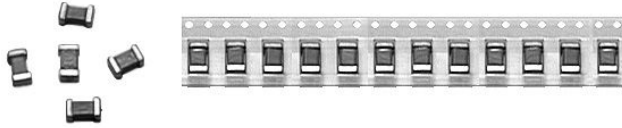


Solid Tantalum Surface Mount Capacitors TANTAMOUNT® Conformal Coated, Military MIL-PRF-55365/4 Qualified


FEATURES

- Weibull failure rates B, C, D, T
Exponential failure rates M, P, R, S
- Tape and reel available per EIA 481-1
- Termination finishes available; Gold plate, solder plated and hot solder dipped
- Compliant to RoHS Directive 2002/95/EC


 Available
RoHS*
 COMPLIANT

PERFORMANCE CHARACTERISTICS
Operating Temperature: - 55 °C to + 125 °C
 (Above 85 °C, voltage derating is required)

Capacitance Range: 0.10 µF to 100 µF
Capacitance Tolerance: ± 5 %, ± 10 %, ± 20 %
Voltage Rating: 4 V_{DC} to 50 V_{DC}

ORDERING INFORMATION							
CWR06	D	B	155	K	B	A	/TR
TYPE	VOLTAGE	TERMINATION FINISH	CAPACITANCE	CAPACITANCE TOLERANCE	FAILURE RATE %/1000 h	SURGE CURRENT (OPTIONAL)	PACKAGING
C = 4 V D = 6 V F = 10V H = 15 V J = 20 V K = 25 V M = 35 V N = 50 V	B = Gold C = Hot solder dipped H = Solder plate	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	J = ± 5 % K = ± 10 % M = ± 20 %	M = 1.0 P = 0.1 R = 0.01 S = 0.001 B = 0.1 C = 0.01 D = 0.001 ⁽¹⁾ T = 0.01 ⁽²⁾	A = 10 cycles at + 25 °C B = 10 cycles at - 55 °C and + 85 °C C = 10 cycles at - 55 °C and + 85 °C (Before Weibull grading)	Blank = Bulk, plastic tray /FA = Waffle pack /PR = 100 pcs reel /HR = Half reel /TR = Full reel	

Notes

- (1) Contact marketing for availability of Weibull D failure rate for 50 V ratings
 (2) T level capacitors are recommended for "Space applications"

DIMENSIONS in inches [millimeters]							
CASE CODE	L	W	H	P	T ₁	T ₂ (MAX.)	
A	0.100 ± 0.015 [2.54 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]	
B	0.150 ± 0.015 [3.81 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]	
C	0.200 ± 0.015 [5.08 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]	
D	0.150 ± 0.015 [3.81 ± 0.38]	0.100 ± 0.015 [2.54 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]	
E	0.200 ± 0.015 [5.08 ± 0.38]	0.100 ± 0.015 [2.54 ± 0.38]	0.050 ± 0.015 [1.27 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]	

Note

- When solder coated terminations are required, add 0.015" [0.38 mm] to termination dimension tolerances.

* Pb containing terminations are not RoHS compliant, exemptions may apply

DIMENSIONS in inches [millimeters]						
CASE CODE	L	W	H	P	T ₁	T ₂ (MAX.)
F	0.220 ± 0.015 [5.59 ± 0.38]	0.135 ± 0.015 [3.43 ± 0.38]	0.070 ± 0.015 [1.78 ± 0.38]	0.030 ± 0.005 [0.76 ± 0.13]	0.005 [0.13]	0.015 [0.38]
G	0.265 ± 0.015 [6.73 ± 0.38]	0.110 ± 0.015 [2.79 ± 0.38]	0.110 ± 0.015 [2.79 ± 0.38]	0.050 ± 0.005 [1.27 ± 0.13]	0.005 [0.13]	0.015 [0.38]
H	0.285 ± 0.015 [7.24 ± 0.38]	0.150 ± 0.015 [3.81 ± 0.38]	0.110 ± 0.015 [2.79 ± 0.38]	0.050 ± 0.005 [1.27 ± 0.13]	0.005 [0.13]	0.015 [0.38]

Notes

- When solder coated terminations are required, add 0.015" [0.38 mm] to termination dimension tolerances.

RATINGS AND CASE CODES								
µF	4 V	6 V	10 V	15 V	20 V	25 V	35 V	50 V
0.10								A
0.15								A
0.22							A	B
0.33						A		B
0.47					A		B	C
0.68				A	B	B	C	D
1.0			A		B	C	D	E
1.5		A		B	C	D	E	F
2.2	A		B	C	D	E		F
3.3		B	C	D	E		F	G
4.7	B	C	D	E		F	G	H
6.8	C	D	E		F	G	H	
10	D	E		F		G		
15	E		F		G	H		
22		F		G	H			
33	F		G	H				
47		G	H					
68	G	H						
100	H							

RATINGS AND PART NUMBER REFERENCE									
CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL (µA) AT			MAX. DF (%) AT			MAX. ESR AT + 25 °C 100 kHz (Ω)
			+ 25 °C	+ 85 °C	+ 125 °C	+ 25 °C	+ 85 °C + 125 °C	- 55 °C	
4 V _{DC} AT + 85 °C, 2.7 V _{DC} AT + 125 °C									
2.2	A	CWR06C(1)225(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
4.7	B	CWR06C(1)475(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
6.8	C	CWR06C(1)685(2)(3)(4)(5)	1.0	10	12	6	8	8	5.5
10	D	CWR06C(1)106(2)(3)(4)(5)	1.0	10	12	8	8	10	4.0
15	E	CWR06C(1)156(2)(3)(4)(5)	1.0	10	12	8	10	12	3.5
33	F	CWR06C(1)336(2)(3)(4)(5)	2.0	20	24	8	10	12	2.2
68	G	CWR06C(1)686(2)(3)(4)(5)	3.0	30	36	10	12	12	1.1
100	H	CWR06C(1)107(2)(3)(4)(5)	4.0	40	48	10	12	12	0.9

Notes

- (1) Termination finish: B, C, H
- (2) Capacitance tolerance: J, K, M
- (3) Failure rate: B, C, D, M, P, R, S, T
- (4) Surge current (optional): A, B, C
- (5) Packaging: Blank, /FA, /HR, /PR, /TR



Solid Tantalum Surface Mount Capacitors
TANTAMOUNT® Conformal Coated, Military
MIL-PRF-55365/4 Qualified

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RATINGS AND PART NUMBER REFERENCE									
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL (μ A) AT			MAX. DF (%) AT			MAX. ESR AT + 25 °C 100 kHz (Ω)
			+ 25 °C	+ 85 °C	+ 125 °C	+ 25 °C	+ 85 °C + 125 °C	- 55 °C	
6 V_{DC} AT + 85 °C, 4 V_{DC} AT + 125 °C									
1.5	A	CWR06D(1)155(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
3.3	B	CWR06D(1)335(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
4.7	C	CWR06D(1)475(2)(3)(4)(5)	1.0	10	12	6	8	8	5.5
6.8	D	CWR06D(1)685(2)(3)(4)(5)	1.0	10	12	6	8	8	4.5
10	E	CWR06D(1)106(2)(3)(4)(5)	1.0	10	12	8	10	12	3.5
22	F	CWR06D(1)226(2)(3)(4)(5)	2.0	20	24	8	10	12	2.2
47	G	CWR06D(1)476(2)(3)(4)(5)	3.0	30	36	10	12	12	1.1
68	H	CWR06D(1)686(2)(3)(4)(5)	4.0	40	48	10	12	12	0.9
10 V_{DC} AT + 85 °C, 7 V_{DC} AT + 125 °C									
1.0	A	CWR06F(1)105(2)(3)(4)(5)	1.0	10	12	6	8	8	12.0
2.2	B	CWR06F(1)225(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
3.3	C	CWR06F(1)335(2)(3)(4)(5)	1.0	10	12	6	8	8	5.5
4.7	D	CWR06F(1)475(2)(3)(4)(5)	1.0	10	12	6	8	8	4.5
6.8	E	CWR06F(1)685(2)(3)(4)(5)	1.0	10	12	6	8	8	3.5
15	F	CWR06F(1)156(2)(3)(4)(5)	2.0	20	24	8	8	10	2.5
33	G	CWR06F(1)336(2)(3)(4)(5)	3.0	30	36	10	12	12	1.1
47	H	CWR06F(1)476(2)(3)(4)(5)	5.0	50	60	10	12	12	0.9
15 V_{DC} AT + 85 °C, 10 V_{DC} AT + 125 °C									
0.68	A	CWR06H(1)684(2)(3)(4)(5)	1.0	10	12	6	8	8	12.0
1.5	B	CWR06H(1)155(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
2.2	C	CWR06H(1)225(2)(3)(4)(5)	1.0	10	12	6	8	8	5.5
3.3	D	CWR06H(1)335(2)(3)(4)(5)	1.0	10	12	6	8	8	5.0
4.7	E	CWR06H(1)475(2)(3)(4)(5)	1.0	10	12	6	8	8	4.0
10	F	CWR06H(1)106(2)(3)(4)(5)	2.0	20	24	6	8	8	2.5
22	G	CWR06H(1)226(2)(3)(4)(5)	4.0	40	48	6	8	8	1.1
33	H	CWR06H(1)336(2)(3)(4)(5)	5.0	50	60	8	8	10	0.9
20 V_{DC} AT + 85 °C, 13 V_{DC} AT + 125 °C									
0.47	A	CWR06J(1)474(2)(3)(4)(5)	1.0	10	12	8	8	10	16.0
0.68	B	CWR06J(1)684(2)(3)(4)(5)	1.0	10	12	6	8	8	14.0
1.0	B	CWR06J(1)105(2)(3)(4)(5)	1.0	10	12	6	8	8	12.0
1.5	C	CWR06J(1)155(2)(3)(4)(5)	1.0	10	12	6	8	8	6.0
2.2	D	CWR06J(1)225(2)(3)(4)(5)	1.0	10	12	6	8	8	5.0
3.3	E	CWR06J(1)335(2)(3)(4)(5)	1.0	10	12	6	8	8	4.0
6.8	F	CWR06J(1)685(2)(3)(4)(5)	2.0	20	24	6	8	8	2.4
15	G	CWR06J(1)156(2)(3)(4)(5)	3.0	30	36	6	8	8	1.1
22	H	CWR06J(1)226(2)(3)(4)(5)	4.0	40	48	6	8	8	0.9

Notes

- (1) Termination finish: B, C, H
- (2) Capacitance tolerance: J, K, M
- (3) Failure rate: B, C, D, M, P, R, S, T
- (4) Surge current (optional): A, B, C
- (5) Packaging: Blank, /FA, /HR, /PR, /TR

RATINGS AND PART NUMBER REFERENCE									
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL (μ A) AT			MAX. DF (%) AT			MAX. ESR AT + 25 °C 100 kHz (Ω)
			+ 25 °C	+ 85 °C	+ 125 °C	+ 25 °C	+ 85 °C + 125 °C	- 55 °C	
25 V_{DC} AT + 85 °C, 17 V_{DC} AT + 125 °C									
0.33	A	CWR06K(1)334(2)(3)(4)(5)	1.0	10	12	6	8	8	15.0
0.68	B	CWR06K(1)684(2)(3)(4)(5)	1.0	10	12	6	8	8	10.0
1.0	C	CWR06K(1)105(2)(3)(4)(5)	1.0	10	12	6	8	8	6.5
1.5	D	CWR06K(1)155(2)(3)(4)(5)	1.0	10	12	6	8	8	6.5
2.2	E	CWR06K(1)225(2)(3)(4)(5)	1.0	10	12	6	8	8	3.5
4.7	F	CWR06K(1)475(2)(3)(4)(5)	2.0	20	24	6	8	8	2.5
6.8	G	CWR06K(1)685(2)(3)(4)(5)	2.0	20	24	6	8	8	1.2
10	G	CWR06K(1)106(2)(3)(4)(5)	3.0	30	36	6	8	8	1.4
15	H	CWR06K(1)156(2)(3)(4)(5)	4.0	40	48	6	8	8	1.0
35 V_{DC} AT + 85 °C, 23 V_{DC} AT + 125 °C									
0.22	A	CWR06M(1)224(2)(3)(4)(5)	1.0	10	12	6	8	8	24.0
0.47	B	CWR06M(1)474(2)(3)(4)(5)	1.0	10	12	6	8	8	17.0
0.68	C	CWR06M(1)684(2)(3)(4)(5)	1.0	10	12	6	8	8	10.0
1.0	D	CWR06M(1)105(2)(3)(4)(5)	1.0	10	12	6	8	8	6.5
1.5	E	CWR06M(1)155(2)(3)(4)(5)	1.0	10	12	6	8	8	4.5
3.3	F	CWR06M(1)335(2)(3)(4)(5)	1.0	10	12	6	8	8	2.5
4.7	G	CWR06M(1)475(2)(3)(4)(5)	2.0	20	24	6	8	8	1.5
6.8	H	CWR06M(1)685(2)(3)(4)(5)	3.0	30	36	6	8	8	1.3
50 V_{DC} AT + 85 °C, 33 V_{DC} AT + 125 °C									
0.10	A	CWR06N(1)104(2)(3)(4)(5)	1.0	10	12	6	8	8	75.0
0.15	A	CWR06N(1)154(2)(3)(4)(5)	1.0	10	12	6	8	8	25.0
0.22	B	CWR06N(1)224(2)(3)(4)(5)	1.0	10	12	6	8	8	17.0
0.33 ⁽⁶⁾	B	CWR06N(1)334(2)(3)(4)(5)	1.0	10	12	6	8	8	12.0
0.47	C	CWR06N(1)474(2)(3)(4)(5)	1.0	10	12	6	8	8	8.0
0.68	D	CWR06N(1)684(2)(3)(4)(5)	1.0	10	12	6	8	8	7.0
1.0	E	CWR06N(1)105(2)(3)(4)(5)	1.0	10	12	6	8	8	6.0
1.5	F	CWR06N(1)155(2)(3)(4)(5)	1.0	10	12	6	8	8	4.0
2.2	F	CWR06N(1)225(2)(3)(4)(5)	2.0	20	24	6	8	8	2.5
3.3	G	CWR06N(1)335(2)(3)(4)(5)	2.0	20	24	6	8	8	2.0
4.7	H	CWR06N(1)475(2)(3)(4)(5)	3.0	30	36	6	8	8	1.5

Notes

- (1) Termination finish: B, C, H
- (2) Capacitance tolerance: J, K, M
- (3) Failure rate: B, C, D, M, P, R, S, T
- (4) Surge current (optional): A, B, C
- (5) Packaging: Blank, /FA, /HR, /PR, /TR
- (6) 5 % tolerance is not available for the 0.33 μ F/50 V design

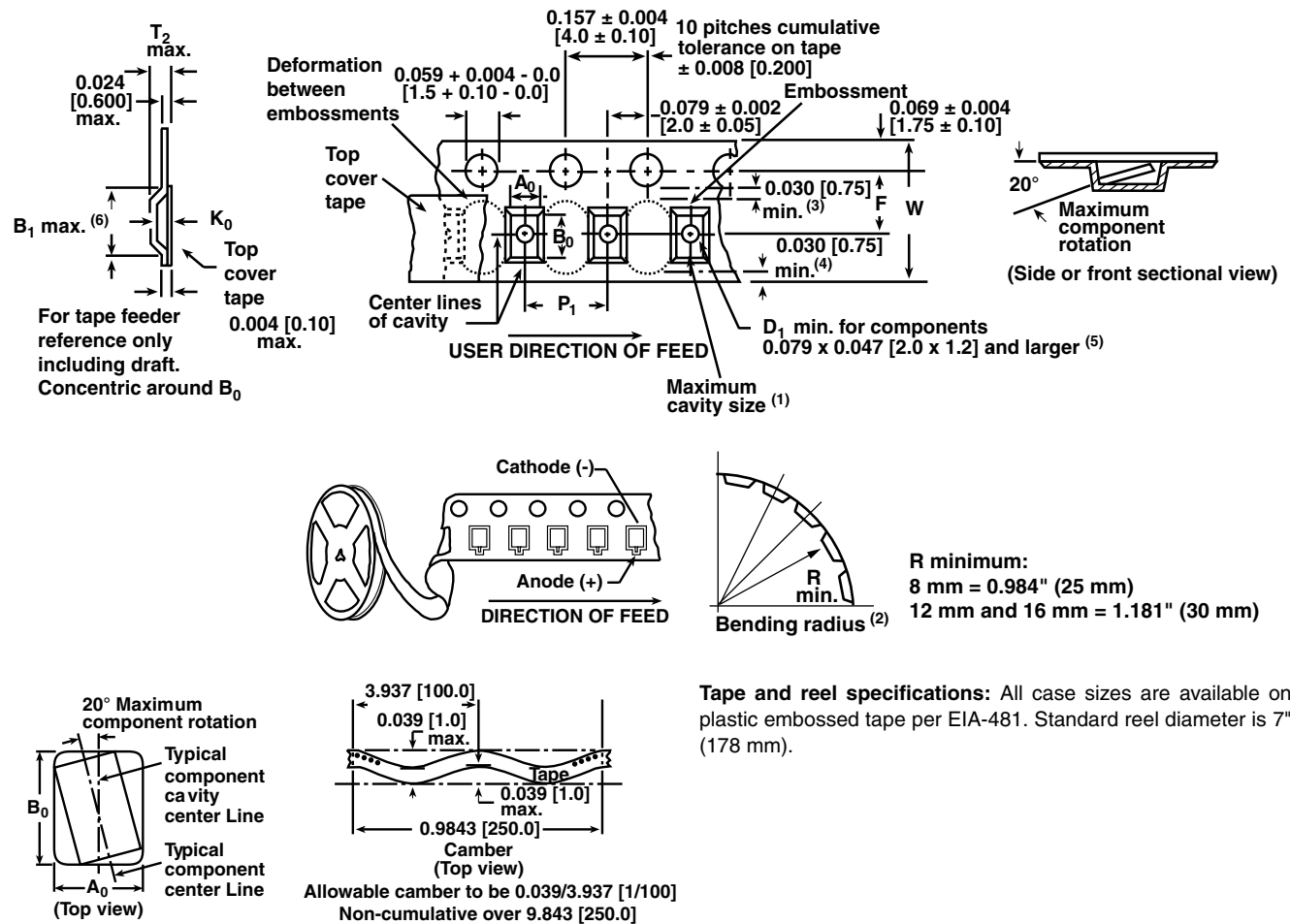
Solid Tantalum Surface Mount Capacitors
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Vishay Sprague

TAPE AND REEL PACKAGING in inches [millimeters]

Note

• Metric dimensions will govern. Dimensions in inches are rounded and for reference only.



Notes

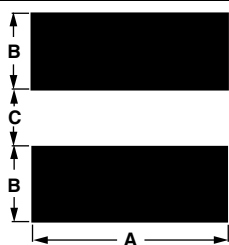
- (1) A₀, B₀, K₀, are determined by the maximum dimensions to the ends of the terminals extending from the component body and/or the body dimensions of the component. The clearance between the ends of the terminals or body of the component to the sides and depth of the cavity (A₀, B₀, K₀) must be within 0.002" (0.05 mm) minimum and 0.020" (0.50 mm) maximum. The clearance allowed must also prevent rotation of the component within the cavity of not more than 20 degrees.
- (2) Tape with components shall pass around radius "R" without damage. The minimum trailer length may require additional length to provide "R" minimum for 12 mm embossed tape for reels with hub diameters approaching N minimum.
- (3) This dimension is the flat area from the edge of the sprocket hole to either outward deformation of the carrier tape between the embossed cavities or to the edge of the cavity whichever is less.
- (4) This dimension is the flat area from the edge of the carrier tape opposite the sprocket holes to either the outward deformation of the carrier tape between the embossed cavity or to the edge of the cavity whichever is less.
- (5) The embossed hole location shall be measured from the sprocket hole controlling the location of the embossement. Dimensions of embossement location shall be applied independent of each other.
- (6) B₁ dimension is a reference dimension tape feeder clearance only.

CARRIER TAPE DIMENSIONS in inches [millimeters]							
CWR06/CWR16							
CASE CODE	TAPE SIZE	B ₁ (max.)	D ₁ (min.)	F	P ₁	T ₂ (MAX.)	W
A	8 mm	0.179 [4.55]	0.039 [1.0]	0.138 ± 0.002 [3.5 ± 0.05]	0.157 ± 0.004 [4.0 ± 0.1]	0.098 [2.5]	0.315 ± 0.004 [8.0 ± 0.10]
B, C, D, E	12 mm	0.323 [8.2]	0.059 [1.5]	0.217 ± 0.002 [5.5 ± 0.05]	0.157 ± 0.004 [4.0 ± 0.1]	0.256 [6.5]	0.472 ± 0.012 [12.0 ± 0.30]
F	12 mm Double pitch	0.323 [8.2]	0.059 [1.5]	0.217 ± 0.002 [5.5 ± 0.05]	0.315 ± 0.004 [8.0 ± 0.10]	0.256 [6.5]	0.472 ± 0.012 [12.0 ± 0.30]
G, H	16 mm	0.476 [12.1]	0.059 [1.5]	0.295 ± 0.004 [7.5 ± 0.1]	0.315 ± 0.004 [8.0 ± 0.10]	0.315 [8.0]	0.642 Max. [16.3] Max.

STANDARD PACKAGING QUANTITY					
SERIES	CASE CODE	QUANTITY (PCS/REEL)			BULK, PLASTIC TRAY QUANTITY
		7", FULL REEL	7", HALF REEL	7", 100 PCS REEL	
CWR06/CWR16	A, B, C, D, E	2500	1250	100	75
	F	1000	500	100	75
	G	600	300	100	60
	H	600	300	100	50

Notes

- (1) Bulk capacitors are shipped in plastic trays
- (2) T level capacitors are only shipped in tape and reel/or waffle packaging. Contact factory for waffle pack quantities.

PAD DIMENSIONS in inches [millimeters]			
			
CWR06/CWR16			
CASE CODE	WIDTH (A)	PAD METALLIZATION (B)	SEPARATION (C)
A	0.065 [1.6]	0.050 [1.3]	0.040 [1.0]
B	0.065 [1.6]	0.070 [1.8]	0.055 [1.4]
C	0.065 [1.6]	0.070 [1.8]	0.120 [3.0]
D	0.115 [2.9]	0.070 [1.8]	0.070 [1.8]
E	0.115 [2.9]	0.070 [1.8]	0.120 [3.0]
F	0.150 [3.8]	0.070 [1.8]	0.140 [3.6]
G	0.125 [3.2]	0.070 [1.8]	0.170 [4.3]
H	0.165 [4.2]	0.090 [2.3]	0.170 [4.3]

POWER DISSIPATION		
SERIES	CASE CODE	MAXIMUM PERMISSIBLE POWER DISSIPATION AT + 25 °C (W) IN FREE AIR
CWR06/CWR16	A	0.06
	B, C	0.075
	D, E	0.085
	F	0.11
	G	0.12
	H	0.15



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