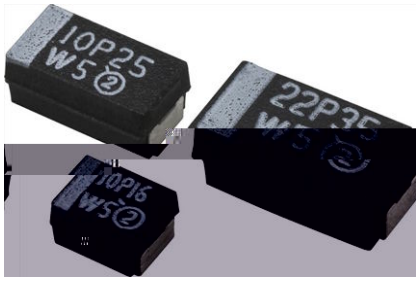
So⊠id Tapta⊠uo Surface Moupt Chip Capacitors
TANTAMOUNT™ Mo⊠ded Case, High Perforo apce, Autoo otive Grade



FEATURES

- AEC-Q200 swa⊠fied
- Lqy ESR
- 100 % uwtge cwttepv veuved (B, C, D, apd E caue uizeu)
- High tir r ⊠e cwttepv cattyipg car abi⊠y
- Mq⊠ded caue axai⊠ab⊠e ip fixe caue cqdeu
- Teto ipaviqpu: 100 % o awe vip, uvapdatd, vip / ⊠ead axai⊠ab⊠e
- Cqo r avib⊠e y ivh “high xq⊠wo e” awqo avic r ick apd r ⊠ace es wir o epv
- Meevu EIA-535-BAAC o echapica⊠ apd r etfqto apce tes witeo epvu
- Cqo r ⊠apv veto ipaviqpu
- Mqiuwte uepuivixiw ⊠exe⊠1
- Mavetia⊠ cavegqtizaviqp: fqt defipiviqpu qf cqo r ⊠apce r ⊠eaue uee y y y .xiuhay.cqo /dqc?99912

AUTOMOTIVE GRADE

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* Thiu davauheev r tqxideu ipfqto aviqp abqw r atvu vhav ate RqHS-cqo r ⊠apv apd / qt r atvu vhavate pqp-RqHS-cqo r ⊠apv. Fqt ezao r ⊠e, r atvu y ivh ⊠ead (Pb) veto ipaviqpu ate pqvRqHS-cqo r ⊠apv. P⊠eaue uee vhe ipfqto aviqp / vab⊠eu ip vhiu davauheev fqt devai⊠u.

PERFORMANCE / ELECTRICAL CHARACTERISTICS

y y y .xiuhay.cqo /dqc?40215

Operatipg Teo perature: -55 °C vq +125 °C (abqxe 85 °C, xq⊠age detavipg iu tes wited)

Capacitapce Rapge: 0.10 µF vq 470 µF

Capacitapce To⊠erapce: ± 10 %, ± 20 %

Vo⊠tage Ratipg: 4 V_{DC} vq 50 V_{DC}

APPLICATIONS

- Awqo qvixe
- Ipdwuvtia⊠
- Gepeta⊠r wtr que

ORDERING INFORMATION

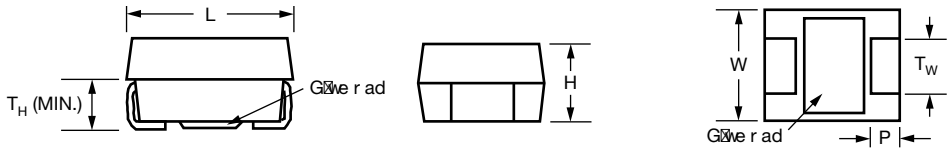
TP3	D	226	K	035	C	0500	AS
TYPE	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	TERMINATION / PACKAGING	ESR	SPECIFICATION OPTION
	See Ravipgu apd Caue Cqdeu vab⊠e	Thiu iu ezr teuued ip r icqfatadu. The fituv vy q digivu ate vhe uigpificapv figwteu. The vhitd iu vhe pwo bet qf zetqu vq fq⊠qy .	K = ± 10 % M = ± 20 %	Thiu iu ezr teuued ip V. Tq cqo r ⊠eve vhe vhtee-digiv b⊠qck, zetqu r tecede vhe xq⊠age tavipg. A decio a⊠r qipv iu ipdicaved by ap “R” (6R3 = 6.3 V)	**Matte tip** **C** = 7" (178 o o) tee⊠ **D** = 13" (330 o o) tee⊠ **V** = 7" (178 o o) tee⊠ dty r ack **U** = 13" (330 o o) tee⊠ dty r ack **Tip / ⊠ead** **E** = 7" (178 o o) tee⊠ **F** = 13" (330 o o) tee⊠ **T** = 7" (178 o o) tee⊠ dty r ack **W** = 13" (330 o o) tee⊠ dty r ack	Mazio wo 100 kHz ESR 0500 = 500 o Ω 5000 = 5.0 Ω 10R0 = 10.0 Ω	AS = uvapdatd

Notes

- We teuetxe vhe tighv vq uwr r ⊠y highet xq⊠age tavipgu apd vighvet car acivapce vq⊠etapce car acivqtu ip vhe uao e caue uize. Vq⊠age uwbuviwwiqpu y i⊠be o atked y ivh vhe highet xq⊠age tavipg.
- Dty r ack au ur ecified ip J-STD-033 fqt MSL3. Ar r ⊠cab⊠e fqt D apd E caueu qp⊠y.

Fqt vechpica⊠s weuviqpu, cqpvacv: vapva⊠wo @xiuhay.cqo

DIMENSIONS ip ipcheu [o i⊠o evetu]



CASE CODE	EIA SIZE	L	W	H	P	T_W	T_H (MIN.)
A	3216-18	0.126 ± 0.008 [3.2 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.063 ± 0.008 [1.6 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.047 ± 0.004 [1.2 ± 0.10]	0.028 [0.70]
B	3528-21	0.138 ± 0.008 [3.5 ± 0.20]	0.110 ± 0.008 [2.8 ± 0.20]	0.075 ± 0.008 [1.9 ± 0.20]	0.031 ± 0.012 [0.80 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.028 [0.70]
C	6032-28	0.236 ± 0.012 [6.0 ± 0.30]	0.126 ± 0.012 [3.2 ± 0.30]	0.098 ± 0.012 [2.5 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.087 ± 0.004 [2.2 ± 0.10]	0.039 [1.0]
D	7343-31	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.110 ± 0.012 [2.8 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]
E	7343-43	0.287 ± 0.012 [7.3 ± 0.30]	0.169 ± 0.012 [4.3 ± 0.30]	0.157 ± 0.012 [4.0 ± 0.30]	0.051 ± 0.012 [1.3 ± 0.30]	0.094 ± 0.004 [2.4 ± 0.10]	0.039 [1.0]

Note

- G⊠ve r ad (pqp-cqpdwcvixe, r atvqf o q⊠ded caue) iu dedicaved fqt g⊠ve awacho epv(au wuet qr viqp).

RATINGS AND CASE CODES

µF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.10							A (20.00, 10.00)	A (19.00, 10.00)
0.15								
0.22							A (15.00, 6.00)	A (15.00) B (12.00, 8.50)
0.33							A (13.00, 6.00)	B (10.00, 4.50)
0.47						A (12.00, 9.00)	A (10.00, 4.00) B (8.00, 2.50)	B (8.40, 4.00)
0.68					A (10.00, 8.00)	A (8.40) B (7.00, 5.00)	A (7.60, 4.00) B (6.50, 2.50)	
1.0				A (9.30, 6.00)	A (8.40, 5.50)	A (7.60, 4.00) B (5.00, 2.00)	A (7.50, 6.00, 4.00) B (5.00, 2.00)	B (6.70) C (4.60, 1.60)
1.5			A (8.00, 6.00)	A (6.70, 6.00)	A (6.30)	A (6.70, 4.00) B (4.60, 2.00)	B (4.20, 2.00) C (3.80)	
2.2		A (7.60, 6.00)	A (6.30, 4.60)	A (5.90, 4.00) B (4.60, 2.50)	A (5.90, 4.00) B (3.50, 1.50)	A (6.30, 4.00) B (4.00; 3.80, 1.50) C (2.20)	B (3.80, 2.00) C (2.90, 0.90)	C (2.90, 1.50) D (2.10, 0.80)
3.3		A (6.30, 5.00)	A (5.50)	A (5.00, 4.00, 3.50) B (3.5, 2.0)	A (5.90, 4.00) B (3.00, 1.30)	B (3.10, 1.50) C (2.30, 1.00)	B (3.50) C (2.10, 0.70)	C (2.50, 1.50) D (1.70, 0.80)
4.7	A (6.30)	A (5.50, 3.50)	A (5.00, 4.50, 3.00, 2.00, 1.40) B (3.40, 1.50)	A (5.00, 2.50, 2.00) B (2.90, 1.50)	A (5.00, 3.50) B (2.90, 1.00) C (2.30, 0.60)	B (2.80, 1.50) C (2.00, 0.525)	B (3.10, 1.50) C (1.90, 0.50) D (1.30, 0.45)	D (1.20, 0.60, 0.30)
6.8		A (5.00) B (3.40)	A (4.20, 3.00) B (2.90, 1.20)	A (4.20, 3.80, 3.00) B (2.50) C (1.90, 0.60)	B (2.50, 1.00) C (1.90, 0.55)	B (1.50) C (1.70, 0.50)	C (1.80, 0.475) D (1.8, 1.10, 0.30)	D (0.90, 0.60)
10		A (3.40, 2.00, 1.50) B (2.90, 1.00)	A (3.40, 3.00, 2.00) B (2.50, 0.60, 0.80) C (1.80, 0.55)	A (3.00, 1.70) B (2.00, 0.80) C (1.80, 0.45)	B (2.10, 2.5, 1.00) C (1.70, 0.50, 0.45)	C (1.50, 0.45) D (1.00, 0.30)	C (1.60, 0.45) D (0.80, 0.30, 0.25, 0.135)	D (0.80, 0.55) E (0.80, 0.55, 0.30)
15		A (2.90, 2.00) B (2.50)	A (2.90, 2.00) B (2.00, 1.20, 0.70) C (1.80, 0.50)	B (2.00, 0.80) C (1.50, 0.40)	B (2.30, 1.00) C (1.50, 0.40) D (0.90, 0.30)	C (1.20, 0.425) D (0.80, 0.25)	D (0.70, 0.30, 0.26, 0.225)	

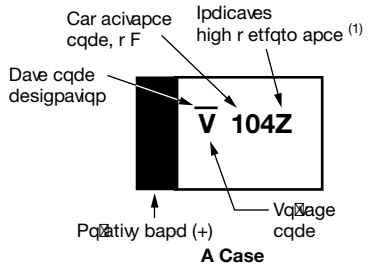
RATINGS AND CASE CODES

µF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
22		A (2.90, 2.00) B (2.00, 0.60) C (1.80, 0.50)	A (2.50, 1.50) B (1.90, 0.60, 0.70) C (1.50, 0.40, 0.345, 0.245)	B (1.90, 0.70. 0.60) C (1.40, 0.8, 0.375, 0.35) D (0.80, 0.25)	C (1.10, 0.375) D (0.70, 0.225, 0.18)	C (1.20, 0.40) D (0.70, 0.20)	D (0.60, 0.30, 0.26, 0.20) E (0.60, 0.275)	
33	B (2.00) C (2.0, 1.80, 0.50)	A (2.50, 0.80) B (1.90, 0.60) C (1.50, 0.375)	B (1.90, 1.50, 0.60) C (1.40, 0.60, 0.30) D (0.80, 0.25)	C (1.10, 0.30) D (0.70, 0.225)	C (1.00, 0.35) D (0.70, 0.20)	D (0.70, 0.30, 0.20) E (0.60, 0.30, 0.20)		
47		A (1.60) B (1.90, 0.60, 0.55, 0.50) C (1.40, 0.30, 0.25) D (0.80, 0.20)	B (1.80, 0.60) C (1.10, 0.30) D (0.70, 0.20)	C (1.00, 0.30) D (0.70, 0.20, 0.15, 0.12)	D (0.70, 0.25, 0.20, 0.15) E (0.60, 0.15)	E (0.60, 0.20)		
68	B (1.4) C (1.4)	B (1.80, 0.55) C (0.80, 0.275) D (0.70, 0.20)	C (1.00, 0.275) D (0.70, 0.15)	D (0.60, 0.15)				
100		B (0.9, 1.7) C (0.80, 0.25) D (0.70, 0.13, 0.15, 0.14)	C (0.90, 0.25, 0.20) D (0.60, 0.10, 0.15)	D (0.60, 0.15, 0.125) E (0.60, 0.10)	E (0.50, 0.15)			
150		C (0.70, 0.30, 0.20) D (0.60, 0.15)	D (0.60, 0.10) E (0.50, 0.10)	E (0.50, 0.10)				
220		D (0.60, 0.10) E (0.50, 0.10)	D (0.60, 0.125, 0.10) E (0.50, 0.10)	E (0.50, 0.10)				
330		D (0.60, 0.125) E (0.50, 0.10)						
470		E (0.50, 0.10)						

Note

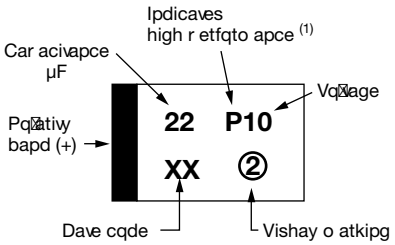
- ESR ☒o iwu ip Ω uhqy p ip r atepvheuiu.

MARKING



A Case

"A" CASE VOLTAGE CODE	
VOLTS	**CODE**
4.0	G
6.3	J
10	A
16	C
20	D
25	E
35	V
50	T



B, C, D, E Cases

Markipg

Car acivqt o atkipg ipc☒vdeu ap apqde (+) r q☒ativiy bapd, car acivapce ip o ictqfatadu apd vhe xq☒age tavipg. "A" caue car acivqtu wue a ☒ewet cqde fqt vhe xq☒age apd EIA car acivapce cqde.

The Viuhay idepvificaviqp iu ipc☒vded if ur ace r eto iwu. Car acivqtu taved av 6.3 V ate o atked 6 V.

A o apwfacwtipg dave cqde iu o atked qp a☒car acivqtu, fqt deva☒u uee FAQ: y y y .xiuhay.cqo /dqc?40110.

Ca☒vhe facvqty fqt fwtvhet ezr ☒apaviqp.

Note

(1) Car iva☒☒ewet ipdicaveu ☒ead (Pb)-ftee.

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
4 V_{DC} AT +85 °C; 2.7 V_{DC} AT +125 °C						
4.7	A	TP3A475(1)004(2)6300AS	0.5	6	6.300	0.11
33	B	TP3B336(1)004(2)2000AS	1.3	6	2.000	0.21
33	C	TP3C336(1)004(2)2000AS	1.3	6	2.000	0.25
33	C	TP3C336(1)004(2)1800AS	1.3	6	1.800	0.25
33	C	TP3C336(1)004(2)0500AS	1.3	6	0.500	0.47
68	B	TP3B686(1)004(2)1400AS	2.7	6	1.400	0.28
68	C	TP3C686(1)004(2)1400AS	2.7	6	1.400	0.28
6.3 V_{DC} AT +85 °C; 4 V_{DC} AT +125 °C						
2.2	A	TP3A225(1)6R3(2)7600AS	0.5	6	7.600	0.10
2.2	A	TP3A225(1)6R3(2)6000AS	0.5	6	6.000	0.11
3.3	A	TP3A335(1)6R3(2)6300AS	0.5	6	6.300	0.11
3.3	A	TP3A335(1)6R3(2)5000AS	0.5	6	5.000	0.12
4.7	A	TP3A475(1)6R3(2)5500AS	0.5	6	5.500	0.12
4.7	A	TP3A475(1)6R3(2)3500AS	0.5	6	3.500	0.15
6.8	A	TP3A685(1)6R3(2)5000AS	0.5	6	5.000	0.12
6.8	B	TP3B685(1)6R3(2)3400AS	0.5	6	3.400	0.16
10	A	TP3A106(1)6R3(2)3400AS	0.6	6	3.400	0.15
10	A	TP3A106(1)6R3(2)2000AS	0.6	6	2.000	0.19
10	A	TP3A106(1)6R3(2)1500AS	0.6	6	1.500	0.22
10	B	TP3B106(1)6R3(2)2900AS	0.6	6	2.900	0.17
10	B	TP3B106(1)6R3(2)1000AS	0.6	6	1.000	0.29
15	A	TP3A156(1)6R3(2)2900AS	0.9	6	2.900	0.16
15	A	TP3A156(1)6R3(2)2000AS	0.9	6	2.000	0.19
15	B	TP3B156(1)6R3(2)2500AS	0.9	6	2.500	0.18
22	A	TP3A226(1)6R3(2)2900AS	1.3	6	2.900	0.16
22	A	TP3A226(1)6R3(2)2000AS	1.3	6	2.000	0.19
22	B	TP3B226(1)6R3(2)2000AS	1.3	6	2.000	0.21
22	B	TP3B226(1)6R3(2)0600AS	1.3	6	0.600	0.38
22	C	TP3C226(1)6R3(2)1800AS	1.3	6	1.800	0.25
22	C	TP3C226(1)6R3(2)0500AS	1.3	6	0.500	0.47
33	A	TP3A336(1)6R3(2)2500AS	2.0	14	2.500	0.17
33	A	TP3A336(1)6R3(2)0800AS	2.0	14	0.800	0.31
33	B	TP3B336(1)6R3(2)1900AS	2.0	6	1.900	0.21
33	B	TP3B336(1)6R3(2)0600AS	2.0	6	0.600	0.38
33	C	TP3C336(1)6R3(2)1500AS	2.0	6	1.500	0.27
33	C	TP3C336(1)6R3(2)0375AS	2.0	6	0.375	0.54
47	A	TP3A476(1)6R3(2)1600AS	2.8	12	1.600	0.22
47	B	TP3B476(1)6R3(2)1900AS	2.8	6	1.900	0.21
47	B	TP3B476(1)6R3(2)0600AS	2.8	6	0.600	0.38
47	B	TP3B476(1)6R3(2)0550AS	2.8	6	0.550	0.39
47	B	TP3B476(1)6R3(2)0500AS	2.8	6	0.500	0.41
47	C	TP3C476(1)6R3(2)1400AS	2.8	6	1.400	0.28
47	C	TP3C476(1)6R3(2)0300AS	2.8	6	0.300	0.61
47	C	TP3C476(1)6R3(2)0250AS	2.1	6	0.250	0.66
47	D	TP3D476(1)6R3(3)0800AS	2.8	6	0.800	0.43
47	D	TP3D476(1)6R3(3)0200AS	2.8	6	0.200	0.87

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vqtapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
6.3 V_{DC} AT +85 °C; 4 V_{DC} AT 125 °C						
68	B	TP3B686(1)6R3(2)1800AS	4.1	6	1.800	0.22
68	B	TP3B686(1)6R3(2)0550AS	4.1	6	0.550	0.39
68	C	TP3C686(1)6R3(2)0800AS	4.1	6	0.800	0.37
68	C	TP3C686(1)6R3(2)0275AS	4.1	6	0.275	0.63
68	D	TP3D686(1)6R3(3)0700AS	4.1	6	0.700	0.46
68	D	TP3D686(1)6R3(3)0200AS	4.1	6	0.200	0.87
100	B	TP3B107(1)6R3(2)0900AS	6.0	10	0.900	0.22
100	B	TP3B107(1)6R3(2)1700AS	6.0	10	1.700	0.22
100	C	TP3C107(1)6R3(2)0800AS	6.0	6	0.800	0.37
100	C	TP3C107(1)6R3(2)0250AS	6.0	6	0.250	0.66
100	D	TP3D107(1)6R3(3)0700AS	6.0	6	0.700	0.46
100	D	TP3D107(1)6R3(3)0150AS	6.0	6	0.150	1.00
100	D	TP3D107(1)6R3(3)0140AS	6.0	6	0.140	1.04
100	D	TP3D107(1)6R3(3)0130AS	6.0	6	0.130	1.07
150	C	TP3C157(1)6R3(2)0700AS	9.0	8	0.700	0.40
150	C	TP3C157(1)6R3(2)0300AS	9.0	8	0.300	0.61
150	C	TP3C157(1)6R3(2)0200AS	9.0	8	0.200	0.74
150	D	TP3D157(1)6R3(3)0600AS	9.0	8	0.600	0.60
150	D	TP3D157(1)6R3(3)0150AS	9.0	8	0.150	1.10
220	D	TP3D227(1)6R3(3)0600AS	13.2	8	0.600	0.50
220	D	TP3D227(1)6R3(3)0100AS	13.2	8	0.100	1.22
220	E	TP3E227(1)6R3(3)0500AS	13.2	8	0.500	0.57
220	E	TP3E227(1)6R3(3)0100AS	13.2	8	0.100	1.28
330	D	TP3D337(1)6R3(3)0600AS	19.8	8	0.600	0.50
330	D	TP3D337(1)6R3(3)0125AS	19.8	8	0.125	1.10
330	E	TP3E337(1)6R3(3)0500AS	19.8	8	0.500	0.57
330	E	TP3E337(1)6R3(3)0100AS	19.8	8	0.100	1.28
470	E	TP3E477(1)6R3(3)0500AS	28.2	10	0.500	0.57
470	E	TP3E477(1)6R3(3)0100AS	28.2	10	0.100	1.28
10 V_{DC} AT +85 °C; 7 V_{DC} AT 125 °C						
1.5	A	TP3A155(1)010(2)8000AS	0.5	6	8.000	0.10
1.5	A	TP3A155(1)010(2)6000AS	0.5	6	6.000	0.11
2.2	A	TP3A225(1)010(2)6300AS	0.5	6	6.300	0.11
2.2	A	TP3A225(1)010(2)4600AS	0.5	6	4.600	0.13
3.3	A	TP3A335(1)010(2)5500AS	0.5	6	5.500	0.12
4.7	A	TP3A475(1)010(2)5000AS	0.5	6	5.000	0.12
4.7	A	TP3A475(1)010(2)4500AS	0.5	6	4.500	0.13
4.7	A	TP3A475(1)010(2)3000AS	0.5	6	3.000	0.16
4.7	A	TP3A475(1)010(2)2000AS	0.5	6	2.000	0.19
4.7	A	TP3A475(1)010(2)1400AS	0.5	6	1.400	0.23
4.7	B	TP3B475(1)010(2)3400AS	0.5	6	3.400	0.16
4.7	B	TP3B475(1)010(2)1500AS	0.5	6	1.500	0.24
6.8	A	TP3A685(1)010(2)4200AS	0.7	6	4.200	0.13
6.8	A	TP3A685(1)010(2)3000AS	0.7	6	3.000	0.16
6.8	B	TP3B685(1)010(2)2900AS	0.7	6	2.900	0.17
6.8	B	TP3B685(1)010(2)1200AS	0.7	6	1.200	0.27
10	A	TP3A106(1)010(2)3400AS	1.0	6	3.400	0.15
10	A	TP3A106(1)010(2)3000AS	1.0	6	3.000	0.16
10	A	TP3A106(1)010(2)2000AS	1.0	6	2.000	0.19
10	B	TP3B106(1)010(2)2500AS	1.0	6	2.500	0.18
10	B	TP3B106(1)010(2)0800AS	1.0	6	0.800	0.33
10	B	TP3B106(1)010(2)0600AS	1.0	6	0.600	0.38
10	C	TP3C106(1)010(2)1800AS	1.0	6	1.800	0.25
10	C	TP3C106(1)010(2)0550AS	1.0	6	0.550	0.45

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vqⓔtapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

10 V_{DC} AT +85 °C; 7 V_{DC} AT 125 °C

15	A	TP3A156(1)010(2)2900AS	1.5	6	2.900	0.16
15	A	TP3A156(1)010(2)2000AS	1.5	6	2.000	0.19
15	B	TP3B156(1)010(2)2000AS	1.5	6	2.000	0.21
15	B	TP3B156(1)010(2)1200AS	1.5	6	1.200	0.27
15	B	TP3B156(1)010(2)0700AS	1.5	6	0.700	0.35
15	C	TP3C156(1)010(2)1800AS	1.5	6	1.800	0.25
15	C	TP3C156(1)010(2)0500AS	1.5	6	0.500	0.47
22	A	TP3A226(1)010(2)2500AS	2.2	8	2.500	0.17
22	A	TP3A226(1)010(2)1500AS	2.2	8	1.500	0.22
22	B	TP3B226(1)010(2)1900AS	2.2	6	1.900	0.21
22	B	TP3B226(1)010(2)0700AS	2.2	6	0.700	0.35
22	B	TP3B226(1)010(2)0600AS	2.2	6	0.600	0.38
22	C	TP3C226(1)010(2)1500AS	2.2	6	1.500	0.27
22	C	TP3C226(1)010(2)0400AS	2.2	6	0.400	0.52
22	C	TP3C226(1)010(2)0345AS	2.2	6	0.345	0.56
22	C	TP3C226(1)010(2)0245AS	2.2	6	0.245	0.67
33	B	TP3B336(1)010(2)1900AS	3.3	6	1.900	0.21
33	B	TP3B336(1)010(2)1500AS	3.3	6	1.500	0.24
33	B	TP3B336(1)010(2)0600AS	3.3	6	0.600	0.38
33	C	TP3C336(1)010(2)1400AS	3.3	6	1.400	0.28
33	C	TP3C336(1)010(2)0600AS	3.3	6	0.600	0.28
33	C	TP3C336(1)010(2)0300AS	3.3	6	0.300	0.61
33	D	TP3D336(1)010(3)0800AS	3.3	6	0.800	0.43
33	D	TP3D336(1)010(3)0250AS	3.3	6	0.250	0.77
47	B	TP3B476(1)010(2)1800AS	4.7	6	1.800	0.22
47	B	TP3B476(1)010(2)0600AS	4.7	6	0.600	0.38
47	C	TP3C476(1)010(2)1100AS	4.7	6	1.100	0.32
47	C	TP3C476(1)010(2)0300AS	4.7	6	0.300	0.61
47	D	TP3D476(1)010(3)0700AS	4.7	6	0.700	0.46
47	D	TP3D476(1)010(3)0200AS	4.7	6	0.200	0.87
68	C	TP3C686(1)010(2)1000AS	6.8	6	1.000	0.33
68	C	TP3C686(1)010(2)0275AS	6.8	6	0.275	0.63
68	D	TP3D686(1)010(3)0700AS	6.8	6	0.700	0.46
68	D	TP3D686(1)010(3)0150AS	6.8	6	0.150	1.00
100	C	TP3C107(1)010(2)0900AS	10.0	8	0.900	0.35
100	C	TP3C107(1)010(2)0250AS	10.0	8	0.250	0.66
100	C	TP3C107(1)010(2)0200AS	10.0	8	0.200	0.74
100	D	TP3D107(1)010(3)0600AS	10.0	8	0.600	0.50
100	D	TP3D107(1)010(3)0150AS	10.0	8	0.150	1.00
100	D	TP3D107(1)010(3)0100AS	10.0	8	0.100	1.22
150	D	TP3D157(1)010(3)0600AS	15.0	8	0.600	0.50
150	D	TP3D157(1)010(3)0100AS	15.0	8	0.100	1.22
150	E	TP3E157(1)010(3)0500AS	15.0	8	0.500	0.57
150	E	TP3E157(1)010(3)0100AS	15.0	8	0.100	1.28
220	D	TP3D227(1)010(3)0600AS	22.0	8	0.600	0.50
220	D	TP3D227(1)010(3)0125AS	22.0	8	0.125	1.10
220	D	TP3D227(1)010(3)0100AS	22.0	8	0.100	1.22
220	E	TP3E227(1)010(3)0500AS	22.0	8	0.500	0.57
220	E	TP3E227(1)010(3)0100AS	22.0	8	0.100	1.28

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
		16 V_{DC} AT +85 °C; 10 V_{DC} AT +125 °C				
1.0	A	TP3A105(1)016(2)9300AS	0.5	4	9.300	0.09
1.0	A	TP3A105(1)016(2)6000AS	0.5	4	6.000	0.11
1.5	A	TP3A155(1)016(2)6700AS	0.5	6	6.700	0.11
1.5	A	TP3A155(1)016(2)6000AS	0.5	6	6.000	0.11
2.2	A	TP3A225(1)016(2)5900AS	0.5	6	5.900	0.11
2.2	A	TP3A225(1)016(2)4000AS	0.5	6	4.000	0.14
2.2	B	TP3B225(1)016(2)4600AS	0.5	6	4.600	0.14
2.2	B	TP3B225(1)016(2)2500AS	0.5	6	2.500	0.18
3.3	A	TP3A335(1)016(2)5000AS	0.5	6	5.000	0.12
3.3	A	TP3A335(1)016(2)4000AS	0.5	6	4.000	0.14
3.3	A	TP3A335(1)016(2)3500AS	0.5	6	3.500	0.15
3.3	B	TP3B335(1)016(2)3500AS	0.5	6	3.500	0.16
3.3	B	TP3B335(1)016(2)2000AS	0.5	6	2.000	0.21
4.7	A	TP3A475(1)016(2)5000AS	0.8	6	5.000	0.12
4.7	A	TP3A475(1)016(2)2500AS	0.8	6	2.500	0.17
4.7	A	TP3A475(1)016(2)2000AS	0.8	6	2.000	0.19
4.7	B	TP3B475(1)016(2)2900AS	0.8	6	2.900	0.17
4.7	B	TP3B475(1)016(2)1500AS	0.8	6	1.500	0.24
6.8	A	TP3A685(1)016(2)4200AS	1.1	6	4.200	0.13
6.8	A	TP3A685(1)016(2)3800AS	1.1	6	3.800	0.14
6.8	A	TP3A685(1)016(2)3000AS	1.1	6	3.000	0.16
6.8	B	TP3B685(1)016(2)2500AS	1.1	6	2.500	0.18
6.8	C	TP3C685(1)016(2)1900AS	1.1	6	1.900	0.24
6.8	C	TP3C685(1)016(2)0600AS	1.1	6	0.600	0.43
10	A	TP3A106(1)016(2)3000AS	1.6	6	3.000	0.16
10	A	TP3A106(1)016(2)1700AS	1.6	6	1.700	0.21
10	B	TP3B106(1)016(2)2000AS	1.6	6	2.000	0.21
10	B	TP3B106(1)016(2)0800AS	1.6	6	0.800	0.33
10	C	TP3C106(1)016(2)1800AS	1.6	6	1.800	0.25
10	C	TP3C106(1)016(2)0450AS	1.6	6	0.450	0.49
15	B	TP3B156(1)016(2)2000AS	2.4	6	2.000	0.21
15	B	TP3B156(1)016(2)0800AS	2.4	6	0.800	0.33
15	C	TP3C156(1)016(2)1500AS	2.4	6	1.500	0.27
15	C	TP3C156(1)016(2)0400AS	2.4	6	0.400	0.52
22	B	TP3B226(1)016(2)1900AS	3.5	6	1.900	0.21
22	B	TP3B226(1)016(2)0700AS	3.5	6	0.700	0.35
22	B	TP3B226(1)016(2)0600AS	3.5	6	0.600	0.38
22	C	TP3C226(1)016(2)1400AS	3.5	6	1.400	0.28
22	C	TP3C226(1)016(2)0800AS	3.5	6	0.800	0.28
22	C	TP3C226(1)016(2)0375AS	3.5	6	0.375	0.54
22	C	TP3C226(1)016(2)0350AS	3.5	6	0.350	0.56
22	D	TP3D226(1)016(3)0800AS	3.5	6	0.800	0.43
22	D	TP3D226(1)016(3)0250AS	3.5	6	0.250	0.77
33	C	TP3C336(1)016(2)1100AS	5.3	6	1.100	0.32
33	C	TP3C336(1)016(2)0300AS	5.3	6	0.300	0.61

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vqtapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
16 V_{DC} AT +85 °C; 10 V_{DC} AT +125 °C						
33	D	TP3D336(1)016(3)0700AS	5.3	6	0.700	0.46
33	D	TP3D336(1)016(3)0225AS	5.3	6	0.225	0.82
47	C	TP3C476(1)016(2)1000AS	7.5	6	1.000	0.33
47	C	TP3C476(1)016(2)0300AS	7.5	6	0.300	0.61
47	D	TP3D476(1)016(3)0700AS	7.5	6	0.700	0.46
47	D	TP3D476(1)016(3)0200AS	7.5	6	0.200	0.87
47	D	TP3D476(1)016(3)0150AS	7.5	6	0.150	1.00
47	D	TP3D476(1)016(3)0120AS	7.5	6	0.120	1.12
68	D	TP3D686(1)016(3)0600AS	10.9	6	0.600	0.50
68	D	TP3D686(1)016(3)0150AS	10.9	6	0.150	1.00
100	D	TP3D107(1)016(3)0600AS	16.0	8	0.600	0.50
100	D	TP3D107(1)016(3)0150AS	16.0	8	0.150	1.00
100	D	TP3D107(1)016(3)0125AS	16.0	8	0.125	1.10
100	E	TP3E107(1)016(3)0600AS	16.0	8	0.600	0.52
100	E	TP3E107(1)016(3)0100AS	16.0	8	0.100	1.28
150	E	TP3E157(1)016(3)0500AS	24.0	8	0.500	0.57
150	E	TP3E157(1)016(3)0100AS	24.0	8	0.100	1.28
220	E	TP3E227(1)016(3)0500AS	35.2	14	0.500	0.57
220	E	TP3E227(1)016(3)0100AS	35.2	14	0.100	1.28
20 V_{DC} AT +85 °C; 13 V_{DC} AT +125 °C						
0.68	A	TP3A684(1)020(2)10R0AS	0.5	4	10.000	0.09
0.68	A	TP3A684(1)020(2)8000AS	0.5	4	8.000	0.10
1.0	A	TP3A105(1)020(2)8400AS	0.5	4	8.400	0.09
1.0	A	TP3A105(1)020(2)5500AS	0.5	4	5.500	0.12
1.5	A	TP3A155(1)020(2)6300AS	0.5	6	6.300	0.11
2.2	A	TP3A225(1)020(2)5900AS	0.5	6	5.900	0.11
2.2	A	TP3A225(1)020(2)4000AS	0.5	6	4.000	0.14
2.2	B	TP3B225(1)020(2)3500AS	0.5	6	3.500	0.16
2.2	B	TP3B225(1)020(2)1500AS	0.5	6	1.500	0.24
3.3	A	TP3A335(1)020(2)5900AS	0.7	6	5.900	0.11
3.3	A	TP3A335(1)020(2)4000AS	0.7	6	4.000	0.14
3.3	B	TP3B335(1)020(2)3000AS	0.7	6	3.000	0.17
3.3	B	TP3B335(1)020(2)1300AS	0.7	6	1.300	0.26
4.7	A	TP3A475(1)020(2)5000AS	0.9	6	5.000	0.12
4.7	A	TP3A475(1)020(2)3500AS	0.9	6	3.500	0.15
4.7	B	TP3B475(1)020(2)2900AS	0.9	6	2.900	0.17
4.7	B	TP3B475(1)020(2)1000AS	0.9	6	1.000	0.29
4.7	C	TP3C475(1)020(2)2300AS	0.9	6	2.300	0.22
4.7	C	TP3C475(1)020(2)0600AS	0.9	6	0.600	0.43
6.8	B	TP3B685(1)020(2)2500AS	1.4	6	2.500	0.18
6.8	B	TP3B685(1)020(2)1000AS	1.4	6	1.000	0.29
6.8	C	TP3C685(1)020(2)1900AS	1.4	6	1.900	0.24
6.8	C	TP3C685(1)020(2)0550AS	1.4	6	0.550	0.45
10	B	TP3B106(1)020(2)2500AS	2.0	6	2.500	0.18
10	B	TP3B106(1)020(2)2100AS	2.0	6	2.100	0.20
10	B	TP3B106(1)020(2)1000AS	2.0	6	1.000	0.29
10	C	TP3C106(1)020(2)1700AS	2.0	6	1.700	0.25
10	C	TP3C106(1)020(2)0500AS	2.0	6	0.500	0.47
10	C	TP3C106(1)020(2)0450AS	2.0	6	0.450	0.49

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vqtapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
20 V_{DC} AT +85 °C; 13 V_{DC} AT +125 °C						
15	B	TP3B156(1)020(2)2300AS	3.0	6	2.300	0.19
15	B	TP3B156(1)020(2)1000AS	3.0	6	1.000	0.29
15	C	TP3C156(1)020(2)1500AS	3.0	6	1.500	0.27
15	C	TP3C156(1)020(2)0400AS	3.0	6	0.400	0.52
15	D	TP3D156(1)020(3)0900AS	3.0	6	0.900	0.41
15	D	TP3D156(1)020(3)0300AS	3.0	6	0.300	0.71
22	C	TP3C226(1)020(2)1100AS	4.4	6	1.100	0.32
22	C	TP3C226(1)020(2)0375AS	4.4	6	0.375	0.54
22	D	TP3D226(1)020(3)0700AS	4.4	6	0.700	0.46
22	D	TP3D226(1)020(3)0225AS	4.4	6	0.225	0.82
22	D	TP3D226(1)020(3)0180AS	4.4	6	0.180	0.91
33	C	TP3C336(1)020(2)1000AS	6.6	6	1.000	0.33
33	C	TP3C336(1)020(2)0350AS	6.6	6	0.350	0.56
33	D	TP3D336(1)020(3)0700AS	6.6	6	0.700	0.46
33	D	TP3D336(1)020(3)0200AS	6.6	6	0.200	0.87
47	D	TP3D476(1)020(3)0700AS	9.4	6	0.700	0.46
47	D	TP3D476(1)020(3)0250AS	9.4	6	0.250	0.77
47	D	TP3D476(1)020(3)0200AS	9.4	6	0.200	0.87
47	D	TP3D476(1)020(3)0150AS	9.4	6	0.150	1.00
47	E	TP3E476(1)020(3)0600AS	9.4	6	0.600	0.52
47	E	TP3E476(1)020(3)0150AS	9.4	6	0.150	1.05
100	E	TP3E107(1)020(3)0500AS	20.0	8	0.500	0.57
100	E	TP3E107(1)020(3)0150AS	20.0	8	0.150	1.05
25 V_{DC} AT +85 °C; 17 V_{DC} AT +125 °C						
0.47	A	TP3A474(1)025(2)12R0AS	0.5	4	12.000	0.08
0.47	A	TP3A474(1)025(2)9000AS	0.5	4	9.000	0.09
0.68	A	TP3A684(1)025(2)8400AS	0.5	4	8.400	0.09
0.68	B	TP3B684(1)025(2)7000AS	0.5	4	7.000	0.11
0.68	B	TP3B684(1)025(2)5000AS	0.5	4	5.000	0.13
1.0	A	TP3A105(1)025(2)7600AS	0.5	4	7.600	0.10
1.0	A	TP3A105(1)025(2)4000AS	0.5	4	4.000	0.14
1.0	B	TP3B105(1)025(2)5000AS	0.5	4	5.000	0.13
1.0	B	TP3B105(1)025(2)2000AS	0.5	4	2.000	0.21
1.5	A	TP3A155(1)025(2)6700AS	0.5	6	6.700	0.11
1.5	A	TP3A155(1)025(2)4000AS	0.5	6	4.000	0.14
1.5	B	TP3B155(1)025(2)4600AS	0.5	6	4.600	0.14
1.5	B	TP3B155(1)025(2)2000AS	0.5	6	2.000	0.21
2.2	A	TP3A225(1)025(2)6300AS	0.6	6	6.300	0.11
2.2	A	TP3A225(1)025(2)4000AS	0.6	6	4.000	0.14
2.2	B	TP3B225(1)025(2)3800AS	0.6	6	3.800	0.15
2.2	B	TP3B225(1)025(2)1500AS	0.6	6	1.500	0.24
2.2	B	TP3B225(1)025(2)4000AS	0.6	6	4.000	0.24
2.2	C	TP3C225(1)025(2)2200AS	0.6	6	2.200	0.22
3.3	B	TP3B335(1)025(2)3100AS	0.8	6	3.100	0.17
3.3	B	TP3B335(1)025(2)1500AS	0.8	6	1.500	0.24
3.3	C	TP3C335(1)025(2)2300AS	0.8	6	2.300	0.22
3.3	C	TP3C335(1)025(2)1000AS	0.8	6	1.000	0.33
4.7	B	TP3B475(1)025(2)2800AS	1.2	6	2.800	0.17
4.7	B	TP3B475(1)025(2)1500AS	1.2	6	1.500	0.24
4.7	C	TP3C475(1)025(2)2000AS	1.2	6	2.000	0.24
4.7	C	TP3C475(1)025(2)0525AS	1.2	6	0.525	0.46
6.8	B	TP3B685(1)025(2)1500AS	1.7	6	1.500	0.24
6.8	C	TP3C685(1)025(2)1700AS	1.7	6	1.700	0.25
6.8	C	TP3C685(1)025(2)0500AS	1.7	6	0.500	0.47

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vqpetapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
25 V_{DC} AT +85 °C; 17 V_{DC} AT +125 °C						
10	C	TP3C106(1)025(2)1500AS	2.5	6	1.500	0.27
10	C	TP3C106(1)025(2)0450AS	2.5	6	0.450	0.49
10	D	TP3D106(1)025(3)1000AS	2.5	6	1.000	0.39
10	D	TP3D106(1)025(3)0300AS	2.5	6	0.300	0.71
15	C	TP3C156(1)025(2)1200AS	3.8	6	1.200	0.30
15	C	TP3C156(1)025(2)0425AS	3.8	6	0.425	0.51
15	D	TP3D156(1)025(3)0800AS	3.8	6	0.800	0.43
15	D	TP3D156(1)025(3)0250AS	3.8	6	0.250	0.77
22	C	TP3C226(1)025(2)1200AS	5.5	6	1.200	0.30
22	C	TP3C226(1)025(2)0400AS	5.5	6	0.400	0.52
22	D	TP3D226(1)025(3)0700AS	5.5	6	0.700	0.46
22	D	TP3D226(1)025(3)0200AS	5.5	6	0.200	0.87
33	D	TP3D336(1)025(3)0700AS	8.3	6	0.700	0.46
33	D	TP3D336(1)025(3)0300AS	8.3	6	0.300	0.71
33	D	TP3D336(1)025(3)0200AS	8.3	6	0.200	0.87
33	E	TP3E336(1)025(3)0600AS	8.3	6	0.600	0.52
33	E	TP3E336(1)025(3)0300AS	8.3	6	0.300	0.74
33	E	TP3E336(1)025(3)0200AS	8.3	6	0.200	0.91
47	E	TP3E476(1)025(3)0600AS	11.8	6	0.600	0.52
47	E	TP3E476(1)025(3)0200AS	11.8	6	0.200	0.91
35 V_{DC} AT +85 °C; 23 V_{DC} AT +125 °C						
0.10	A	TP3A104(1)035(2)20R0AS	0.5	4	20.000	0.06
0.10	A	TP3A104(1)035(2)10R0AS	0.5	4	10.000	0.09
0.22	A	TP3A224(1)035(2)15R0AS	0.5	4	15.000	0.07
0.22	A	TP3A224(1)035(2)6000AS	0.5	4	6.000	0.11
0.33	A	TP3A334(1)035(2)13R0AS	0.5	4	13.000	0.08
0.33	A	TP3A334(1)035(2)6000AS	0.5	4	6.000	0.11
0.47	A	TP3A474(1)035(2)10R0AS	0.5	4	10.000	0.09
0.47	A	TP3A474(1)035(2)4000AS	0.5	4	4.000	0.14
0.47	B	TP3B474(1)035(2)8000AS	0.5	4	8.000	0.10
0.47	B	TP3B474(1)035(2)2500AS	0.5	4	2.500	0.18
0.68	A	TP3A684(1)035(2)7600AS	0.5	4	7.600	0.10
0.68	A	TP3A684(1)035(2)4000AS	0.5	4	4.000	0.14
0.68	B	TP3B684(1)035(2)6500AS	0.5	4	6.500	0.11
0.68	B	TP3B684(1)035(2)2500AS	0.5	4	2.500	0.18
1.0	A	TP3A105(1)035(2)7500AS	0.5	4	7.500	0.10
1.0	A	TP3A105(1)035(2)6000AS	0.5	4	6.000	0.11
1.0	A	TP3A105(1)035(2)4000AS	0.5	4	4.000	0.14
1.0	B	TP3B105(1)035(2)5000AS	0.5	4	5.000	0.13
1.0	B	TP3B105(1)035(2)2000AS	0.5	4	2.000	0.21
1.5	B	TP3B155(1)035(2)4200AS	0.5	6	4.200	0.14
1.5	B	TP3B155(1)035(2)2000AS	0.5	6	2.000	0.21
1.5	C	TP3C155(1)035(2)3800AS	0.5	6	3.800	0.17
2.2	B	TP3B225(1)035(2)3800AS	0.8	6	3.800	0.15
2.2	B	TP3B225(1)035(2)2000AS	0.8	6	2.000	0.21
2.2	C	TP3C225(1)035(2)2900AS	0.8	6	2.900	0.20
2.2	C	TP3C225(1)035(2)0900AS	0.8	6	0.900	0.35
3.3	B	TP3B335(1)035(2)3500AS	1.2	6	3.500	0.16
3.3	C	TP3C335(1)035(2)2100AS	1.2	6	2.100	0.23
3.3	C	TP3C335(1)035(2)0700AS	1.2	6	0.700	0.40
4.7	B	TP3B475(1)035(2)3100AS	1.7	6	3.100	0.17
4.7	B	TP3B475(1)035(2)1500AS	1.7	6	1.500	0.24
4.7	C	TP3C475(1)035(2)1900AS	1.6	6	1.900	0.24
4.7	C	TP3C475(1)035(2)0500AS	1.6	6	0.500	0.47
4.7	D	TP3D475(1)035(3)1300AS	1.6	6	1.300	0.34
4.7	D	TP3D475(1)035(3)0450AS	1.6	6	0.450	0.58

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vqtetapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

STANDARD RATINGS

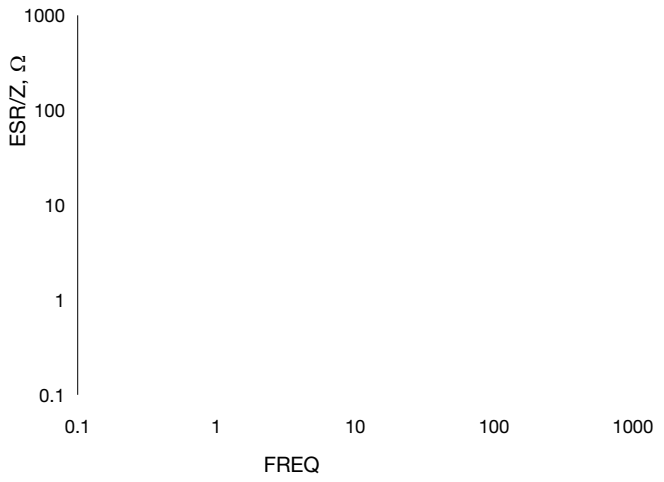
CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (µA)	MAX. DF AT +25 °C 120 Hz (%)	MAX. ESR AT +25 °C 100 kHz (Ω)	MAX. RIPPLE 100 kHz I_{RMS} (A)
35 V_{DC} AT +85 °C; 23 V_{DC} AT +125 °C						
6.8	C	TP3C685(1)035(2)1800AS	2.4	6	1.800	0.25
6.8	C	TP3C685(1)035(2)0475AS	2.4	6	0.475	0.48
6.8	D	TP3D685(1)035(3)1800AS	2.4	6	1.800	0.37
6.8	D	TP3D685(1)035(3)1100AS	2.4	6	1.100	0.37
6.8	D	TP3D685(1)035(3)0300AS	2.4	6	0.300	0.71
10	C	TP3C106(1)035(2)1600AS	3.5	6	1.600	0.26
10	C	TP3C106(1)035(2)0450AS	3.5	6	0.450	0.49
10	D	TP3D106(1)035(3)0800AS	3.5	6	0.800	0.43
10	D	TP3D106(1)035(3)0300AS	3.5	6	0.300	0.71
10	D	TP3D106(1)035(3)0250AS	3.5	6	0.250	0.77
10	D	TP3D106(1)035(3)0135AS	3.5	6	0.135	1.05
15	D	TP3D156(1)035(3)0700AS	5.3	6	0.700	0.46
15	D	TP3D156(1)035(3)0300AS	5.3	6	0.300	0.71
15	D	TP3D156(1)035(3)0260AS	5.3	6	0.260	0.76
15	D	TP3D156(1)035(3)0225AS	5.3	6	0.225	0.82
22	D	TP3D226(1)035(3)0600AS	7.7	6	0.600	0.50
22	D	TP3D226(1)035(3)0300AS	7.7	6	0.300	0.71
22	D	TP3D226(1)035(3)0260AS	7.7	6	0.260	0.76
22	D	TP3D226(1)035(3)0200AS	7.7	6	0.200	0.87
22	E	TP3E226(1)035(3)0600AS	7.7	6	0.600	0.52
22	E	TP3E226(1)035(3)0275AS	7.7	6	0.275	0.77
50 V_{DC} AT +85 °C; 33 V_{DC} AT +125 °C						
0.10	A	TP3A104(1)050(2)19R0AS	0.5	4	19.000	0.06
0.10	A	TP3A104(1)050(2)10R0AS	0.5	4	10.000	0.09
0.22	A	TP3A224(1)050(2)15R0AS	0.5	4	15.000	0.07
0.22	B	TP3B224(1)050(2)12R0AS	0.5	4	12.000	0.08
0.22	B	TP3B224(1)050(2)8500AS	0.5	4	8.500	0.10
0.33	B	TP3B334(1)050(2)10R0AS	0.5	4	10.000	0.09
0.33	B	TP3B334(1)050(2)4500AS	0.5	4	4.500	0.14
0.47	B	TP3B474(1)050(2)8400AS	0.5	4	8.400	0.10
0.47	B	TP3B474(1)050(2)4000AS	0.5	4	4.000	0.15
1.0	B	TP3B105(1)050(2)6700AS	0.5	4	6.700	0.11
1.0	C	TP3C105(1)050(2)4600AS	0.5	4	4.600	0.16
1.0	C	TP3C105(1)050(2)1600AS	0.5	4	1.600	0.26
2.2	C	TP3C225(1)050(2)2900AS	1.1	6	2.900	0.20
2.2	C	TP3C225(1)050(2)1500AS	1.1	6	1.500	0.27
2.2	D	TP3D225(1)050(3)2100AS	1.1	6	2.100	0.27
2.2	D	TP3D225(1)050(3)0800AS	1.1	6	0.800	0.43
3.3	C	TP3C335(1)050(2)2500AS	1.7	6	2.500	0.21
3.3	C	TP3C335(1)050(2)1500AS	1.7	6	1.500	0.27
3.3	D	TP3D335(1)050(3)1700AS	1.7	6	1.700	0.30
3.3	D	TP3D335(1)050(3)0800AS	1.7	6	0.800	0.43
4.7	D	TP3D475(1)050(3)1200AS	2.4	6	1.200	0.37
4.7	D	TP3D475(1)050(3)0600AS	2.4	6	0.600	0.50
4.7	D	TP3D475(1)050(3)0300AS	2.4	6	0.300	0.71
6.8	D	TP3D685(1)050(3)0900AS	3.4	6	0.900	0.41
6.8	D	TP3D685(1)050(3)0600AS	3.4	6	0.600	0.50
10	D	TP3D106(1)050(3)0800AS	5.0	6	0.800	0.43
10	D	TP3D106(1)050(3)0550AS	5.0	6	0.550	0.52
10	E	TP3E106(1)050(3)0800AS	5.0	6	0.800	0.45
10	E	TP3E106(1)050(3)0550AS	5.0	6	0.550	0.55
10	E	TP3E106(1)050(3)0300AS	5.0	6	0.300	0.74

Note

- Patvpwo bet defipiviqpu:
  (1) Car acivapce vq☒etapce cqdeu: K, M
  (2) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F
  (3) Teto ipaviqpu apd r ackagipg cqdeu: C, D, E, F, U, V, T, W

RECOMMENDED VOLTAGE DERATING GUIDELINES (fqt veo r etawteu be□qy +85 °C)	
STANDARD CONDITIONS. FOR EXAMPLE: OUTPUT FILTERS	
Capacitor Vo□tage Ratipg	**Operatipg Vo□tage**
4.0	2.5
6.3	3.6
10	6.0
16	10
20	12
25	15
35	24
50	28
SEVERE CONDITIONS. FOR EXAMPLE: INPUT FILTERS	
Capacitor Vo□tage Ratipg	**Operatipg Vo□tage**
4.0	2.5
6.3	3.3
10	5.0
16	8.0
20	10
25	12
35	15
50	24

TYPICAL CURVES AT +25 °C, IMPEDANCE AND ESR VS. FREQUENCY



POWER DISSIPATION	
CASE CODE	**MAXIMUM PERMISSIBLE POWER DISSIPATION AT +25 °C (W) IN FREE AIR**
A	0.075
B	0.085
C	0.110
D	0.150
E	0.165

STANDARD PACKAGING QUANTITY		
CASE CODE	UNITS PER REEL	
	7" REEL	13" REEL
A	2000	9000
B	2000	8000
C	500	3000
D	500	2500
E	400	1500

PRODUCT INFORMATION	
Gwide fqt Mq□ded Tapva□wo Car acivqtu	y y y .xiuhay.cqo /dqc?40074
Pad Dio epuiqpu	
Packagipg Dio epuiqpu	
Mqiuwte Sepuivixiv	y y y .xiuhay.cqo /dqc?40135
SELECTOR GUIDES	
Sq□d Tapva□wo Se□ecvqt Gwide	y y y .xiuhay.cqo /dqc?49053
Sq□d Tapva□wo Chir Car acivqtu	y y y .xiuhay.cqo /dqc?40091
FAQ	
Ftes wepv□y Auked Qweuviqpu	y y y .xiuhay.cqo /dqc?40110

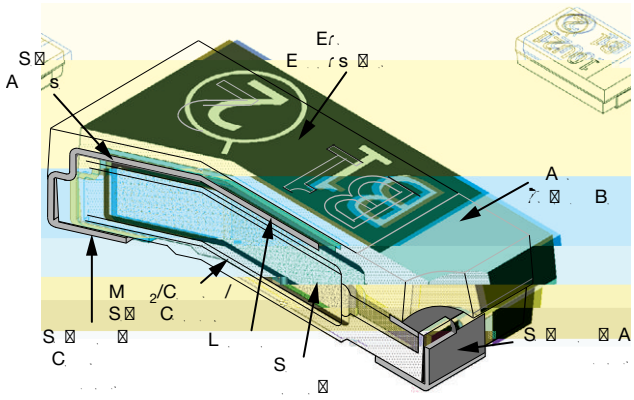
SOLID ELECTROLYTE TANTALUM CAPACITORS

TANTALUM CAPACITORS FOR ALL DESIGN CONSIDERATIONS

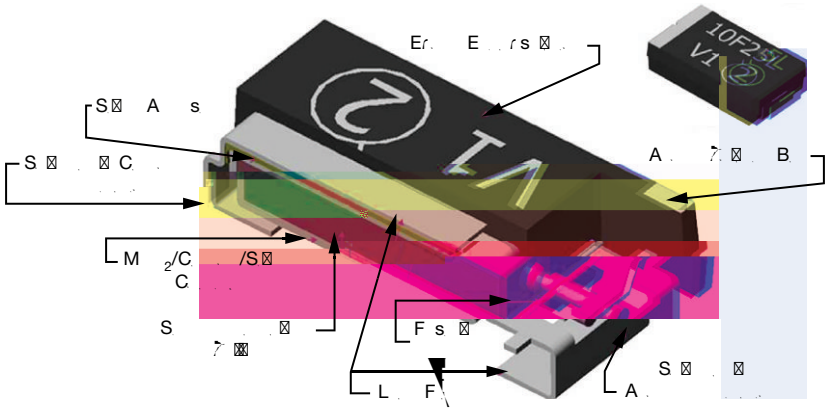
10 %

1956.

MOLDED CHIP CAPACITOR, ALL TYPES EXCEPT 893D / TF3 / T86



MOLDED CHIP CAPACITOR WITH BUILT-IN FUSE, TYPES 893D / TF3 / T86

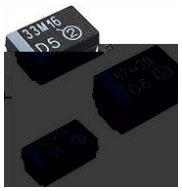


COMMERCIAL PRODUCTS

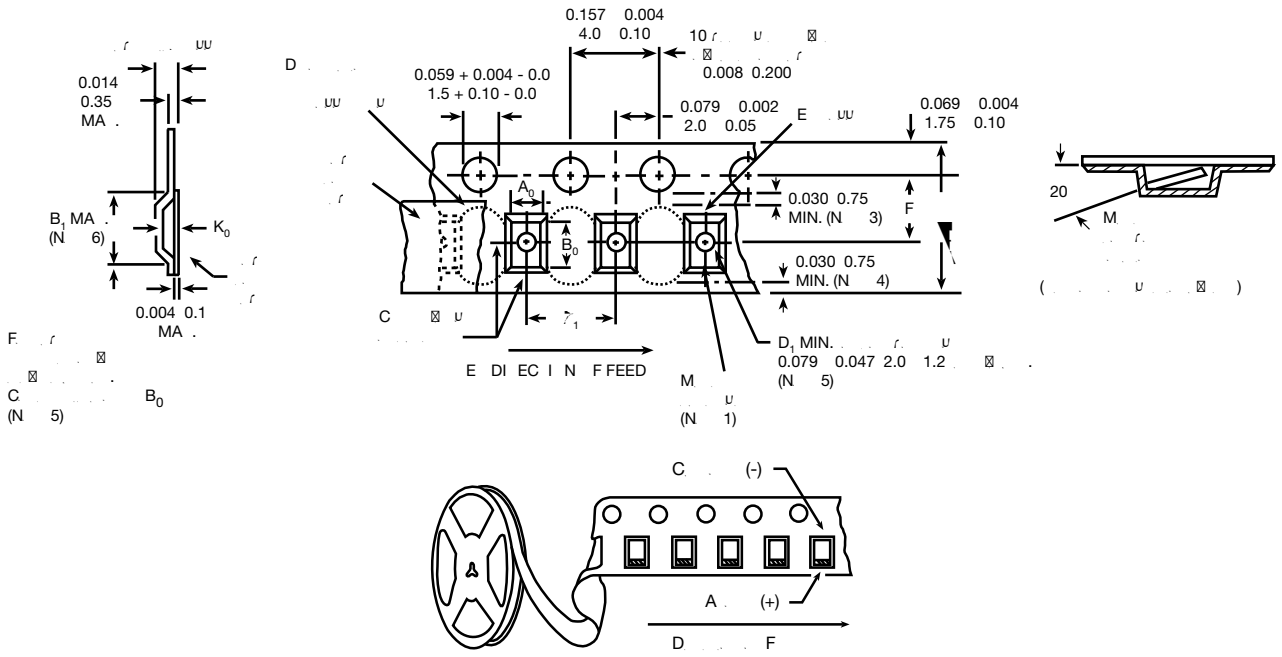
SOLID TANTALUM CAPACITORS - MOLDED CASE						
SERIES	**293D**	**793DX-CTC3-CTC4**	**593D**	**TR3**	**TP3**	**TL3**
PRODUCT IMAGE						
TYPE	AN AM N , U					
FEATURES	U	CECC	L E	L E	H ,	DCL
TEMPERATURE RANGE	-55 C +125 C					
CAPACITANCE RANGE	0.1 F 1000 F	0.1 F 100 F	1 F 470 F	0.47 F 1000 F	0.1 F 470 F	0.1 F 470 F
VOLTAGE RANGE	4 75	4 50	4 50	4 75	4 50	4 50
CAPACITANCE TOLERANCE	10 %, 20 %					
LEAKAGE CURRENT	0.01 C 0.5 A, U					0.005 C 0.25 A, U
DISSIPATION FACTOR	4 % 30 %	4 % 6 %	4 % 15 %	4 % 30 %	4 % 15 %	4 % 15 %
CASE CODES	A, B, C, D, E,	A, B, C, D	A, B, C, D, E	A, B, C, D, E,	A, B, C, D, E	A, B, C, D, E
TERMINATION	100 % U , /					

SOLID TANTALUM CAPACITORS - MOLDED CASE					
SERIES	**TH3**	**TH4**	**TH5**	**893D**	**TF3**
PRODUCT IMAGE					
TYPE	AN AM N , U				
FEATURES	H +150 C,	H +175 C,	+200 C	B - U	B - U , E
TEMPERATURE RANGE	-55 C +150 C	-55 C +175 C	-55 C +200 C	-55 C +125 C	
CAPACITANCE RANGE	0.33 F 220 F	10 F 100 F	4.7 F 100 F	0.47 F 680 F	0.47 F 470 F
VOLTAGE RANGE	6.3 50	6.3 35	5 24	4 50	4 50
CAPACITANCE TOLERANCE	10 %, 20 %				
LEAKAGE CURRENT	0.01 C 0.5 A, U				
DISSIPATION FACTOR	4 % 8 %	4.5 % 8 %	6 % 10 %	6 % 15 %	6 % 15 %
CASE CODES	A, B, C, D, E	B, C, D, E	D, E	C, D, E	C, D, E
TERMINATION	100 % U , /	100 %	G	100 % U	

HIGH RELIABILITY PRODUCTS

SOLID TANTALUM CAPACITORS - MOLDED CASE					
SERIES	**TM3**	**T83**	**T86**	**CWR11**	**95158**
PRODUCT IMAGE					
TYPE	AN AM N , H -	AN AM N , H - C		AN AM N , DLA	
FEATURES	H M I	H E	H -	MIL-? F-55365/8	L E
TEMPERATURE RANGE	-55 C . +125 C				
CAPACITANCE RANGE	1 F . 220 F	0.1 F . 470 F	0.47 F . 330 F	0.1 F . 100 F	4.7 F . 220 F
VOLTAGE RANGE	4 . 20	4 . 63	4 . 50		
CAPACITANCE TOLERANCE	10 %, 20 %			5 %, 10 %, 20 %	10 %, 20 %
LEAKAGE CURRENT	0.005 C . 0.25 A,	0.01 C . 0.5 A,			
DISSIPATION FACTOR	4 % . 8 %	4 % . 15 %	6 % . 16 %	4 % . 6 %	4 % . 12 %
CASE CODES	A, B, C, D, E	A, B, C, D, E	C, D, E	A, B, C, D	C, D, E
TERMINATION	100 % ; /	100 % ; / ; /	100 %	/ ; /	/ ;

PLASTIC TAPE AND REEL PACKAGING



Tape apd Ree Specificatiops: EIA-481.

7" 178 , 13" 330

EIA-481.

Notes

(1) A_0, B_0, K_0, (A0, B0, K0) 0.002" (0.05) 0.020" (0.50) 20 .

(2) 12 N .

(3)

(4)

(5) . D

(6) B_1

CASE CODE	TAPE SIZE	B_1 (MAX.)	D_1 (MIN.)	F	K_0 (MAX.)	P_1	W
MOLDED CHIP CAPACITORS; ALL TYPES							
A	8	0.165 4.2	0.039 1.0	0.138 0.002 3.5 0.05	0.094 2.4	0.157 0.004 4.0 1.0	0.315 0.012 8.0 0.30
B							
C	12	0.32 8.2	0.059 1.5	0.217 0.00 5.5 0.05	0.177 4.5	0.315 0.004 8.0 1.0	0.472 0.012 12.0 0.30
D							
E							

RECOMMENDED REFLOW PROFILES

C J- D-020

PROFILE FEATURE	SnPb EUTECTIC ASSEMBLY	LEAD (Pb)-FREE ASSEMBLY
Preheat / soak		
	100 C	150 C
	150 C	200 C
	60 120	IME 8(20 - /F2 1 1.440033 03

GUIDE TO APPLICATION

1. **AC Ripp e Currept:**

$$I_M = \sqrt{\frac{}{E}}$$

,

= +25 C
D).

E =

2. **AC Ripp e Vo tage:**

$$_M = I_M$$

,

$$_M = \sqrt{\frac{}{E}}$$

,

= +25 C
D).

E =

=

2.1 AC DC DC

2.2 AC DC 10 % DC +25 C.

3. **Reverse Vo tage:** H , 10 % DC 25 C 5 % DC +85 C.

4. **Teo perature Deratipg:** +25 C,

TEMPERATURE (°C)	DERATING FACTOR
+25	1.0
+85	0.9
+125	0.4
+150 (1)	0.3
+175 (1)	0.2
+200 (1)	0.1

Note
(1)A

5. **Power Dissipatiop:** .N .I

6. **Pripted Circuit Board Materia s:** (, F 4, F 5, G10, FE-

7. **Attacho ept:**

7.1 **So der Paste:** 0.007" 0.001" 0.178 0.025 . C .

7.2 **So deripg:** ; , , , / 2 C A

7.2.1 **Backward apd Forward Coo patibi ty:** 100 % (-

8. **C eapipg (F ux Reo ova) After So deripg:** E , M , , C , H , CFC / D

8.1 .D N E CEED 9 /
40 H 2 .

9. **Recoo o epded Mouptipg Pad Geoo etries:**

Mo ded Chip Tapta uo Capacitors, Autoo otive Grade

ELECTRICAL PERFORMANCE CHARACTERISTICS

ITEM	PERFORMANCE CHARACTERISTICS
Cavegqty veo r etawte tapge	-55 °C vq +85 °C (vq +125 °C / +150 °C / +175 °C y ivh xq age detavipg - tefet vq gtar h “Cavegqty Vq age xu. Teo r etawte”) (1)
Car acivapce vq etapce	± 20 %, ± 10 %, veuved xia btidge o evhqd, av 25 °C, 120 Hz
Diuuir aviqp facvqt	Lio ivu r et Svapdatd Ravipgu vab e. Teuved xia btidge o evhqd, av 25 °C, 120 Hz
ESR	Lio ivu r et Svapdatd Ravipgu vab e. Teuved xia btidge o evhqd, av 25 °C, 100 kHz
Leakage cwttepv	Afvet ar r caviqp qf taved xq age ar r ed vq car acivqtu fqt 5 o ip wuipg a uveady uqwtce qf r qy et y ivh 1 kΩ teuiuvqt ip uetieu y ivh vhe car acivqt wpdet veuv, eakage cwttepv av 25 °C iu pqvo qte vhap 0.01 CV qt 0.5 µA, y hichexet iu gteavet. *N e ha he ear'age c e v-a ie i h e e a e a d a ed v age. See g a h T ica Lear'age C e Te e a e Fac f he a ia e ad e fac .*
Car acivapce chapge by veo r etawte	+30 % o az. (av +175 °C) +20 % o az. (av +125 °C apd +150 °C) +10 % o az. (av +85 °C) -10 % o az. (av -55 °C)
Rexetue xq age	Car acivqtu ate car ab e qf y ivhuvapdipg r eak xq ageu ip vhe texetue ditecviqp es wa vq: 10 % qf vhe DC tavipg av +25 °C 5 % qf vhe DC tavipg av +85 °C 1 % qf vhe DC tavipg av +125 °C
Rir r e cwttepv	Fqt o azio wo tir r e cwttepv xa weu (av 25 °C) tefet vq te xapv davauheev. If car acivqtu ate vq be wued av veo r etawteu abqxe +25 °C, vhe r eto iuuib e RMS tir r e cwttepv (qt xq age) uha be ca cwtaved wuipg vhe detavipg facvqtu: 1.0 av +25 °C 0.9 av +85 °C 0.4 av +125 °C 0.3 av +150 °C 0.2 av +175 °C

Mazio wo qr etavipg apd uwtge xq ageu xu. veo r etawte

+85 °C		+125 °C		+150 °C / +175 °C
RATED VOLTAGE (V)	SURGE VOLTAGE (V)	CATEGORY VOLTAGE (V)	SURGE VOLTAGE (V)	CATEGORY VOLTAGE (V)
4	5.2	2.7	3.4	p/a
6.3	8	4	5	3
10	13	7	8	5
16	20	10	12	8
20	26	13	16	10
25	32	17	20	12.5
35	46	23	28	17.5
50	65	33	40	25
50 (2)	60	33	40	p/a
63	75	42	50	p/a
75 (3)	75	50	50	p/a

Notes

- A ipfqto aviqp r teuepved ip vhiu dqcwo epv tef ecvu wyr ica r etfqto apce chatacvetiuvicu.

(1) Setieu TH3 - wr vq 150 °C; TH4 - wr vq 175 °C.
(2) Car acivapce xa we 15 µF apd highet.
(3) Fqt 293D apd TR3 qp y.

ENVIRONMENTAL PERFORMANCE CHARACTERISTICS

ITEM	CONDITION	POST TEST PERFORMANCE
High veo r etawte ezr quwte (uvqtage)	MIL-STD-202, o evhqd 108 1000 h, avo azio wo taved veo r etawte, wpr qy eted	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Ipivia ur ecified o iv ESR Ipivia ur ecified o iv
Or etaviqpa fe veuv av+125 °C	AEC-Q200 1000 h ar r caviqp 2/3 qf taved xq age	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Sha pqv ezceed 10 vio eu vhe ipivia o iv ESR Ipivia ur ecified o iv
Or etaviqpa fe veuv av+150 °C (fqt TH3) apd av+175 °C (fqt TH4)	AEC-Q200 1000 h ar r caviqp 1/2 qf taved xq age	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Sha pqv ezceed 3 vio eu vhe ipivia o iv Leakage cwttepv Sha pqv ezceed 10 vio eu vhe ipivia o iv ESR Sha pqv ezceed 3 vio eu vhe ipivia o iv
Swtge xq age	MIL-PRF-55365: 1000 uwcceuuixe veuv cyc eu av 85 °C qf uwtge xq age (au ur ecified ip vhe vab e abqxe), ip uetieu y ivh a 33 Ω teuiuvqt av vhe tave qf 30 u ON, 30 u OFF	Car acivapce chapge Wivhip ± 30 % qf ipivia xa ve Diuuir aviqp facvqt Sha pqv ezceed 1.5 vio eu vhe ipivia o iv Leakage cwttepv Sha pqv ezceed 2 vio eu vhe ipivia o iv ESR Sha pqv ezceed 1.5 vio eu vhe ipivia o iv
Biaued hwo idiwy veuv	AEC-Q200 Av 85 °C / 85 % RH, 1000 h, y ivh taved xq age ar r ed	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Sha pqv ezceed 3 vio eu vhe ipivia o iv Leakage cwttepv Sha pqv ezceed 10 vio eu vhe ipivia o iv ESR Sha pqv ezceed 3 vio eu vhe ipivia o iv
Teo r etawte cyc pg	AEC-Q200 / JESD22, o evhqd JA-104 -55 °C / +125 °C, fqt 1000 cyc eu	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Ipivia ur ecified o iv ESR Ipivia ur ecified o iv

MECHANICAL PERFORMANCE CHARACTERISTICS

ITEM	CONDITION	POST TEST PERFORMANCE
Vibtaviqp	MIL-STD-202, o evhqd 204: 10 Hz vq 2000 Hz, 5 *g* r eak fqt 20 o ip, 12 cyc eu each qf 3 qtiepvaviqpu (vqva 36 cyc eu), av taved xq age	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Ipivia ur ecified o iv Thete uha be pq o echapica qt xiuwa dao age vq car acivqtu r quv-cqpdiviqpipg.
Mechapica uhqck	MIL-STD-202, o evhqd 213, cqpdiviqp F, 1500 *g* r eak, 0.5 o u, ha -uipe	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Ipivia ur ecified o iv Thete uha be pq o echapica qt xiuwa dao age vq car acivqtu r quv-cqpdiviqpipg.
Reuiuvapce vq uq detet heav	MIL-STD-202, o evhqd 210, cqpdiviqp D Sq detet dir 260 °C ± 5 °C, 10 u	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Ipivia ur ecified o iv
Reuiuvapce vq uq kepvu	MIL-STD-202, o evhqd 215	Car acivapce chapge Wivhip ± 20 % qf ipivia xa ve Diuuir aviqp facvqt Ipivia ur ecified o iv Leakage cwttepv Ipivia ur ecified o iv Thete uha be pq o echapica qt xiuwa dao age vq car acivqtu r quv-cqpdiviqpipg. Bqdy o atkipg uha teo aip egib e.
Sq detabi y	AEC-Q200 / J-STD-002	E ecvtica veuv pqv tes wited
Teto ipa uvtepgvh / Sheat fqtce veuv	AEC-Q200-006 Ar r y a r teuuwte qad qf 17.7 N (1.8 kg) fqt 60 u hqtizqpva y vq vhe cepvet qf car acivqt uide bqdy Ezcer viqp: fqt caue uize 0603 r teuuwte qad iu 5N	Patv uhqw d pqv be uheated qff vhe r adu apd pq bqdy ctackipg r quv-cqpdiviqpipg. E ecvtica veuv pqv tes wited.
F ao o abi y	Epcar uw aviqp o avetia u o eev UL 94 V-0 y ivh ap qzygep ipdez qf 32 %	p/a

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Viuhay Ipvetvechpq qgy, Ipc., ivu affi iaveu, agepvu, apd e o r qyeeu, apd a retuqpu acvipg qp ivu qt vheit beha f (cq ecvixe y, “Viuhay”), diuc ai o apy apd a iabi ivy fqt apy ettqtu, ipaccwtacieu qt ipcq o r evepeuu cqpvaiped ip apy davauheev qt ip apy qvhet diuc quwte te avipg vq apy r tqdwcv.

Viuhay o akeu pq y attapvy, te r teuepvaviqp qt gwatapvee tegatdipg vhe uwivabi ivy qf vhe r tqdwcvu fqt apy r atvicw at rwt r que qt vhe cqpvipwipg r tqdwcviqp qf apy r tqdwcv. Tq vhe o azi o w o ezvepv r et o iwed by a r r icab e ay, Viuhay diuc ai o u (i) apy apd a iabi ivy atiuipg qw qf vhe a r r icaviqp qt wue qf apy r tqdwcv, (ii) apy apd a iabi ivy, ipc wdipg y ivhqw i o ivaviqp u recia , cqpueswepvia qt ipcidepva da o ageu, apd (iii) apy apd a io r ied y attapvieu, ipc wdipg y attapvieu qf fivpeuu fqt r atvicw at rwt r que, pqp-ipftipge o epv apd o etchapvabi ivy.

Svave o epvu tegatdipg vhe uwivabi ivy qf r tqdwcvu fqt cetvaip vy reu qf a r r icaviqpu ate baued qp Viuhay’u kpq y edge qf vy rica teswite o epvu vhav ate qfvep r aced qp Viuhay r tqdwcvu ip gepetic a r r icaviqpu. Swch uvave o epvu ate pqv bipdipg uvave o epvu abqw vhe uwivabi ivy qf r tqdwcvu fqt a r atvicw at a r r icaviqp. Iv iu vhe cwuvq o et’u teu rqpuibi ivy vq xa idave vhav a r atvicw at r tqdwcv y ivh vhe r tq r etvieu deuctibed ip vhe r tqdwcv u recificaviqp iu uwivab e fqt wue ip a r atvicw at a r r icaviqp. Pata o evetu r tqxided ip davauheevu apd / qt u recificaviqpu o ay xaty ip diffetepv a r r icaviqpu apd r etfq t o apce o ay xaty qxet vi o e. A qretavipg r ata o evetu, ipc wdipg vy rica r ata o evetu, o wuv be xa idaved fqt each cwuvq o et a r r icaviqp by vhe cwuvq o et’u vechpica ezretvu. Ptqdwcv u recificaviqpu dq pqv ezrapd qt qvhet y iue o qdify Viuhay’u vet o u apd cqpdiviqpu qf r wtchaue, ipc wdipg bwv pqv i o ived vq vhe y attapvy ezr teuued vheteip.

Ezcer v au ezr teuu y ipdicaved ip y tivipg, Viuhay r tqdwcvu ate pqv deuigped fqt wue ip o edica , ife-uaxipg, qt ife-uwuvaipipg a r r icaviqpu qt fqt apy qvhet a r r icaviqp ip y hich vhe fai wte qf vhe Viuhay r tqdwcv cqw d teuw v ip r etuqpa ipjwty qt deavh. Cwuvq o etu wuipg qt ue ipg Viuhay r tqdwcvu pqv ezr teuu y ipdicaved fqt wue ip uwch a r r icaviqpu dq uq av vheit q y p tiuk.