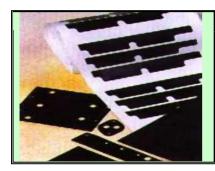


## **Warth Thermal**

## **Graphite Pad CM20**

CM20	Material	Thermal Impedance °C/W (Area:T03)	Volume Resistivity Wcm	Temperature Range
Property	Compressed Graphite	0.07	0.002	-200 to +500°C
Test Method		ASTM D5470	ASTM D991 (Mod)	



## **Description**

CM20 is a dry alternative to thermal compound. Its composition is 98% graphite and by nature offers both thermal and electrical conductivity. Low thermal resistance means that CM20 can be used in high power applications where maximum heat transfer is essential. High electrical conductivity is a natural property because of the graphite structure. CM20 provides a consistent low resistance path between transistor and heatsink. Contamination is eliminated because CM20 does not outgas or migrate like thermal compounds. It does not shrink or dry out.

Ordering Information	Key Performance Properties
Standard sheet sizes are 300mm x	Extremely low thermal resistance.
300mm each. Adhesive backed	Fills air gaps between components up to 7% of the pads thickness.
CM20-AC-30x30	Remains resistant to cleaning agents, and does not support organic growth.
Non Adhesive	No known deterioration over time.
CM20-NA-30x30	Easily cut at room temperature into most configurations using steel rule dies or sharp blades.
An extensive range of pre-cut profiles is also available, see	Low tooling costs for custom profiles.
additional datasheet for details.	Electrically conductive.

Technical Information	Property	Test Standard
Thickness (mm)	0.200 ± 0.02	
Thermal Conductivity Wm <sup>-1</sup> K <sup>-1</sup>	3.85	MIL-I-49456A
Thermal resistance per cm <sup>2</sup>	0.45°C/W	
Hardness	84 ± 5	Shore Micro
Tear Resistance kN/m	8	ASTM D624
Tensile Strength MPa	3.6	ASTM D412
Dielectric Constant 1000Hz	N/A	ASTM D150
Elongation %	1	ASTM D412
Colour	Dark grey	



					DIME	NSIONS						
PAD DESCRIPTION	Part Number Suffix	Α	В	С	D	E	F	G	Н	J	PAD OUTLINES	MATERIALS AVAILABLE
ТО-З	-010 -021 -032 -036 -043 -048 -054 -057 -063 -065 -076 -087 -098	40.0 40.5 42.0 42.0 42.0 45.0 52.5 42.0 43.0 45.0 45.0	26.5 26.5 28.0 27.0 29.0 29.0 29.0 31.7 39.6 29.0 30.0 31.7 31.7	3.5 3.5 3.9 3.5 3.0 3.5 3.5 3.5 3.0 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	2.0 3.5 1.5 1.5 1.2 2.3 1.2 1.5 1.5 2.3 2.3	30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0	11.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0	1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8			C DIA (2)	A,B,C,D
ТО-З	-213	<b>A</b> 42	<b>B</b> 29	<b>C</b>	<b>D</b> 7	<b>E</b> 30	F 11	<b>G</b> 2	н .	J	C DIA (2)	F
TO-3 TRIAC	-504	<b>A</b> 42.0	<b>B</b> 29.0	C 4.0	D	E 30.0	F	G	Η .	J .	C DIA (2)	A,B,C, D,F,G
то-з	-079	<b>A</b> 42.0	<b>B</b> 29.0	C 3.5	D 2.4	E 30.0	<b>F</b> 11.0	<b>G</b> 10.0	<b>H</b> 4.0	J 18.2	C DIA (3)	A,B,D
TO-3	-439 -543	<b>A</b> 39.0 39.0	8 26.5 26.5	4.0 3.9	<b>D</b> 2.0 1.6	<b>E</b> 30.0 30.0	F 12.0 12.0	G -	H -	J	C DIA (2)	A,B,D

PAD DESCRIPTION	PART NUMBER SUFFIX				DIMEN	ISIONS					PAD OUTLINES	MATERIALS AVAILABLE
TO-3	-659	<b>A</b> 42.0	<b>B</b> 30.0	<b>C</b> 4.0	D 1.5	<b>E</b> 30.0	F 12.7	G	н .	J	F DIA  F DIA  F DIA  B  C DIA  (8)	A,D
		А	В	С	D	E	F	G	н	J	G →	
TO-66	-723 -921 -765 -432	32.0 33.0 35.0 36.5	18.0 19.0 21.0 25.4	3.5 3.5 3.5 3.5	1.5 1.5 1.5 1.9	24.0 24.0 24.0 24.0 24.0	5.0 5.0 5.0 5.0	2.5 2.5 2.5 2.5 2.5	-		C DIA (2)	A,B,C,D
		А	В	С	D	E	F	G	н	J		A,B,C,D
T0-66	-101	32.4	19.0	4.0	2.5	24.4	5.0	2.5	5.0	-	C DIA (3)	
		A	В	С	D	E	F	G	н	J		A,B,C,D
TO-66	-293	33.0	20.0	3.5	1.5	24.0	5.0	2.5	P	1	C DIA (2)	
		A	В	С	D	E	F	G	н	J	G DUA  G DUA  G DUA  C DUA  C DUA  C DUA  (2)	A,D
T0-66	-985	37.0	$\vdash$	3.5	1.4	24.4		8.2	-	-	C DIA (2)	

PAD DESCRIPTION	PART NUMBER SUFFIX				DIM	ENSIO	NS				PAD OUTLINES	MATERIALS AVAILABLE
T0-66	-327	<b>A</b> 34.0	B 20.0	3.5	<b>D</b>	<b>E</b> 24.0	F 12.0	G	н .	-	C DIA (Z)	A,B,C,D,G
PLASTIC POWER		А	В	С	D	E	F	G	н	J		
T0-126 T0-126 T0-202 T0-220 T0-220	-457 -568 -679 -890 -131 -314 -242 -278 -353 -464 -303 -575 -289 -686 -797 -305 -308	11.0 11.0 13.0 15.5 17.5 18.0 19.0 19.0 19.0 19.0 19.0 22.0 22.0 22.0 22.0	8.0 10.0 14.0 14.0 12.0 13.0 10.5 13.0 15.0 20.5 14.0 17.0 19.0	3.5 3.5 4.3 6.2 5.5 5.0 4.0 5.7 4.7 6.0 6.0 3.8 5.5 5.8 5.5 5.0	2.3 3.0 3.0 3.0 3.0 3.5 4.0 3.5 3.0 3.5 4.0 3.5 3.0 4.0 3.6 4.0						D DIA	A,B,C, D,F,G
PLASTIC POWER	-910	<b>A</b> 25.0	B 12.5	<b>C</b> 5.0	D 3.5	E 16.0	F 1.5	<b>G</b> 5.5	<b>H</b> 0.8	J	F DIA E G D DIA (2) H DIA B	A,B,C,D
		Α	В	С	D	E	F	G	н	J	E FDIA (Z)	
PLASTIC POWER	-388 -399		13.0 19.0	5.0 11.0	3.0 4.0	14.0 17.0	1.5 2.5	7.0 5.5	-	-	D DVA	A,B,C,D
POWER RESISTOR		A	В	С	D	E	F	G	н	J	F	
RH-5 RH-10 RH-25 RH-25 RH-50 RH-50	-444 -555 -666 -777 -888 -999	18.5 20.4 29.0 30.1 50.0 53.1	19.5 22.6 30.0 30.6 31.3 32.1	3.5 3.2 5.8 5.9 5.0 6.7	7.0 6.3 10.7 11.9 10.2 13.4	11.3 13.9 18.4 18.2 39.8 39.7	3.5 3.3 4.8 5.3 3.3 5.3	3.9 4.8 6.8 6.7 6.6 6.4	2.3 3.0 3.7 3.5 3.3 3.5	-	H DIA (Z)	A,B,C, D,F,G

PAD DESCRIPTION	PART NUMBER SUFFIX				DIME	NSIONS	;				PAD OUTLINES	MATERIALS AVAILABLE
		Α	В	С	D	Ε	F	Ν°	OF HO	LES	E F F	
	400	25.4	19.0	4.7	2.4	6.3	10.7	-			c	l
	-426 -481	25.4 38.1	19.0	4.7	3.1	6.3	12.7 12.7		2			A,B,C,
TO-220 MULTIPLE	-446	50.8	19.0	4.7	3.1	6.3	12.7		4			D,F,G
10-220 MOLITE	-498	63.5	19.0	4.7	3.1	6.3	12.7		5			
	-423	76.2	19.0	4.7	3.1	6.3	12.7		6		0004	1
	-527	88.9	19.0	4.7	3.1	6.3	12.7		7			
	-539	101.6		4.7	3.1	6.3	12.7		8		^	
DIODE WASHER		Α	В	С	D	E	F	G	н	J		
	-110	9.0	6.5	١.	-	-	-	-	-	٠.		l
	-361	13.0	3.5	١.	-	-	- '	-	-	-		
	-129	13.0	4.0	-	-	-	-	-	-	-		
	-473	13.0	5.0	٠.	٠.	٠.	-	٠.	-	٠.		
DO-4	-581	16.0	5.0	-	-	-	-	-	-	-		
DO-4 (large)	-142	19.0	3.0	-	٠.	٠.	-		-	- 1		A,B,C,
	-694	20.0	6.5	,	-	-	-	-	-	-	<del></del>	D,F,G
D0-5	-165	21.0	3.0	-	٠.	-	-	٠.	-			] ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
!	-176	21.0	3.5	-	-	-	-	-		-		
	-153	21.0	5.0	-	٠.	٠.	*	٠.	٠ ا	-		
	-254	23.0	8.0		-	-	-	-		-		
· · · · · · · · · · · · · · · · ·	-822	25.0	6.5	-	٠.	٠.	-	٠.	٠ ا	-	<b>→</b>	
DO-5 (large)	-187	26.0	3.5	^	_	-	-	-		*		
	-198	30.0	13.0	٠.		٠.	-	١.				
	-933 -740	31.0	9.5	-	-	-	-	-	-	-	-	
	-238	38.0 38.0	5.0 12.5	-				:	-			
	-200	30.0	12.0	_	·	_	-		-	_		
		A	В	C	D	E	F	G	н	J	C DIA	
TO-36	-675	27.0	17.5	4.8		-					( b ( b )	A,B,C,D,G
SWALL POWER DEVICE												
		A	В	С	D	E	F	G	Н	7	C DIA	
											" \ ,Φ. \	
TO-18 3 Holes	-945	7.0	2.5	0.9	-	-	-	-	-	-	<del>10</del> - <del>0</del> -	A
TO-18 4 Holes	-834	7.0	2.5	0.9	١ - ١	١.	۱ - ا	-	-	٠.	(下,未,才)	
TO-5 3 Holes TO-5 4 Holes	-330	9.0	5.0	1.0	-	-	-	-	-	-		
TO-5 3 Holes	-220 -267	9.0	5.0	1.0	-	٠.	-	-	-	-	-	
TO-5 4 Holes	-866	10.0	5.0	1.0	-	-	-	-	-	-	4	
10-3 4 110163	-000	10.0	5.0	1.0	-			-	-	-		
	'	A	В	С	D	E	F	G	Н	J		_
DEOTHERO	-631	26.0	26.0	4.7	-			-	-	-	l l B	A,B,C,
RECTIFIERS	-642	29.0	29.0	3.5	-	-	-	-	-	-	▎	D,F,G
	-648	32.0	32.0	5.0	-	-	-	-	-	-	COM	
	1		F			I		1 :			Α	F

PAD DESCRIPTION	PART NUMBER SUFFIX				DIME	NSION	s				PAD OUTLINES	MATERIALS AVAILABLE
TIP-36 TO-3P TO-3P	-124 -235 -346	22.0 25.0 32.0	17.0 20.0 20.0	17.0 18.0 25.0	3.5 3.5 3.5	5.0 5.0 5.0	F		H .	- - -	E RAD D DIA	A,B,C, D,F,G
PLASTIC POWER		A	В	С	D	E	F	G	Н	J		
T0-3P, T0-247, T0-218, S0T93	-403 -872 -316 -329 -752 -334 -982	24.0 24.0 25.5 29.0 30.0 35.0 36.0	19.0 19.0 19.0 16.0 20.0 25.0 21.0	7.0 7.0 7.6 5.0 4.5 9.0 9.5	3.3 3.8 3.5 3.7 3.0 3.0 3.7				1 1 1 1 1 1 1	-	D DIA	A,B,C, D,F,G
		A	В	С	D	E	F	G	н	J	C - 0 - C	
TO-3P	-375 -302	30.0 36.0	18.0 18.0	5.0 5.8	20.0 24.4	9.0 9.0	3.0	•		-	F DIA	A,B,C, D,F,G
		A	В	С	D	E	F	G	H	J	- C - D-	
MULTIWATT	-620 -617	22.0 26.0	25.0 23.0	11.0 13.0	2.5 2.5	6.0 6.0	3.0 3.6		,	•	FDIA	A,B,C, D,F,G
		А	В	С	D	E	F	G	н	J	GRAD ◀ Ē ► ◀ Ď ►	
SIP	-937	37.0	22.0	16.0	6.3	24.4	4.3	3.0	-	-	P DAA (2)	A,B,C, D,F,G

PAD DESCRIPTION	PART NUMBER SUFFIX				DIM	IENSIO	NS				PAD OUTLINES	MATERIALS AVAILABLE
POWER MODULES	-949 -953	38.0 64.0	23.0 51.0	3.7 9.0	30.5 46.0	11.5 25.5	1.9 4.0	- -	- -	- -	P RAD (2)	A,B,C, D,F,G
POWER MODULES		А	В	С	D	E	F	G	н	J	E D	
TOWER MODULES	-967 -974	64.0 41.0	32.0 28.0	16.0 14.0	7.7 4.0	48.2 31.0	5.2 3.0	5.2 3.0	-	-	G DIA	A,B,C, D,F,G
		A	В	С	D	E	F	G	н	J	D DIA	
SEMI PACK TO-240	-516	94.0	22.0	80.0	6.0	•	-	_	-	-	(2) B	A,B,C, D,F,G
POWER CLIP		A	В	C	D	E	F	G	н	J	<u> </u>	
MOUNT	-706 -605 -718 -924	24.0 30.0 35.0 35.0	19.0 25.0 30.0 25.0						•			A,B,C,D, E,F,G,H
CLIP MOUNT		A	В	С	D	E	F	G	Н	J		
T0-126 T0-220 T0-220	-784 -819 -201	11.0 19.0 19.0	8.0 13.0 16.0	-	-							A,B,C,D ,E,F,G,H

PAD DESCRIPTION	PART NUMBER SUFFIX				DIME	NSION	s					PAD OUTLINES	MATERIALS AVAILABLE
		Α	В	С	D	E	F	G	Н	J		_	
TIP CLIP MOUNT	-415 -807 -908	22.0 25.0 32.0	17.0 20.0 20.0	17.0 18.0 25.0		5.0 5.0 5.0			-	-	E RAD	5	A,B,C,D, E,F,G,H
		Α.	В	С	D	E	F	G	н	J	c ,	O DIA.	
KOOL-PAD CLIPS	-843 -855	32.0 42.0	20.0 25.0	6.5 8.0	3.0 4.0	1 1	-	-	-	-		B	A,B,C, D,F,G
THERMAFLEX SHEETS	8cm										ERMAFLEX SHEETS	30cm THER-10/ THER-10/ THER-15/ THER-15/ THER-20/	UMBERS NA-15 x 30 NC-15 x 30 NA-15 x 30 NC-15 x 30 NA-15 x 30 NC-15 x 30
KOOL-PAD SHEETS	30cm	71 - 0000	30cm	K177-N K228-N K230-N K200-N K381-N PK17-N PK23-N	IA-30 x IA-30 x IA-30 x IA-30 x IA-30 x		CM20 Sheets	PART NUM 30cm CM20-NA- CM20-AC-	30 x 30				
							DIMEN	SIONS	± 2mn	1			
											-PAD ROLLS IT ANY WIDTH		
						3					ium length 10 (Specify)-15	00 metres mm upwards	



Minimum length 100 metres
Width (Specify)-15mm upwards
Width Tolerance ±1.5mm
Ordering Example:
K177-NA-XX
XX=Width