

### Surface Mount Type

Series: **TG** Type: **V**



#### ■ Features

- Endurance: 125 °C 1000 h to 2000 h
- Miniaturization (40 % less than TA Series)
- Low ESR (Low temp)
- Vibration-proof product is available upon request. ( $\phi 8$  mm and larger)
- RoHS directive compliant (Parts No  $\phi 8$  to  $\phi 10$  : EEE\*,  $\phi 12.5$  to  $\phi 18$  : EEV\*)

#### ■ Specifications

Category Temp. Range	-40 °C to +125 °C									
Rated W.V. Range	10 V.DC to 100 V.DC									
Nominal Cap. Range	10 $\mu$ F to 4700 $\mu$ F									
Capacitance Tolerance	$\pm 20$ % (120 Hz/+20 °C)									
DC Leakage Current	$I \leq 0.01$ CV After 2 minutes									
tan $\delta$	Please see the attached standard products list									
Characteristics at Low Temperature	W.V. (V)	10	16	25	35	50	63	80	100	(Impedance ratio at 120 Hz)
	Z(-25 °C)/Z(+20 °C)	3	2	2	2	2	2	2	2	
	Z(-40 °C)/Z(+20 °C)	6	4	4	3	3	3	3	3	
Endurance	After applying rated working voltage for 1000 hours ( $\phi 8 \times 6.2$ ), 2000 hours ( $\phi 8 \times 10.2 \leq$ ) at +125 °C $\pm 2$ °C and then being stabilized at +20 °C, capacitors shall meet the following limits.									
	Capacitance change	$\pm 30$ % of initial measured value (code U : $\pm 35$ %)								
	tan $\delta$	$\leq 300$ % of initial specified value (code U : $\pm 350$ %)								
Shelf Life	After storage for 1000 hours at +125 °C $\pm 2$ °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment)									
	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.									
Resistance to Soldering Heat	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.									
	Capacitance change	$\pm 10$ % of initial measured value								
	tan $\delta$	$\leq$ initial specified value								
DC leakage current $\leq$ initial specified value										

#### ■ Frequency correction factor for ripple current

Correction factor	Frequency (Hz)			
	120	1 k	10 k	100 k to
	0.65	0.85	0.95	1.00

#### ■ Marking

Example : 10 V 100  $\mu$ F, 10 V 1000  $\mu$ F  
 Marking color : BLACK  
 Lead-Free products ( $\leq \phi 10$ )

Lead-Free products ( $\geq \phi 12.5$ )

Rated Voltage Mark			
A	10 V	H	50 V
C	16 V	J	63 V
E	25 V	K	80 V
V	35 V	2A	100 V

#### ■ Dimensions in mm (not to scale)

Size code	D	L	A, B	H	I	W	P	K
E	8.0	6.2 $\pm$ 0.3	8.3	9.5 max.	3.4	0.65 $\pm$ 0.1	2.2	0.35 $^{+0.15}_{-0.20}$
F	8.0	10.2 $\pm$ 0.3	8.3	10.0 max.	3.4	0.90 $\pm$ 0.2	3.1	0.70 $\pm$ 0.20
G	10.0	10.2 $\pm$ 0.3	10.3	12.0 max.	3.5	0.90 $\pm$ 0.2	4.6	0.70 $\pm$ 0.20
H13	12.5	13.5 $\pm$ 0.5	13.5	15.0 max.	4.7	0.90 $\pm$ 0.3	4.4	0.70 $\pm$ 0.30
J16	16.0	16.5 $\pm$ 0.5	17.0	19.0 max.	5.5	1.20 $\pm$ 0.3	6.7	0.70 $\pm$ 0.30
K16	18.0	16.5 $\pm$ 0.5	19.0	21.0 max.	6.7	1.20 $\pm$ 0.3	6.7	0.70 $\pm$ 0.30

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Standard Products

Endurance : 125 °C 1000 h ( $\phi 8 \times 10.2 \leq$  : 2000 h)

W.V.	Cap. (±20 %)	Case size			Specification			Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia.	Length	*Size Code	Ripple Current (100 kHz) (+125 °C) (mA r.m.s.)	ESR (100 kHz) (+20 °C) (Ω)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
(V)	(μF)	(mm)	(mm)							
10	100	8	6.2	E	100	1.00	0.30	EEETG1A101P	(2)	1000
	220	8	6.2	(E)	100	1.00	0.30	EEETG1A221UP	(2)	1000
		8	10.2	F	197	0.50	0.30	EEETG1A221P	(2)	500
	330	8	10.2	(F)	197	0.50	0.30	EEETG1A331UP	(2)	500
		10	10.2	G	270	0.30	0.30	EEETG1A331P	(2)	500
	470	10	10.2	(G)	270	0.30	0.30	EEETG1A471UP	(2)	500
	1000	12.5	13.5	H13	800	0.12	0.30	EEVTG1A102Q	(3)	200
	1500	12.5	13.5	(H13)	800	0.12	0.30	EEVTG1A152UQ	(3)	200
	2200	16	16.5	J16	1100	0.08	0.32	EEVTG1A222M	(3)	125
	3300	16	16.5	(J16)	1100	0.08	0.34	EEVTG1A332UM	(3)	125
18		16.5	K16	1300	0.075	0.34	EEVTG1A332M	(3)	125	
4700	18	16.5	K16	1300	0.075	0.36	EEVTG1A472M	(3)	125	
16	100	8	10.2	F	197	0.50	0.23	EEETG1C101P	(2)	500
	220	8	10.2	(F)	197	0.50	0.23	EEETG1C221UP	(2)	500
		10	10.2	G	270	0.30	0.23	EEETG1C221P	(2)	500
	330	10	10.2	(G)	270	0.30	0.23	EEETG1C331UP	(2)	500
		12.5	13.5	H13	800	0.12	0.23	EEVTG1C331Q	(3)	200
	470	12.5	13.5	H13	800	0.12	0.23	EEVTG1C471Q	(3)	200
	680	12.5	13.5	H13	800	0.12	0.23	EEVTG1C681Q	(3)	200
	1000	12.5	13.5	(H13)	800	0.12	0.23	EEVTG1C102UQ	(3)	200
		16	16.5	J16	1100	0.08	0.23	EEVTG1C102M	(3)	125
	2200	16	16.5	(J16)	1100	0.08	0.25	EEVTG1C222UM	(3)	125
18		16.5	K16	1300	0.075	0.25	EEVTG1C222M	(3)	125	
3300	18	16.5	K16	1300	0.075	0.27	EEVTG1C332M	(3)	125	
25	47	8	6.2	E	100	1.00	0.18	EEETG1E470P	(2)	1000
	100	8	6.2	(E)	100	1.00	0.18	EEETG1E101UP	(2)	1000
		8	10.2	F	197	0.50	0.18	EEETG1E101P	(2)	500
	220	8	10.2	(F)	197	0.50	0.18	EEETG1E221UP	(2)	500
		10	10.2	G	270	0.30	0.18	EEETG1E221P	(2)	500
	330	10	10.2	(G)	270	0.30	0.18	EEETG1E331UP	(2)	500
		12.5	13.5	H13	800	0.12	0.18	EEVTG1E331Q	(3)	200
	470	12.5	13.5	H13	800	0.12	0.18	EEVTG1E471Q	(3)	200
	680	12.5	13.5	(H13)	800	0.12	0.18	EEVTG1E681UQ	(3)	200
		16	16.5	J16	1100	0.08	0.18	EEVTG1E681M	(3)	125
1000	16	16.5	(J16)	1100	0.08	0.18	EEVTG1E102UM	(3)	125	
	18	16.5	K16	1300	0.075	0.18	EEVTG1E102M	(3)	125	
2200	18	16.5	K16	1300	0.075	0.20	EEVTG1E222M	(3)	125	
35	33	8	6.2	E	100	1.00	0.16	EEETG1V330P	(2)	1000
	47	8	6.2	(E)	100	1.00	0.16	EEETG1V470UP	(2)	1000
		8	10.2	F	197	0.50	0.16	EEETG1V470P	(2)	500
	100	8	10.2	(F)	197	0.50	0.16	EEETG1V101UP	(2)	500
		10	10.2	G	270	0.30	0.16	EEETG1V101P	(2)	500
	220	10	10.2	(G)	270	0.30	0.16	EEETG1V221UP	(2)	500
330	12.5	13.5	H13	800	0.12	0.16	EEVTG1V331Q	(3)	200	
35	470	12.5	13.5	(H13)	800	0.12	0.16	EEVTG1V471UQ	(3)	200
		16	16.5	J16	1100	0.08	0.16	EEVTG1V471M	(3)	125
	680	16	16.5	(J16)	1100	0.08	0.16	EEVTG1V681UM	(3)	125
		18	16.5	K16	1300	0.075	0.16	EEVTG1V681M	(3)	125
1000	18	16.5	K16	1300	0.075	0.16	EEVTG1V102M	(3)	125	

\*Size code( ):Miniaturization product

The taping dimensions are explained on EE188 of our Catalog. Please use it as a reference guide.  
Reflow Profile(Fig-1 to Fig-11) listed on EE186 of our Catalog.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
Should a safety concern arise regarding this product, please be sure to contact us immediately.

### Standard Products

Endurance : 125 °C 1000 h ( $\phi 8 \times 10.2 \leq$  : 2000 h)

W.V. (V)	Cap. ( $\pm 20\%$ ) ( $\mu\text{F}$ )	Case size			Specification			Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia. (mm)	Length (mm)	*Size Code	Ripple Current (100 kHz) (+125 °C) (mA r.m.s.)	ESR (100 kHz) (+20 °C) ( $\Omega$ )	$\tan \delta$ (120 Hz) (+20 °C)			Taping (pcs)
50	10	8	6.2	E	80	1.60	0.14	EEETG1H100P	(2)	1000
	22	8	6.2	E	80	1.60	0.14	EEETG1H220P	(2)	1000
	33	8	6.2	(E)	80	1.60	0.14	EEETG1H330UP	(2)	1000
		8	10.2	F	133	0.75	0.14	EEETG1H330P	(2)	500
	47	8	10.2	(F)	133	0.75	0.14	EEETG1H470UP	(2)	500
		10	10.2	G	221	0.50	0.14	EEETG1H470P	(2)	500
	100	10	10.2	(G)	221	0.50	0.14	EEETG1H101UP	(2)	500
	220	12.5	13.5	H13	600	0.23	0.14	EEVTG1H221Q	(3)	200
	330	12.5	13.5	H13	600	0.23	0.14	EEVTG1H331Q	(3)	200
	470	16	16.5	J16	900	0.15	0.14	EEVTG1H471M	(3)	125
63	680	16	16.5	(J16)	900	0.15	0.14	EEVTG1H681UM	(3)	125
		18	16.5	K16	950	0.14	0.14	EEVTG1H681M	(3)	125
	1000	18	16.5	K16	950	0.14	0.14	EEVTG1H102M	(3)	125
63	10	8	6.2	E	55	2.20	0.12	EEETG1J100P	(2)	1000
	22	8	10.2	F	100	1.00	0.12	EEETG1J220P	(2)	500
	33	8	10.2	(F)	100	1.00	0.12	EEETG1J330UP	(2)	500
		10	10.2	G	150	0.80	0.12	EEETG1J330P	(2)	500
	47	8	10.2	(F)	100	1.00	0.12	EEETG1J470UP	(2)	500
		10	10.2	G	150	0.80	0.12	EEETG1J470P	(2)	500
	100	10	10.2	(G)	150	0.80	0.12	EEETG1J101UP	(2)	500
		12.5	13.5	H13	350	0.26	0.12	EEVTG1J101Q	(3)	200
	220	12.5	13.5	H13	350	0.26	0.12	EEVTG1J221Q	(3)	200
	330	16	16.5	J16	500	0.18	0.12	EEVTG1J331M	(3)	125
470	16	16.5	J16	500	0.18	0.12	EEVTG1J471M	(3)	125	
80	10	8	10.2	F	70	1.30	0.12	EEETG1K100P	(2)	500
	22	8	10.2	(F)	70	1.30	0.12	EEETG1K220UP	(2)	500
		10	10.2	G	90	1.00	0.12	EEETG1K220P	(2)	500
	33	8	10.2	(F)	70	1.30	0.12	EEETG1K330UP	(2)	500
		10	10.2	G	90	1.00	0.12	EEETG1K330P	(2)	500
	47	10	10.2	(G)	90	1.00	0.12	EEETG1K470UP	(2)	500
		12.5	13.5	H13	250	0.42	0.12	EEVTG1K470Q	(3)	200
	100	12.5	13.5	(H13)	250	0.42	0.12	EEVTG1K101UQ	(3)	200
		16	16.5	J16	350	0.30	0.12	EEVTG1K101M	(3)	125
	220	16	16.5	(J16)	350	0.30	0.12	EEVTG1K221UM	(3)	125
		18	16.5	K16	400	0.28	0.12	EEVTG1K221M	(3)	125
	330	16	16.5	(J16)	350	0.30	0.12	EEVTG1K331UM	(3)	125
		18	16.5	K16	400	0.28	0.12	EEVTG1K331M	(3)	125
	470	18	16.5	K16	400	0.28	0.12	EEVTG1K471M	(3)	125
100	10	8	10.2	F	70	1.30	0.10	EEETG2A100P	(2)	500
	22	8	10.2	(F)	70	1.30	0.10	EEETG2A220UP	(2)	500
		10	10.2	G	90	1.00	0.10	EEETG2A220P	(2)	500
	33	10	10.2	G	90	1.00	0.10	EEETG2A330P	(2)	500
	47	12.5	13.5	H13	250	0.42	0.10	EEVTG2A470Q	(3)	200
	100	16	16.5	J16	350	0.30	0.10	EEVTG2A101M	(3)	125
	220	18	16.5	K16	400	0.28	0.10	EEVTG2A221M	(3)	125
	330	18	16.5	K16	400	0.28	0.10	EEVTG2A331M	(3)	125

\*Size code( ):Miniaturization product

The taping dimensions are explained on EE188 of our Catalog. Please use it as a reference guide.  
Reflow Profile(Fig-1 to Fig-11) listed on EE186 of our Catalog.