.5	33	19.5	C383E105-*03***+++



■ 技术参数 Technical data(mm)

3 000 Vdc (750 Vac)									
C <sub>N</sub> (μF)	W±1.0	H±1.0	T±1.0	dV/dt (V/μs)	$\hat{i}$ (A)	ESR max@100kHz (mΩ)	L <sub>s</sub> (nH)	I <sub>rms</sub> 100kHz@70°C (A)	Part number
0.047	37.0	25.0	15.0	3 361	158	8.5	23	13	C384Q473-*01***+++
0.068	37.0	30.0	16.0	3 361	229	8.0	23	14	C384Q683-*01***+++
0.10	37.0	34.0	20.0	3 361	336	7.5	23	15	C384Q104-*01***+++
0.15	37.0	34.0	20.0	3 361	504	7.0	23	15.5	C384Q154-*01***+++
0.22	42.0	40.0	20.0	2 050	451	5.0	29	16	C384Q224-*02***+++
0.33	42.0	45.0	30.0	2 050	677	4.5	29	16.5	C384Q334-*02***+++
0.47	42.0	43.0	42.0	2 050	964	4.0	29	18	C384Q474-*02***+++
0.47	57.0	45.0	30.0	1 200	564	4.0	33	18.5	C384Q474-*03***+++
0.68	57.0	50.0	35.0	1 200	816	4.0	33	19	C384Q684-*03***+++
0.82	57.0	50.0	35.0	1 200	984	3.5	33	20	C384Q824-*03***+++

- 备注Note: 1. “-”表示容量偏差。 “-”=capacitance tolerance code M= ± 20%,K= ± 10%, J= ± 5%  
 2. “\*”表示脚距代码(见table 1)。“\*\*” = Pitch(refer to table 1)  
 3. “\*\*\*”表示引出端形式代码(见table 2)。“\*\*\*\*” =terminal form code(refer to table 2)  
 4. “#”当额定电压为630Vdc时,第4~5位为2J。“#” when the rated voltage is 630Vdc,the digit 4~5 is 2J.  
 5. “+++”表示内部特征码。“+++” = Internal use  
 6. “I<sub>rms</sub>”测试条件: 环境温度70°C, 频率100kHz, 外壳温度达到85°C下的有效值。  
 “I<sub>rms</sub>” at 100kHz,+70°C for case operating T=+85°C.  
 7. “ESR”、“L<sub>s</sub>”均为典型值。“ESR”、“L<sub>s</sub>” are typical values.