



How to Select an DCMKP Capacitor

By Hans Lohr

INTRODUCTION

This application note shows in a four-step approach how somebody can select the most suitable capacitor from the DCMKP series for their application.

STEP 1

First, a Request for Power Electronic Capacitors needs to be filled out by the customer; orange blocks are mandatory, yellow ones are optional.

Request for Power Electronic Capacitors (Example and Extract)

RFQ FOR PECS	EXAMPLE / UNIT	CUSTOMER INPUT	
PROJECT	Name	xyz	
APPLICATION	AC/DC, filter etc.	DC link	(1)
ENVIRONMENTAL	Humidity, sea water, altitude		
OUTLINE	Rectangular / tubular	Tubular	(2)
QUANTITY	pcs, pcs/a		
APPLICABLE STANDARDS	IEC 61071, IEC 61881-1	IEC 61071	(5)
TECHNOLOGY	All film, metalized PP, etc.	Metalized PP	(4)
IMPREGNATION AGENT	Dry resin, castor oil, synthetic oil	Dry	(3)
RATED CAPACITANCE	μF	160 μF	(8)
CAPACITOR TOLERANCE	$\pm \%$	$\pm 5 \%$	
RATED AC VOLTAGE	V_{AC}		
RATED DC VOLTAGE	V_{DC}	2000 V_{DC}	(6)
RIPPLE VOLTAGE	V_{pp}	200 V_{pp}	(7)
RATED FREQUENCY (AC)	Hz		
RIPPLE FREQUENCY (DC)	Hz		
MAX. PEAK CURRENT (I)	kA		
MAX. RMS CURRENT ($I_{MAX.}$)	A_{RMS}	20 A_{RMS}	(9)

STEP 2

With the customer input in the example above, we can see that it is a DC-link application (1) with a tubular outline (2), making the DCMKP series applicable.

The DCMKP series features dry (3) and metalized PP (4) technology. The devices' design is based on the IEC 61071 or IEC 61881-1 standard (5).

STEP 3

Taking all the specified electrical features into consideration, in particular the DC voltage U_{NDC} (6) including the ripple peak (7), the requested capacitance C_n (8), and the continuous maximum RMS current $I_{max.}$ (9), we can already select the most suitable capacitor from the DCMKP datasheet table (extract):



How to Select an DCMKP Capacitor

											(11)	(12)
TYPE DESCRIPTION												
TYPE DCMKP...-...IBR	C _N (μF)	U _{NDC} (V _{DC})	R _S (mΩ)	R _{th} (K/W)	I _{max.} (A)	Î (kA)	Î _S (kA)	H (mm)	DIA. (mm)	MOQ / PU (pcs)	DRAWING NO.	
DCMKP 2.0, U _{NDC} = 2000 V												
2.0-35	35	2000	6.8	10.7	16	0.3	0.9	105	64	9	1	
2.0-50	50	2000	9.1	8.5	17	0.3	0.9	130	64	9	1	
2.0-70	70	2000	3.6	8.8	25	0.6	1.8	105	84.4	4	1	
2.0-85	85	2000	13.9	5.6	17	0.3	1.0	185	64	9	1	
2.0-110	110	2000	4.8	7	26	0.6	1.9	130	84.4	4	1	
(10) 2.0-160	160	2000	7.6	5.7	23	0.6	1.9	185	84.4	4	1	
2.0-310	310	2000	4.3	3.9	38	1.2	3.5	185	116	4	1	

STEP 4

The required specs in this example lead to the yellow-marked DCMKP 2.0-160 IBR type of capacitor **(10)**. In addition to other electrical parameters, you can find the mechanical dimensions for the height H = 185 mm and the diameter DIA. = 84.4 mm **(11)**. The Minimum Order Quantity (MOQ) is same as the Packing Unit (PU) and indicates almost 4 pcs **(12)**.