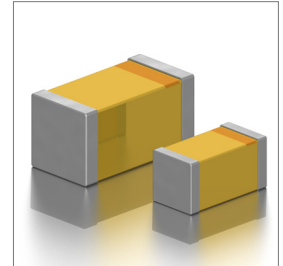


Features
<ul style="list-style-type: none"> Capacitance range: 0.10μF to 150μF Voltage range: 2 to 25 V_{DC} Meets or exceeds EIA 535 BAAC and IECQ standards (QC300801/US001, IS-28) Operating Temperature range -55°C to +125°C linear derating above +40°C to 0.5 x Vr at +85°C and 0.2 x Vr at +125°C

Applications
<ul style="list-style-type: none"> Encapsulant material satisfies the UL 94 V0 flammability classification MSL (moisture sensitivity level) per IPC/Jedec J-STD-020B is level 1 Reliability .2% per 1000 hours at 85°C, 0.5 x Vr with 0.1 Ω/V series impedance with 60% confidence level



Part Numbering Guide

CGT 10 / 16 R M 7500

SERIES TYPE

CAPACITANCE
In Micro-farads (μ F)
Ex. 0.68 μ F = .68

VOLTAGE
2 = 2V
3 = 3V
4 = 4V
6 = 6.3V
10 = 10V
16 = 16V
20 = 20V
25 = 25V

CASE SIZE
A (3216-18)
B (3528-15)
P (1005-07)
R (1608-10)
Q (2012-15)
H (2012-10) Low profile
I (3216-05) Low Profile
J (1608-08) Low Profile
T (3528-12) Low Profile
U (2012-06) Low Profile
V (3216-08) Low Profile

TOLERANCE
M = \pm 20%
K = \pm 10%

MAX ESR
Milliohms



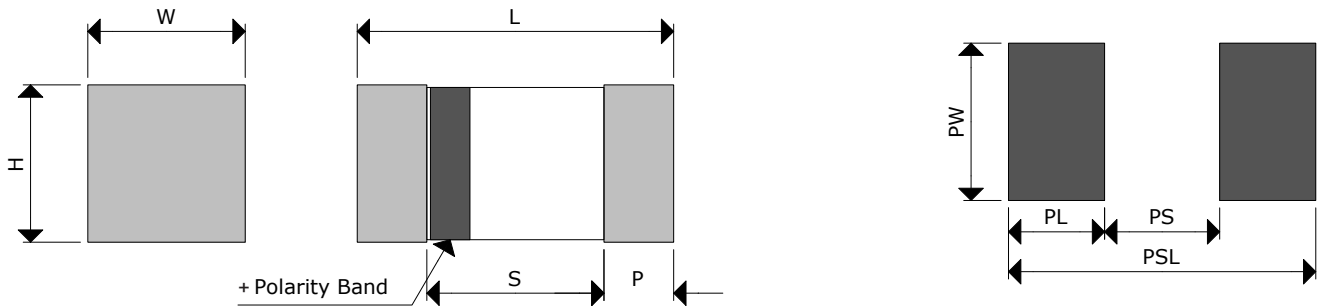
Electrical Parameters	Units	Minimum	Typical	Maximum	Remarks
Technical Data	All technical data relate to an ambient temperature of +25°C				
Capacitance Range	μ F	0.1		150	
Capacitance Tolerance	%	\pm 20		\pm 10	See part numbering guide for options
Operating Temperature Range	°C	-55		+125	0.5 x Vr @85°C & 0.2 x Vr @125C
Rated Voltage (V _R) -55°C \leq +40°C	V	2	3	4	6 (6.3) 10 16 20 25
Temp Derated Voltage +80°C	V	1	1.5	2	3.2 5.0 8.0 10.0 12.5
Temp Derated Voltage +125°C	V	0.4	0.6	0.8	1.3 2.0 3.2 4.0 5.0
Capacitance	Measured at 120Hz, 0.5 RMS with DC bias of 1.5V. DCL is measured at rated voltage after 5 minutes				
Leakage Current DCL	0.01CV or 0.5 μ A whichever is the greater				
Reliability	1% per 1000 hours at 85°C, 0.5 x Vr with 0.1 Ω /V series impedance with 60% confidence level				
Qualifications	Fixed Tantalum Specifications: EIA 525BAAC and IECQ standards (QC300801/US001, IS-28) Solder-ability: Sn Plated Terminations – meets requirements of IEC 68 2.20 test Ta and MIL-STD=202, Method 208 MSL (moisture sensitivity level): Level 1 of IPC/Jedec J-STD-020B				

Case Size Cross Reference : Capacitance And Voltage Rating (Rated Voltage DC @ 85°C)

Cap (µF)	2V	3V	4V	6.3V	10V	16V	20V	25V
0.10						P		
0.15					P	P		
0.22					P	P	P	
0.33					P	P		
0.47					P, R	R		
0.68					P, R	R		
1.0				P, R	P, R, Q	R, U		Q
1.5			R	R	R			
2.2		P, R	R	P, R	R, U	R		
3.3	P, R	P, R	R	R, U	R, Q		Q	
4.7	P, R	P, R	R, U	R	R, Q		Q	
6.8	P, R	R	R	R, Q	R, Q			
10	P, R, U	R	R, Q, J	R, Q, I*	R, Q, H, V	Q		
15		Q	R, Q	R, Q, H	Q, V			
22	Q	R, Q	R, Q	Q, H	Q			
33	Q	Q	Q, H	Q	A, Q			
47	Q	Q, H	Q	A, Q	B, T			
68	Q	A, Q	A	T				
100		A, Q	A, Q	A, T				
150	A							

Outline Drawing & Recommended Landed Pattern

All dimensions are in millimeters (mm) unless otherwise noted. Drawings are not to scale.



Case Size & Land Pattern Dimensions

Case Size Code	EIA Size Code	L	W	H	S Min	P Min	PSL	PL	PS	PW
A	3216-18	3.2 ±0.2	1.6 ±0.2	1.6 ±0.2	1.8	0.15	4.4	1.6	1.2	1.8
B	3528-15	3.5 ±0.2	2.8 +0.2/-0.1	1.5 Max	2.0	0.15	4.7	1.05	2.0	1.7
P	1005-07	1.0 ±0.2	0.5 +0.2/-0.1	0.5 +0.2/-0.1	0.4	0.1	2.2	0.9	0.4	0.7
R	1608-10	1.6 ±0.2	0.85 ±0.15	0.85 ±0.15	0.55	0.15	2.8	1.11	0.6	1.0
Q	2012-15	2.0 ±0.2	1.35 ±0.15	1.35 ±0.15	0.7	0.15	3.2	1.3	0.6	1.5
H	2012-10	2.0 ±0.2	1.35 ±0.15	1.0 Max	0.7	0.15	3.2	1.3	0.6	1.5
I	3216-05	3.2 ±0.2	1.60 ±0.2	0.5 Max	1.8	0.15	4.4	1.05	1.8	0.7
J	1608-08	1.6 ±0.2	0.85 ±0.15	0.75 Max	0.55	0.15	2.8	1.05	0.55	0.95
T	3528-12	3.5 ±0.2	2.8 +0.2/-0.1	1.2 Max	2.0	0.15	4.7	1.7	1.3	3.0
U	2012-06	2.0 ±0.2	1.35 ±0.15	0.6 Max	0.7	0.15	3.2	1.3	0.6	1.5
V	3216-08	3.2 ±0.2	1.60 ±0.2	0.75 Max	1.8	0.15	4.4	1.05	1.8	0.95

Ratings and Part Number Reference

2V DC @ 40°C (1V DC @ 85°C, 0.4V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
3.3	P	15,000	CGT3.3 / 2P_ _15000	1.3	0.5	8	32	28	13
3.3	R	7,500	CGT3.3 / 2R_ _7500	1.3	0.5	6	58	52	23
4.7	P	15,000	CGT4.7 / 2P_ _15000	1.3	0.5	12	32	28	13
4.7	R	7,500	CGT4.7 / 2R_ _7500	1.3	0.5	6	58	52	23
6.8	P	15,000	CGT6.8 / 2P_ _15000	1.3	0.5	20	32	28	13
6.8	R	7,500	CGT6.8 / 2R_ _7500	1.3	0.5	6	58	52	23
10	P	15,000	CGT10 / 2P_ _15000	1.3	0.5	15	32	28	13
10	R	7,500	CGT10 / 2R_ _7500	1.3	0.5	10	58	52	23
10	U	5,000	CGT10 / 2U_ _5000	1.3	0.5	8	84	75	33
22	Q	5,000	CGT22 / 2Q_ _5000	1.3	0.5	8	95	85	38
33	Q	5,000	CGT33 / 2Q_ _5000	1.3	0.7	10	95	85	38
47	Q	5,000	CGT47 / 2Q_ _5000	1.3	0.9	10	95	85	38
68	Q	5,000	CGT68 / 2Q_ _5000	1.3	1.4	14	95	85	38
150	A	1,000	CGT150 / 2A_ _5000	1.3	3.0	20	200	180	80

3V DC @ 40°C (1.5V DC @ 85°C, 0.6V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
2.2	P	15,000	CGT2.2/3P_ _15000	2	0.5	6	32	28	13
2.2	R	7,500	CGT2.2/3R_ _7500	2	0.5	6	58	52	23
3.3	P	15,000	CGT3.3/3P_ _15000	2	0.5	8	32	28	13
3.3	R	7,500	CGT3.3/3R_ _7500	2	0.5	6	58	52	23
4.7	P	15,000	CGT4.7/3P_ _15000	2	0.5	12	32	28	13
4.7	R	7,500	CGT4.7/3R_ _7500	2	0.5	6	58	52	23
6.8	R	7,500	CGT6.8/3R_ _7500	2	0.5	6	58	52	23
10	R	7,500	CGT10/3R_ _7500	2	0.5	10	58	52	23
15	Q	5,000	CGT15/3Q_ _5000	2	0.5	8	95	85	38
22	R	7,500	CGT22/3R_ _7500	2	0.7	20	58	52	23
22	Q	5,000	CGT22/3Q_ _5000	2	0.7	8	95	85	38
33	Q	5,000	CGT33/3Q_ _5000	2	1.0	10	95	85	38
47	H	5,000	CGT47/3H_ _5000	2	1.4	20	89	80	36
47	Q	5,000	CGT47/3Q_ _5000	2	1.5	10	95	85	38
68	A	2,000	CGT68/3A_ _2000	2	2.0	15	141	127	57
68	Q	5,000	CGT68/3Q_ _5000	2	2.0	14	95	85	38
100	A	1,000	CGT100/3A_ _1000	2	3.0	15	200	180	80
100	Q	5,000	CGT100/3Q_ _5000	2	3.0	30	95	85	38

Ratings and Part Number Reference

4V DC @ 40°C (2V DC @ 85°C , 0.8V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
1.5	R	7,500	CGT1.5/4R_7500	2.7	0.5	6	58	52	23
2.2	R	7,500	CGT2.5/4R_7500	2.7	0.5	6	58	52	23
3.3	R	7,500	CGT3.3/4R_7500	2.7	0.5	6	58	52	23
4.7	R	7,500	CGT4.7/4R_7500	2.7	0.5	6	58	52	23
4.7	U	5,000	CGT4.7/4U_5000	2.7	0.5	8	84	75	33
6.8	R	7,500	CGT6.8/4R_7500	2.7	0.5	8	58	52	23
10	J	7,500	CGT10/4J_7500	2.7	0.5	20	52	46	21
10	R	7,500	CGT10/4R_7500	2.7	0.5	10	58	52	23
10	Q	5,000	CGT10/4Q_5000	2.7	0.5	8	95	85	38
15	R	7,500	CGT15/4R_7500	2.7	0.6	20	58	52	23
15	Q	5,000	CGT15/4Q_5000	2.7	0.6	8	95	85	38
22	R	7,500	CGT22/4R_7500	2.7	0.9	20	58	52	23
22	Q	5,000	CGT22/4Q_5000	2.7	0.9	8	95	85	38
33	H	5,000	CGT33/4H_5000	2.7	1.3	14	89	80	36
33	Q	5,000	CGT33/4Q_5000	2.7	1.3	10	95	85	38
47	Q	5,000	CGT47/4Q_5000	2.7	1.9	14	95	85	38
68	A	1,000	CGT68/4A_1000	2.7	2.7	15	200	180	80
100	A	1,000	CGT100/4A_1000	2.7	4.0	20	200	180	80
100	Q	5,000	CGT100/4Q_5000	2.7	4.0	30	95	85	38

6.3V DC @ 40°C (3.2V DC @ 85°C , 1.3V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
1	P	15,000	CGT1/6.3P_15000	4	0.5	6	32	28	13
1	R	7,500	CGT1/6.3R_7500	4	0.5	6	58	52	23
1.5	R	7,500	CGT1.5/6.3R_7500	4	0.5	6	58	52	23
2.2	P	15,000	CGT2.5/6.3P_15000	4	0.5	8	32	28	13
2.2	R	7,500	CGT2.2/6.3R_7500	4	0.5	6	58	52	23
3.3	R	7,500	CGT3.3/6.3R_7500	4	0.5	6	58	52	23
3.3	U	5,000	CGT3.3/6.3U_5000	4	0.5	8	84	75	33
4.7	R	7,500	CGT4.7/6.3R_7500	4	0.5	8	58	52	23
6.8	R	7,500	CGT6.8/6.3R_7500	4	0.5	10	58	52	23
6.8	Q	5,000	CGT6.8/6.3Q_5000	4	0.5	8	95	85	38
10	I	5,000	CGT10/6.3I_5000	4	0.6	20	84	75	33
10	R	6,000	CGT10/6.3R_6000	4	0.6	10	65	58	26
10	Q	5,000	CGT10/6.3Q_5000	4	0.6	8	95	85	38
15	H	5,000	CGT15/6.3H_5000	4	0.9	8	89	80	36
15	R	7,500	CGT15/6.3R_7500	4	0.9	20	58	52	23
15	Q	5,000	CGT15/6.3Q_5000	4	0.9	8	95	85	38
22	H	5,000	CGT22/6.3H_5000	4	1.4	10	89	80	36
22	Q	5,000	CGT22/6.3Q_5000	4	1.4	10	95	85	38
33	Q	5,000	CGT33/6.3Q_5000	4	2.1	12	95	85	38
47	A	1,000	CGT47/6.3A_1000	4	3.0	15	200	180	80
47	Q	5,000	CGT47/6.3Q_5000	4	3.0	20	95	85	38
68	T	1,000	CGT68/6.3T_1000	4	4.3	15	200	180	80
100	A	1,000	CGT100/6.3A_1000	4	6.3	20	200	180	80
100	T	1,000	CGT100/6.3T_1000	4	6.3	12	200	180	80

Ratings and Part Number Reference

10V DC @ 40°C (5V DC @ 85°C , 2V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
0.15	P	40,000	CGT0.15/10P__40000	7	0.5	6	19	17	8
0.22	P	30,000	CGT0.22/10P__30000	7	0.5	6	22	20	9
0.33	P	20,000	CGT0.33/10P__20000	7	0.5	6	27	25	11
0.47	P	15,000	CGT0.47/10P__15000	7	0.5	6	32	28	13
0.47	R	7,500	CGT0.47/10R__7500	7	0.5	6	58	52	23
0.68	P	15,000	CGT0.68/10P__15000	7	0.5	8	32	28	13
0.68	R	7,500	CGT0.68/10R__7500	7	0.5	6	58	52	23
1	P	15,000	CGT1/10P__15000	7	0.5	6	32	28	13
1	R	7,500	CGT1/10R__7500	7	0.5	6	58	52	23
1	Q	7,000	CGT1/10Q__7000	7	0.5	6	80	72	32
1.5	R	7,500	CGT1.5/10R__7500	7	0.5	6	58	52	23
2.2	R	7,500	CGT2.2/10R__7500	7	0.5	6	58	52	23
2.2	U	5,000	CGT2.2/10U__5000	7	0.5	8	84	75	33
3.3	R	7,500	CGT3.3/10R__7500	7	0.5	8	58	52	23
3.3	Q	5,000	CGT3.3/10Q__5000	7	0.5	8	95	85	38
4.7	R	6,000	CGT4.7/10R__6000	7	0.5	10	65	58	26
4.7	Q	6,000	CGT4.7/10Q__6000	7	0.5	8	87	78	35
6.8	R	7,500	CGT6.8/10R__7500	7	0.7	20	58	52	23
6.8	Q	5,000	CGT6.8/10Q__5000	7	0.7	8	95	85	38
10	H	5,000	CGT10/10H__5000	7	1.0	8	89	80	36
10	R	7,500	CGT10/10R__7500	7	1.0	20	58	52	23
10	Q	5,000	CGT10/10Q__5000	7	1.0	8	95	85	38
10	V	2,000	CGT10/10V__2000	7	1.0	10	132	119	53
15	Q	5,000	CGT15/10Q__5000	7	1.5	10	95	85	38
15	V	2,000	CGT15/10V__2000	7	1.5	10	132	119	53
22	Q	5,000	CGT22/10Q__5000	7	2.2	14	95	85	38
33	A	1,000	CGT33/10A__1000	7	3.3	12	200	180	80
33	Q	5,000	CGT33/10Q__5000	7	3.3	20	95	85	38
47	B	1,000	CGT47/10B__1000	7	4.7	15	200	180	80
47	T	1,000	CGT47/10T__1000	7	4.7	12	200	180	80

16V DC @ 40°C (8V DC @ 85°C , 3.2V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
0.1	P	40,000	CGT0.1/16P__40000	10	0.5	6	19	17	8
0.15	P	30,000	CGT0.15/16P__30000	10	0.5	6	22	20	9
0.22	P	20,000	CGT0.22/16P__20000	10	0.5	6	27	25	11
0.33	P	20,000	CGT0.33/16P__20000	10	0.5	6	27	25	11
0.47	R	7,500	CGT0.47/16R__7500	10	0.5	6	58	52	23
0.68	R	7,500	CGT0.68/16R__7500	10	0.5	6	58	52	23
1	R	7,500	CGT1/16R__7500	10	0.5	6	58	52	23
1	U	5,000	CGT1/16U__5000	10	0.5	8	84	75	33
2.2	R	7,500	CGT2.2/16R__7500	10	0.5	10	58	52	23
10	Q	5,000	CGT10/16R__5000	10	1.6	10	95	85	38

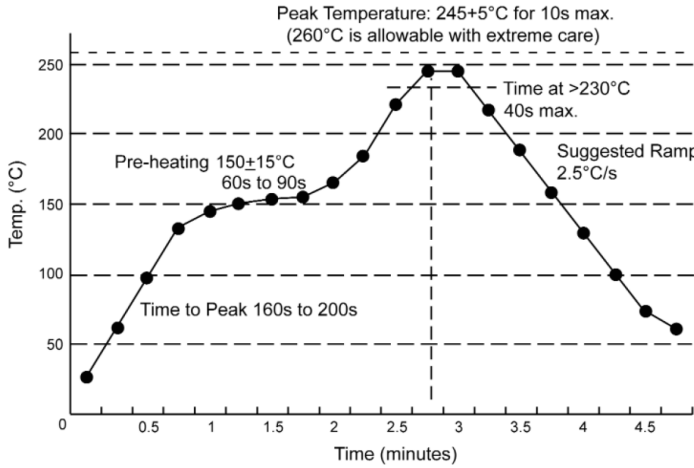
20V DC @ 40°C (10V DC @ 85°C , 4V DC @ 125°C)									
Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
0.22	P	20,000	CGT0.22/20P__20000	13	0.5	6	27	25	11
3.3	Q	5,000	CGT3.3/20Q__5000	13	0.7	8	95	85	38
4.7	Q	5,000	CGT4.7/20Q__5000	13	0.9	8	95	85	38

Ratings and Part Number Reference

25V DC @ 40°C (12.5V DC @ 85°C , 5V DC @ 125°C)

Capacitance	Case Size	ESR Max @ 100kHz (mΩ)	Nemco Part No.	Category Voltage	DCL Max (μA)	DF Max (%)	100kHz RMS Current (mA)		
							25°C	85°C	125°C
1	Q	5,000	CGT1/25Q_5000	17	0.5	8	95	85	38

Reflow Profile



Tantalum capacitors are lead-free system compatible system components, meeting the requirements of J-STD-020 standard. Maximum peak temperature 260°C for 10 seconds maximum, 3 reflow cycles.

There are several important general soldering considerations for tantalum capacitors.

- Soldering temperature and time should be the minimum for a good connection.
- Recommended soldering profiles are designed to insure that the temperature of the internal construction of the capacitors does not exceed +220°C.
- Positioning capacitors near components radiating heat such as power transistors should be avoided.
- Allow for an increase to ESR ratings of 1.25 x catalog limit post PCB assembly.

Tape And Reel Dimensions

All dimensions are in millimeters (mm) unless otherwise noted. Drawings are not to scale.

500pcs / Std 7" Reel
3,000pcs / 13" Reel

