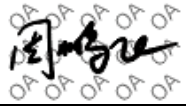
SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C3H-C08

Product Name	Snubber capacitor for IGBT (PCB)
Product Type:	C3H3A155JF0B000
Product Code	
Customer	
Customer Code	
Issue Date	2022-12

Xiamen Faratronic Co. Ltd.			Approved by Customer
Drafted	Checked	Approved	
			

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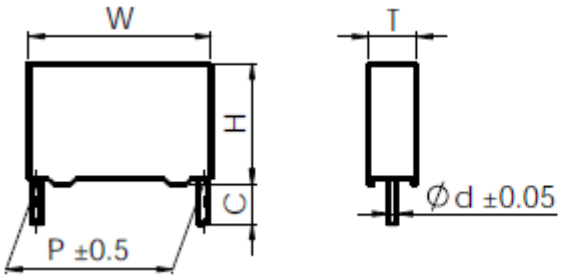
Version history

Current version	Date	Author	Change description

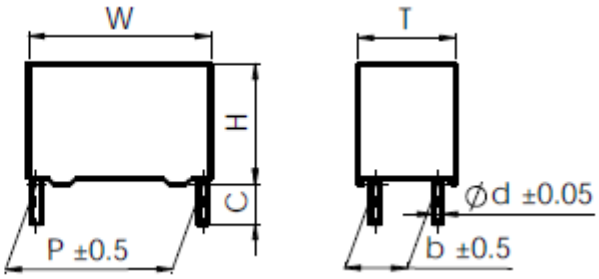
Snubber capacitor for IGBT (PCB)

■ Outline Drawing

2 Pins



4 Pins



■ 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

■Safety Approvals

•		UL	UL 810 (construction only),Max.5000Vdc,90℃ File No.: E256238, CCN: CZDS2

■ Specifications

Reference Standard	GB/T17702,IEC 61071
Climatic Category	40/85/56
Operating temperature range (case)	-40℃~85℃
Rated Voltage	630Vdc～3 000Vdc
Capacitance Range	0.047μF～9.0μF
Capacitance Tolerance	J(±5%), K(±10%)
Test voltage	$1.5U_N$（10s）
Dissipation Factor	≤5×10^{-4} (1kHz, 20℃)
Insulation Resistance	IR≥100 000MΩ , C_N≤0.33 μF IR×C^N≥30 000s C_N＞0.33 μF (20℃, 100Vdc,1min)
Expected lifetime	≥100 000hrs @ U_N, Θ_{hs}=70℃

■ Part number system

The 15 digits part number is formed as follow:

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

Digit 1 to 3 Series code
C3H

Digit 4 to 5 D.C. rated voltage
2J=630V, 1V=700V, 1W=850V, 3A=1000V,3L=1200V,
3C=1600V, 7M=1700V ,3D=2000V, 3E=2500V, 4Q=3000V

Digit 6 to 8 Rated capacitance value
For example: 105=10×10^5 pF= 1.0μF

Digit 9 Capacitance tolerance
J=±5%, K=±10%, M=±20%

Digit 10 Pitch
D=32.5 mm F=37.5 mm M=52.5 mm

Digit 11 Internal use

Digit 12 to 15 Lead form and packaging code
Refer to table1

Table 1 lead form and packaging code

Digit 12		Digit 13 and Digit 14		Digit 15	
Code	explanation	Code	explanation	Code	explanation
0	Two pins(bulk)	00 38	standard lead length 5.5mm lead length 3.8mm	0 2	Length tolerance ±1.0mm Length tolerance ±0.5mm
6	four pins(bulk) b=5.0mm				
1	four pins(bulk) b=10.0mm				
2	four pins(bulk) b=12.7mm				
3	four pins(bulk) b=20.0mm				
A	four pins(bulk) b=20.3mm				
B	four pins(bulk) b=10.2mm				
C	four pins(bulk) b=5.1mm				

■**技术参数（mm）**

1 000Vdc（500Vac）												
C_N (μF)	W ±1.0	H ±1.0	T ±1.0	P ±0.5	b ±0.5	d ±0.05	dV/dt (V/μs)	Î (A)	ESR @100kHz (mΩ)	I_{max} 100kHz@70℃ (A)	L_s (nH)	Part number
1.5	42.0	40.0	20.0	37.5	10.2	1.2	850	1 275	4.5	16	29	C3H3A155JF0B000

Note：1. “I_{max}” at 100kHz, θ_{amb}=70℃, θ_{case}=85℃

6.“ESR”、“Ls” are the typical value.

■ Test Method And Performance

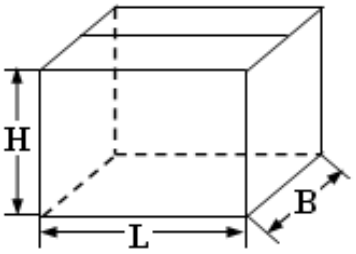
No.	Item	Performance	Testing Method IEC 61071
1	5.14.2 External inspection	Legible marking and finish as specified Dimensions: see specific drawing	Check for finish, marking and overall dimensions
	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.14.1.1 Robustness of terminations	There shall be no visible damage	Tensile U_{a1} Wire diameter load d ≤0.8mm 10N 0.8 mm<d ≤1.2mm 20N duration 10s ±1s Bending U_{b1} Wire diameter load d≤0.8 mm 5N 0.8 mm<d≤1.2 mm 10N 4×90°, duration 2s to 3s
	5.14.1.6 Resistance to soldering heat	There shall be no visible damage.	Solder temperature: 260˚C±5˚C Immersion time: 10s±1s
	Final measurements	|ΔC/C|≤0.5%(relative to the initial value) Increase of tgδ: ≤0.005	
2	Initial measurements	Capacitance at 1kHz t tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.14.3.1 Vibration	There shall be no evidence damage	f=10 Hz to 55Hz a=±0.35mm Test duration per axis = 10 frequency cycles (3 axes offset from each other by 90°C), 1 octave/min, the total times are 135min for 3 axes.
	5.14.3.1 Impacts	There shall be no evidence damage	1 000times, Acceleration: 390m/s^2 Pulse duration: 6ms
	Final measurements	|ΔC/C|≤0.5%(relative to the initial value) Increase of tgδ: ≤0.002	
3	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.9 Surge discharge test		Test voltage: 1.1U_{NDC} Number of discharges: 5 Time lapse every 2 min (10min total) Within 5 min after the surge discharge test, the capacitor shall be subjected to a voltage test between terminals: 1.5U_{NDC}, 60s
	Final measurements	|ΔC/C|≤1.0% (relative to the initial value) tgδ: ≤1.2×tgδ$_0$(the initial tgδ)+0.0001	

No.	Item	Performance	Testing Method IEC 61071
4	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.11 Self-healing		Voltage: $1.5U_{NDC}$ Duration: 10s If fewer than five clearing occur during this time, the voltage shall be increased slowly until five clearings have occurred since the start of the test or until the voltage has reached $2.5U_{NDC}$ If fewer than five clearings have occurred when the voltage has reached $2.5U_{NDC}$, for a time of 10s,the test shall be finished.
		|ΔC/C|≤0.5% (relative to the initial value) tgδ: ≤1.1×$tg\delta_0$(the initial tgδ)+0.0001	
5	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.13.1Change of temperature	There shall be no evidence of deterioration	Test: Na θ_A=-40˚C,θ_B=+85˚C 5 cycles, Duration: t=30min
	Final measurements	|ΔC/C|≤2.0%(relative to the initial value) Increase of tgδ:≤0.002	
6	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.13.2Damp heat, steady state	There shall be no evidence of deterioration.	Temperature: 40˚C ±2˚C Humidity: 93±3 %RH Duration: 56 days
	5.5.1 Voltage test between terminals	There shall be no permanent puncturing or flashover.	$1.5U_{NDC}$, 60s
	5.6.1 Voltage test between terminals and case	There shall be no permanent puncturing or flashover.	2 000VAC, 10s
	Final measurements	|ΔC/C|≤2.0%(relative to the initial value) Increase of tgδ:≤0.002	
7	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.10.1Thermal stability test	Throughout the last 6h, the temperature of the case near of the top rise shall not increase by more than 1˚C	Temperature: ambient temperature Test current: 1.1Irms Test frequency: 10kHz Test time: 48h During the last 6h, the temperature of the case near of the top rise shall be measured per 1.5h.
	Final measurements	|ΔC/C|≤2.0%(relative to the initial value) tgδ:≤0.002	

No.	Item	Performance	Testing Method IEC 61071
8	Initial measurements	Capacitance at 1kHz tgδ at 10kHz,C≤1.0μF tgδ at 1kHz,C>1.0μF	
	5.15 Endurance		Measuring procedure: (1) 1.3U_{NDC}, 85℃, 500h (2) Charging and discharging: Times: 1 000 dv/dt: according to the technical data (3) 1.3U_{NDC}, 85℃, 500h
	Final measurements	|ΔC/C|≤3.0%(relative to the initial value) Increase of tgδ:≤0.003	

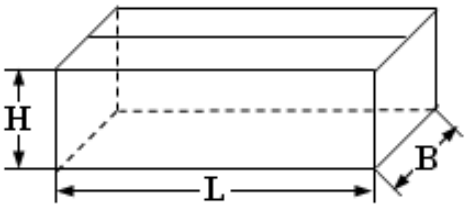
■ Packing box sizes(mm)(example)

1. Out packing box for bulk



L:375±5
B:375±5
H:265±5

2. Inner packing box for bulk



L:355±3
B:175±3
H:118±3