



SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C3A-F07

Product Name	DC-Link-Capacitor (Dry-Type,Plastic case, Temperature 105°C)
Product Type:	C3A
Product Code	
Customer	
Customer Code	
Issue Date	2015-7

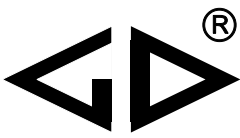


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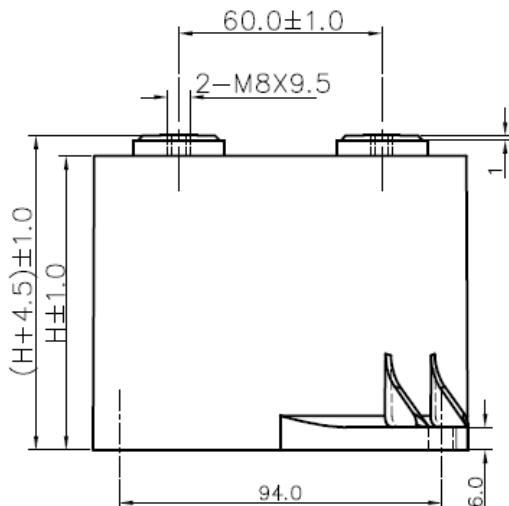
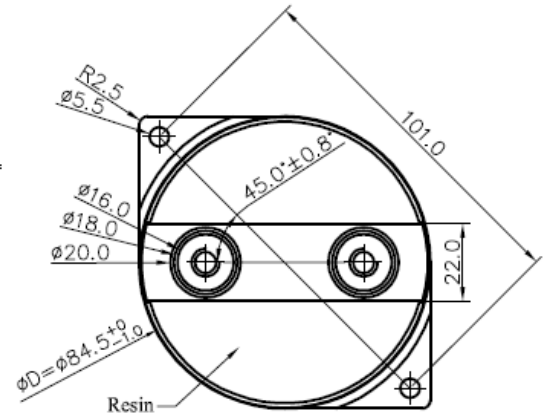
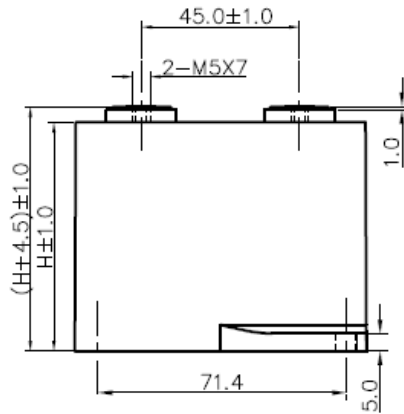
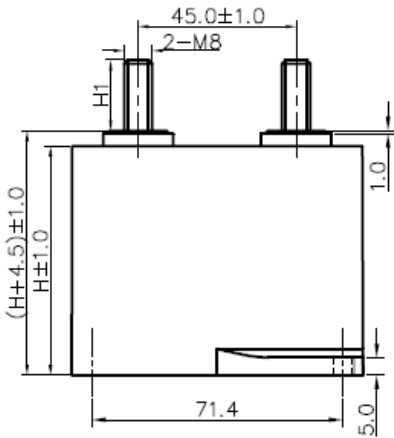
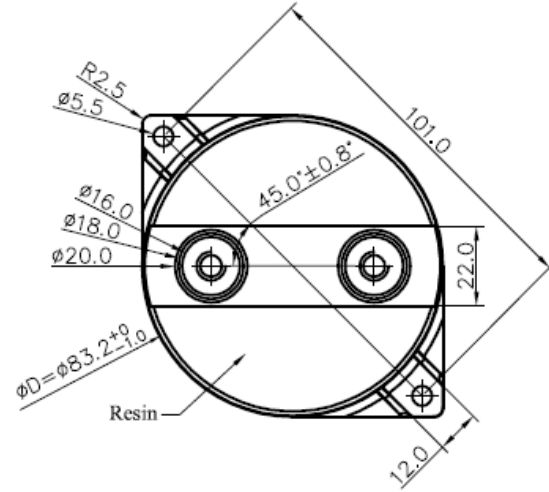
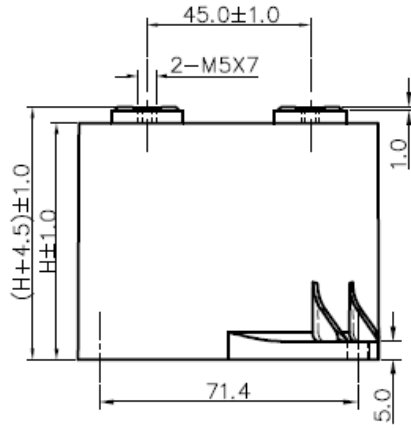
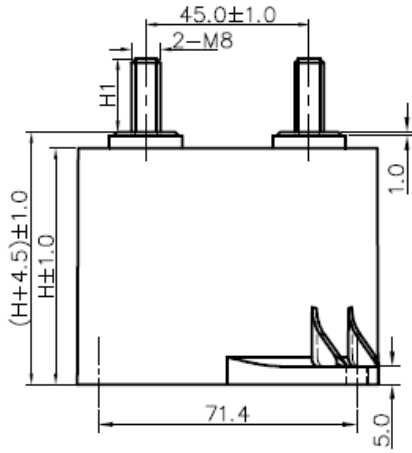
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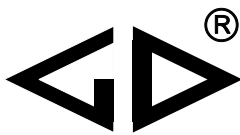


C3A

DC-Link Capacitor (Dry-Type, Plastic case, Temperature 105°C)

■ Outline Drawing







■ Features

- Used in DC-Link circuits, Can replace electrolytic capacitor
- Low ESR, high ripple current handling capabilities
- Low L_s
- Self-healing property
- Long lifetime
- Plastic case, Filled with resin

■ Applications

- Transportation: EV or HEV
- Welders, Elevators, Motor Driver systems

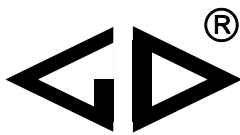
■ Safety Approvals

	TUV Rheinland	EN 61071:2007, EN 61881-1:2011, 450Vdc~1500Vdc, 10.0μF~600.0μF, -40/105°C Certificate No.: R 50266007
	UL	UL 810(construction only), Max 5000Vdc, 90°C File No.: E256238, CCN:CZDS2

■ Specifications

Reference Standard	IEC 61071, AEC Q200D-2010, GB/T 17702	
Climatic Category	40/105/56	
Operating Temperature Range	$-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$ ($\Theta_{hs} \leq 105^{\circ}\text{C}$) $\Theta_{hs} = 85^{\circ}\text{C} \sim 105^{\circ}\text{C}$: decreasing factor 1.5% per °C for U_N	
Storage Temperature Range	$-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	
Voltage Range	450Vdc~900Vdc	
Capacitance Range	47μF~380μF	
Capacitance Tolerance	±5%(J); ±10%(K)	
Voltage Proof	Between Terminals:	1.5 U_N (10s, 20°C±5°C)
	Between Terminals And Case:	3000Vac (60s, 50Hz, 20°C±5°C)
$tg\delta_d$	0.0002	
$IR \times C_N$	≥5 000s (20°C, 100Vdc, 1min)	
Over Voltage	1.1 U_N (30% of on-load-dur.)	
	1.15 U_N (30min/day)	
	1.2 U_N (5min/day)	
	1.3 U_N (1min/day)	
	1.5 U_N (30ms every time, 1 000times during the life of the capacitor)	
Max. Altitude	2000m	
Max. Torque of terminals	M5: 2.5Nm	M8: 6.0 Nm
Max. Torque of Installation	3.0Nm	
Installation	Any Position	
Failure rate	50 FIT	

Note: The effect of altitude on convection cooling and external insulation should be taken into consideration, if the altitude exceeds 2000m.



■ Part number system

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	A															

- Digit 1 to 3 Series code
- Digit 4 to 5 DC rated voltage
2S=450V 1U=600V 2K=800V 1X=900V
- Digit 6 to 8 Rated capacitance value
For example: 127=12×10⁷pF=120uF
- Digit 9 Capacitance tolerance
J=± 5%,K=± 10%,
- Digit 10 Dimension code

C3A Dimension code		
ΦD	H	Code
84.5	65	1
84.5	50	2
84.5	41	3
83.2	65	4
84.5	76	5
115	64	6

- Digit 11 Internal use
- Digit 12 to 15 Terminals code
- Digit 16 to 18 Internal use

Table 1 Terminals code

Male terminals code

Digit 12		Digit 13		Digit 14		Digit 15	
Code	Terminal form	Code	Fixed style	Code	Length of terminal	Code	Specifications of terminal
2	Male Terminals	B	Double mounting ears in the bottom of the case	0	20mm	0	M8
				1	11mm		
				2	16mm		

Female terminals code

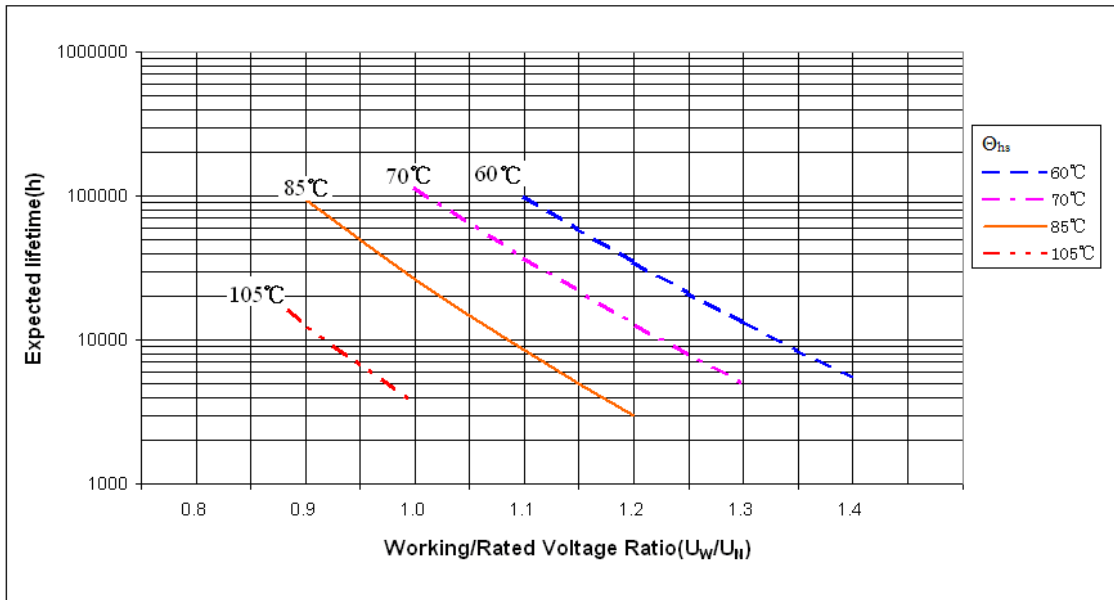
Digit 12		Digit 13		Digit 14		Digit 15	
Code	Terminal form	Code	Fixed style	Code	Depth of terminal	Code	Specifications of terminal
H	Thread hole type	B	Double mounting ears in the bottom of the case	3	7mm	7	M5
				4	9.5mm	1	M8



■ Technical data(mm)

U _N (Vdc)	C _N (μ F)	ESR @10kHz (mΩ)	L _s (nH)	R _{th} (K/W)	Ī (A)	I _{max} (A)		Dimension		Weight (kg)	Part number	Expected lifetime
						60°C	85°C	ΦD	H			
450	170	0.7	25	6.8	2 141	92	65	84.5	41	≈0.35	C3A2S177-30*****	Lifetime curve
	260	0.9	32	5.3	2 240	97	65	84.5	50	≈0.40	C3A2S267-20*****	
	380	1.0	40	5.0	2 195	95	63	84.5	65	≈0.48	C3A2S387-10*****	
	380	1.0	40	5.2	2 195	93	62	83.2	65	≈0.47	C3A2S387-40*****	
	600	1.0	40	3.4	3 955	100	76	115	64	≈0.90	C3A2S607-60*****	
600	100	0.8	25	6.8	2 164	88	58	84.5	41	≈0.35	C3A1U107-30*****	
	150	1.0	32	5.3	2 244	89	59	84.5	50	≈0.40	C3A1U157-20*****	
	220	1.1	40	5.0	2 169	89	59	84.5	65	≈0.48	C3A1U227-10*****	
	220	1.1	40	5.2	2 169	87	58	83.2	65	≈0.47	C3A1U227-40*****	
	350	1.0	40	3.4	3 879	100	76	115	64	≈0.90	C3A1U357-60*****	
800	66	0.8	25	6.8	1 907	91	61	84.5	41	≈0.35	C3A2K666-30*****	
	100	1.1	32	5.3	1 998	88	59	84.5	50	≈0.40	C3A2K107-20*****	
	140	1.3	40	5.0	1 843	83	55	84.5	65	≈0.48	C3A2K147-10*****	
	140	1.3	40	5.2	1 843	82	54	83.2	65	≈0.47	C3A2K147-40*****	
	230	1.1	40	3.4	3 404	100	73	115	64	≈0.90	C3A2K237-60*****	
900	47	1.0	25	6.8	1 620	78	52	84.5	41	≈0.35	C3A1X476-30*****	
	70	1.2	32	5.3	1 688	84	56	84.5	50	≈0.40	C3A1X706-20*****	
	100	1.3	40	5.0	1 570	83	55	84.5	65	≈0.48	C3A1X107-10*****	
	100	1.3	40	5.2	1 570	81	54	83.2	65	≈0.47	C3A1X107-40*****	
	160	1.2	40	3.4	2 824	99	70	115	64	≈0.90	C3A1X167-60*****	

Expected lifetime curve



Note: 1. “-”=capacitance tolerance code, J=±5%,K=±10%

2. “****”=terminals code(refer to table1),terminals can be male or female.

3. “+++”=Internal use.

4. “I_{max}”= Maxium r.m.s current at Θ_{amb} . Θ_{hs} will reach the maximum value on this condition.

5. “R_{th}” = R_{th} between hotspot and ambient on natural cooling condition.

6. The length of terminals H1 available on request (refer to table1).

7. Other capacitance and dimensions are available on request.

8. $\Theta_{hs} = \Theta_{amb} + I_{rms}^2 \times ESR \times R_{th}$.