

TO.

DATE : 2005. .

SPECIFICATION

PRODUCT : STARCAP MODEL : DA SERIES

WRITTEN	CHECKED	APPROVED

總代理商:舜成有限公司 / Component Plus Inc. TEL:02-2898-4050 FAX:02-2896-9157





1. Scope

These are the specifications of STARCAP(electric double layer capacitor) which you are using.

Please study these applications and approved them.

2. Part number system

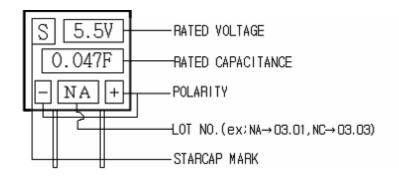
- SC
 DA
 5R5
 473
 H
 F

 ①
 ②
 ③
 ④
 ⑤
 ⑥
- ① STARCAP
- ② Series Name
- ③ Rated Voltage : 5.5Vdc
- (4) Capacitance : 223-0.022F, 473-0.047F, 104-0.1F
- (5) Lead Type : V Vertical Type, H Horizontal Type, A Ammo Taping Type
- 6 Pb-free

3. Characteristics

OPERATING TEMPERATURE	-25 ~ +70 ℃
RATED VOLTAGE	5.5 VDC
CAPACITANCE	0.022 ~ 0.1 F
CAPACITANCE TOLERANCE	-20 ~ 80 %
EQUIVALENT SERIES RESISTANCE	0.022F : LESS THAN 150 Ω 0.047F : LESS THAN 60 Ω 0.1F : LESS THAN 60 Ω
LEAKAGE CURRENT	0.022F : LESS THAN 50 //A 0.047F : LESS THAN 70 //A 0.1F : LESS THAN 150 //A

4. Marking

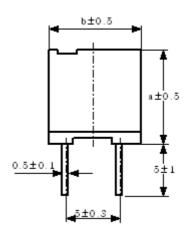


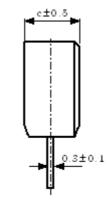




5. Construction And Dimension

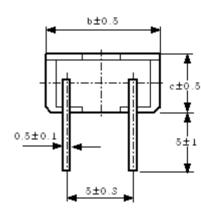
1) Vertical Type (V-type)

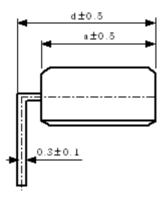




No. Type		Rated		Capacitance	Measurement (mm)		
INO.	Туре	Voltage	Capacitance	Tolerance	а	b	С
1	SCDA5R5223 V	5.5VDC	0.022F	-20 ~ 80%	10.5	9.5	5.0
2	SCDA5R5473 V	5.5VDC	0.047F	-20 ~ 80%	10.5	9.5	5.0
3	DCDA5R5104 V	5.5VDC	0.1F	-20 ~ 80%	12.5	11.5	5.0

2) Horizontal Type (H-type)

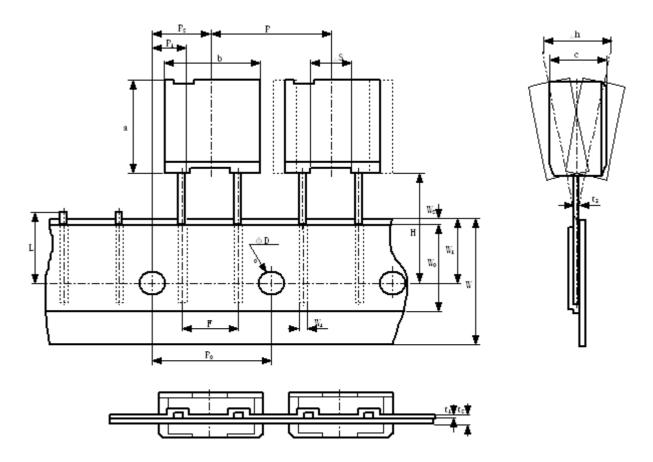




		Rated	Canaaitanaa	Capacitance	Measurement (mm)		
No.	Туре	Voltage	Capacitance	Tolerance	а	b	С
1	SCDA5R5223 V	5.5VDC	0.022F	-20 ~ 80%	10.5	9.5	5.0
2	SCDA5R5473 V	5.5VDC	0.047F	-20 ~ 80%	10.5	9.5	5.0
3	DCDA5R5104 V	5.5VDC	0.1F	-20 ~ 80%	12.5	11.5	5.0



3) Ammo Taping Type (A-type)



ITEM	SYMBOL	DIMENSION	ITEM		SYMBOL	DIME	ENSION								
PITCH	Р	12.7 ± 0.2	PORTION	PORTION TO OUT		11.0 +0,-1.0									
LENGTH 1	P1	3.85 ± 0.7			- TOTAL THICKNESS		TOTAL THICKNESS		TOTAL THICKNESS		TOTAL THICKNESS		t1	0.6	± 0.3
LENGTH 2	P2	6.35 ± 1.3		TUKILOO	t2	1	.5								
LEAD SPACING	F	5 +0.8,-0.2	DEVIATION ACROSS TAPE		∆h	0 ± 1.0									
CARRIER TAPE WIDTH	Ŵ	18.0±0.5	DEVEATION ALONG TAPE		∆s	0 ± 2.0									
HOLE DOWN TAPE WIDTH	₩o	MAX 12.5	LEAD ACROSS WIDTH		Ψ_4	0.5 ± 0.1									
POSITION OF HOLE	₩1	9.0 +0.5, -0.5	SECTION	SECTION THIORIESS		0.3 ± 0.1									
HOLE DOWN TAPE POSITION	₩2	0.5 ± 0.5		HEIGHT	а	10.5±0.5	★12.5±0.5								
COMPONENT BOTTOM PLANE	Н	18.5 ± 0.5	BODY DIMENSION	₩IDTH	Ь	9.5±0.5	★11.5±0.5								
DIAMETER OF HOLE	φDo	4.0 ± 0.1		THICKNESS	с	5.0±0.5	★ 5.0±0.5								

(★ 104 ONLY)





6. Specifications And Test Method

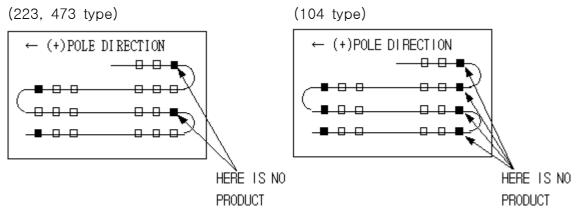
OPERATING TEMP, RANGE -25 °C +70 °C RATED VOLTAGE 5.5VDC TO SEE MEASURE METHOD CAPACITANCE TOLERANCE +80%, -20% TO SEE MEASURE METHOD EQUIV. SERIES, RES. (ESR) TO SEE CONSTRUCTION&DIM. FRE.: 14%, 1mA VOLT5, 5V, TO SEE CONSTRUCTION&DIM. FRE.: 14%, 1mA LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. FRE.: 10.022F~0.1F LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. FRE.: 10.022F~0.1F CAPACITANCE STAGE 3.50% OF INI. VAL STAGE CAPACITANCE STAGE 3.20±2°C 2 CAPACITANCE STAGE SPEC. VALUE 3 20±2°C CAPACITANCE STAGE SPEC. VALUE 3 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1%E, 10±1 SEC 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1%E, 10±1 SEC 10042 SEC VIBRATION ESR SPEC. VALUE AMPLITUDE: 1.5m RESISTANCE LC(30MIN) SPEC. VALUE SOLDER TEMP:230+5°C SOLDER ABILITY LEAD TERM				SPECIFICATION		Т	FOT		
RATED VOLTAGE 5.5VDC CAPACITANCE 0.022 ~ 0.1F TO SEE MEASURE METHOD CAPACITANCE TOLERANCE +80%, -20% TO SEE MEASURE METHOD EQUIV. SERIES. RES. (ESR) TO SEE CONSTRUCTION&DIM. FRE. : 14%, 1mÅ LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. TO SEE MEASURE METHOD LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. TO SEE MEASURE METHOD TEMPERATURE CAPACITANCE STAGE ±50% OF INI. VAL STAGE TEMPERATURE CAPACITANCE STAGE ±30% OF INI. VAL STAGE TEMPERATURE STAGE TEMPERATURE CAPACITANCE LC (30MIN) SPEC. VALUE 2 -25±2°C LC (30MIN) EAD TERMINAL SHALL NOT LCAD 20±2°C 5 20±2°C LEAD BEND STRENGTH LEAD TERMINAL SHALL NOT LCAD 11% and 10±1 SEC LOAD11% and 10±1 SEC LEAD BEND STRENGTH LEAD TERMINAL SHALL NOT LCAGMIN) SOLDER ABILITY LCAGMIN SPEC. VALUE APPEARANCE NO MARKED DEFECT VIBRATION ESP SOLDER TEMP:230+5°C INMERSION TIME54-0.58C DIP LEDVICHCY: 10-55Hz VIBRATION <td< td=""><td colspan="2"></td><td colspan="3"></td><td> </td><td colspan="3">TEST CONDITION</td></td<>							TEST CONDITION		
CAPACITANCE 0.022 ~ 0.1F TO SEE MEASURE METHOD CAPACITANCE TOLERANCE +80%, -20% TO SEE MEASURE METHOD EQUIV. SERIES. RES. (ESR) TO SEE CONSTRUCTION&DIM. FRE.: 19%, 1mÅ YOUT:5.5V, LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. FRE.: 10%, 1mÅ TO SEE MEASURE METHOD TO SEE MEASURE METHOD RES.: 0.022F~0.1F 1000 CAPACITANCE STAGE ±50% OF INI. VAL STAGE TEMPERATURE STAGE CAPACITANCE ESR 2 3 TIMES OF INI. VAL STAGE 20±2°C CAPACITANCE ESR 4 SPEC. VALUE 3 20±2°C CAPACITANCE STAGE SPEC. VALUE 3 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1kg. ANGLE 90°, 1CYCLE 3 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT LOADI 1kg. ANGLE 90°, 1CYCLE APPEARANCE NO WARKED DEFECT TEST TIME: 64									
CAPACITANCE +80%20% TO SEE TO SEE MEASURE METHOD EQUIV. SERIES. RES. (LSR) TO SEE CONSTRUCTION&DIM. FRE. 1 M/L, 1 MA VOLTS.5V. LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. FRE. 1 M/L, 1 MA VOLTS.5V. LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. FRE. 1 M/L, 1 MA VOLTS.5V. TEMPERATURE CAPACITANCE STAGE ±50% OF INI. VAL CAPACITANCE STAGE ±90% OF INI. VAL STAGE 1 20±2°C CAPACITANCE STAGE \$PEC. VALUE 1 20±2°C 2 -25±2°C LC (30MIN) 4 SPEC. VALUE 3 20±2°C 5 20±2°C LEAD STRENTH BE SEPARATED LOAD 1kg, 10±1 SEC LOAD:1kg ANGLE 90°, 1CYCLE LEAD STRENTH BE SEPARATED LOAD:1kg ANGLE 90°, 1CYCLE AMPLITUDE: 1.5mg VIBRATION ESR SPEC. VALUE AMPLITUDE: 1.5mg SOLDER ABILITY VIBRATION ESR SPEC. VALUE FRECURENCY: 10.55K2 DIRECTIONS: X.7 20IRECTIONS MUMIDITY LC(30MIN) SPEC. VALUE FRECURENCY: 1000 SOLDER SOLDER TEMP:230±5°C MUMIDITY						TO SEE	MEA	SURE METHOD	
EQUIV. SERIES. RES. (ESR) TO SEE CONSTRUCTION&DIM. FRE. : 1 H/k, 1 mA LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. FRE. : 1 H/k, 1 mA LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. TO SEE MEASURE METHOD RES. : 0.022F~0.1F 1002 TEMPERATURE CHARACTERISTICS CAPACITANCE ESR STAGE 2 ±30% OF INI. VAL ±30% OF INI. VAL STAGE 2 STAGE 2 -25±2°C LC (30MIN) STAGE ESR ±30% OF INI. VAL SPEC. VALUE STAGE 2 -25±2°C LEAD STRENGTH LC (30MIN) STAGE ESR 5PEC. VALUE 3 20±2°C LEAD STRENGTH LEAD BEND STRENGTH LEAD TERMINAL SHALL NOT ESR LOAD 1%2, 10~55k2 000, 1CYCLE VIBRATION RESISTANCE CAPACITANCE COMPCTANCE SPEC. VALUE AMPLITUDE: 1.5mm FREQUENCY: 10~55k2 VIBRATION RESISTANCE ESR SPEC. VALUE AMPLITUDE: 1.5mm FREQUENCY: 10~55k2 SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED DIRECTION: X.Y.Z 30HCCIONS TIME: 50.5SEC DIP LENGTH: TO 1.6mm FROM BOTTOM OF THE BODY HUMIDITY VICC300MIN) SPEC. VALUE SOLDER TEMP:20±3C SOLDER TEMP:20±5°C CONDITION SOLDER TEMP:20±5°C DIP LENGTH: TO 1.6mm FROM BOTTOM OF THE BODY SELF DISCHARGE CHARAGER									
LEAKAGE CURRENT (30MIN) TO SEE CONSTRUCTION&DIM. TO SEE CONSTRUCTION&DIM. TO SEE CONSTRUCTION&DIM. TO SEE MEASURE METHOD RES: 0.022F~0.1F 1002 TEMPERATURE ESR CAPACITANCE ESR \$TAGE 2 \$TIMES OF INI. VAL 2 STAGE 1 20±2°C 2 TEMPERATURE CHARACTERISTICS ESR LC (30MIN) \$TAGE 4 \$PEC. VALUE 5 STAGE 2 \$TIMES OF INI. VAL 2 2 2 25±2°C 2 LC (30MIN) \$TAGE ESR 5 \$PEC. VALUE 5 3 20±2°C 2 2 20±2°C 2 LEAD STRENGTH LC (30MIN) STAGE 5 \$PEC. VALUE 5 3 20±2°C 2 4 70±2°C 5 20±2°C LEAD STRENGTH LEAD STRENGTH BE SEPARATED LCAPACITANCE CAPACITANCE SPEC. VALUE CAPACITANCE AMPLITUDE: 1.5mm CAPACITANCE AMPLITUDE: 1.5mm CAPACITANCE AMPLITUDE: 1.5mm BE SEPARATED AMPLITUDE: 1.5mm DIRECTION:X, Y. 2 3DIRECTIONS TEST TIME: 6HOURS SOLDER ABILITY LEAD TERMINAL SHALL NOT LC (30MIN) DESC PRE. V LC (30MIN) SOLDER TEMP: 230±5°C IMMERSION TIME: 5±0.5SEC DIP LENGTH : TO 1.6mm FROM BOTTOM OF THE BODY SOLDER ABILITY ESR 1.2TIMES 1 OF SPE. V LC (30MIN) SOLDER TEMP: 240±8HOURS NO VOLTAGE : 5°C ILC (30MIN) SOLDER TEMP: 240±8HOURS NO VOLTAGE : 000 CHARGETIME: 240±8HOURS NO VOLTAGE : 000 CHARGE TIME: 240±8HOURS </td <td></td> <td></td> <td>TO SE</td> <td></td> <td>I&DIM.</td> <td></td> <td></td> <td></td>			TO SE		I&DIM.				
ESR 12 3 TIMES OF INI. VAL 430% OF INI. VAL STAGE 120±2°C TEMPERATURE CHARACTERISTICS ESR 4 SPEC. VALUE 1 20±2°C CAPACITANCE CAPACITANCE TAGE ESR SPEC. VALUE 3 20±2°C LC (30MIN) 4 SPEC. VALUE 3 20±2°C LC (30MIN) 5 SPEC. VALUE 3 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT BE SEPARATED LOAD 1kg . 10±1 SEC 5 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT BE SEPARATED LOAD 1kg . 10±5 SEC 10±5542 VIBRATION RESISTANCE CAPACITANCE SPEC. VALUE ANGLE 90°, 10×5542 VIBRATION RESISTANCE LC(30MIN) SPEC. VALUE DIRECTION:X, Y.2 30IRECTIONS APPEARANCE AMPLITUDE: 1.5m MERSION TIME:540.5SEC SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:203±5°C IMMERSION TIME:540.5SEC HUMIDITY ESR 1.2TIMES 1 OF SPEC. VAL TEMP:40±2°C IMMERSION TIME:240±8HOURS SOLDER ABILITY LC(30MIN) 1.2TIMES 1 OF SPEC. VALUE SOLDER TEMP:260±5°C IMMERSION TIME:240±8HOURS <t< td=""><td></td><td></td><td colspan="2">TO SEE CONSTRUCTION&DIM. T</td><td>VOLT:5.9 TO SEE</td><td colspan="3">VOLT:5.5V, TO SEE MEASURE METHOD</td></t<>			TO SEE CONSTRUCTION&DIM. T		VOLT:5.9 TO SEE	VOLT:5.5V, TO SEE MEASURE METHOD			
TEMPERATURE CAPACITANCE CAPACITANCE CHARACTERISTICS 2 br 3 TIMES OF INI. VAL SPEC. VALUE 1 20±2℃ LC (30MIN) 4 SPEC. VALUE 3 20±2℃ 3 20±2℃ 3 20±2℃ CAPACITANCE CAPACITANCE ESR STAGE SPEC. VALUE SPEC. VALUE 3 20±2℃ 4 3 20±2℃ LEAD STRENGTH LC (30MIN) ESR SPEC. VALUE 3 20±2℃ 4 70±2℃ LEAD STRENGTH LEAD BEND STRENGTH BESSTANCE LEAD TERMINAL SHALL NOT LC (30MIN) DAD 1kg ANGLE 90°, 1CYCLE AMPLITUDE: 1.5mm VIBRATION RESISTANCE CAPACITANCE SOLDER ABILITY SPEC. VALUE AMPLITUDE: 1.5mm 1.5mm VIBRATION RESISTANCE ESR SPEC. VALUE AMPLITUDE: 1.5mm 1.5mm VIBRATION RESISTANCE ESR SPEC. VALUE DISCHERTINE: 6HOURS SOLDER TEMP:30±5℃ SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:20±5℃ SOLDER TEMP:20±6±5℃ MUMIDITY CAPACITANCE 90%1 OF SPEC. VALUE SOLDER TEMP:20±6±5℃ SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SER SPEC. VALUE SOLDER TEMP:20±24 S		CAPACITANCE	STAGE	±50% OF INI.	VAL	CT A	~F	TEMDEDATUDE	
TEMPERATURE CHARACTERISTICS CAR ACTINANCE ESR STAGE STAGE TSO OT INI. VALUE 2 -25±2℃ LC (30MIN) 4 SPEC. VALUE 3 20±2℃ CAPACITANCE ESR STAGE STAGE SPEC. VALUE 3 20±2℃ LEAD STRENGTH LEAD TERMINAL SHALL NOT BE SEPARATED LOAD 1kg . 10±1 SEC 4 70±2℃ LEAD STRENGTH LEAD TERMINAL SHALL NOT BE SEPARATED LOAD 1kg . 10±1 SEC LOAD 1kg . 10±1 SEC LEAD STRENGTH LEAD TERMINAL SHALL NOT BE SEPARATED LOAD 1kg . 10±1 SEC LOAD 1kg . 10±1 SEC VIBRATION RESISTANCE ESR SPEC. VALUE AMPLITUDE: 1.5mm FROUBORY: 10-55tz SOLDER TEMP:230±5℃ SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED DIP LENGTH: TO 1.6mm FROM BOTTOM OF THE BODY SOLDER TEMP:230±5℃ HUMIDITY LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ① HUMIDITY:90 ~ 95% ② LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ② HUMIDITY:90 ~ 95% ② LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ② HUMIDITY:90 ~ 95% ② SOLDER ABILITY ESR SPEC. VALUE SOLDER TE		ESR	2	3 TIMES OF INI.	. VAL		JL		
TEMPERATURE ESH 4 SPEC. VALUE 2 2312 C CHARACTERISTICS CC (30MIN) SPEC. VALUE 3 20±2°C CAPACITANCE ESR STAGE ±30% OF INI, VAL 4 70±2°C LC (30MIN) SPEC. VALUE 5 20±2°C 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1kg , 10±1 SEC LOAD:1kg ANGLE 90°, 1CYCLE VIBRATION ESR SPEC. VALUE AMPLITUDE: 1.5mm ICYCLE VIBRATION ESR SPEC. VALUE AMPLITUDE: 10-55tz DIRECTION:X,Y,Z 3DIRECTIONS RESISTANCE LC(30MIN) SPEC. VALUE SOLDER TEMP:230±5°C IMMERSION TIME:5±0.SEC NO MARKED DEFECT CAPACITANCE 90%1 OF SPEC. VALUE SOLDER TEMP:230±5°C IMMERSION TIME:5±0.SEC NO VOLTAGE 1.2TIMES 1 OF SPEC. VALUE SOLDER TEMP:230±5°C IMMERSION TIME:5±0.SEC DIP LENGTH : TO 1.6mm FROM HUMIDITY LC(30MIN) 1.2TIMES 1 OF SPEC. VALUE SOLDER TEMP:240±8HOURS NO VOLTAGE APPLIED SOLDER ABILITY ESR SPEC. VALUE SOLDER TEMP:260±5°C <td< td=""><td></td><td>CAPACITANCE</td><td></td><td>±30% OF INI.</td><td>VAL</td><td></td><td></td><td></td></td<>		CAPACITANCE		±30% OF INI.	VAL				
CHARACTERISTICS LC (30MIN) SPEC. VALUE 3 20±2°c CAPACITANCE ±30% OF INI. VAL 4 70±2°c LC (30MIN) SPEC. VALUE 5 20±2°c LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1kg . 10±1 SEC 20±2°c LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1kg . 10±1 SEC 20±2°c VIBRATION ESR SPEC. VALUE AMPLITUDE: 1.5mm VIBRATION ESR SPEC. VALUE AMPLITUDE: 1.5mm VIBRATION ESR SPEC. VALUE DIRECTION:X.Y.Z 3DIRECTIONS APPEARANCE NO MARKED DEFECT TEST TIME: 6HOURS SOLDER ABILITY LEAD TERMINAL SHALL NOT IDP LENGTH : C0 1.6mm FROM BOTTOM OF THE BODY HUMIDITY ESR 1.2TIMES 1 OF SPE. V TEST TIME: 240±8HOURS APPEARANCE NO MARKED DEFECT NO VOLTAGE APPLIED SOLDER ABILITY ESR SPEC. VALUE IMMERSION TIME: 5±0.SSEC BULC(30MIN) 1.2TIMES 1 OF SPE. V TEST TIME: 240±8HOURS SOLDER ABILITY ESR SPEC. VALUE IMMERSION TIME: 5±0.SSEC				SPEC. VALU	E	2		-25±2℃	
ESR STAGE LC (30MIN) SPEC. VALUE 4 / 0±2 C 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1kg . 10±1 SEC LOAD 1kg . 10±1 SEC LEAD BEND STRENGTH BE SEPARATED LOAD:1kg ANGLE 90° . 1CYCLE AMPLITUDE: 1.5mm VIBRATION RESISTANCE CAPACITANCE SPEC. VALUE AMPLITUDE: 1.5mm FREQUENCY: 10~55Hz VIBRATION RESISTANCE LC(30MIN) SPEC. VALUE DIRECTION:X.Y.Z 3DIRECTIONS SOLDER TEMP:230±5°C SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:230±5°C MMERSION TIME:5±0.5SEC HUMIDITY CAPACITANCE 90%1 OF SPEC. VAL SOLDER TEMP:230±5°C MUMIDITY CAPACITANCE 90%1 OF SPEC. VAL TEMP:40±2°C HUMIDITY CAPACITANCE 90%1 OF SPEC. VAL TEMP:40±2°C LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95%.2 TEST TIME:240±8HOURS SOLDER ABILITY CAPACITANCE SPEC. VALUE MOVOLTAGE APPLIED SOLDER ABILITY CAPACITANCE SPEC. VALUE MOUTAGE APPLIED SOLDER ABILITY CAPACITANCE SPEC. VALUE MORE THAN 4.2V	CHARACTERISTICS	LC (30MIN)	I	SPEC. VALU	E	3		20±2°C	
ESR SPEC. VALUE 5 20±2°C LEAD STRENGTH LEAD TERMINAL SHALL NOT BE SEPARATED LOAD 1kg , 10±1 SEC LOAD:1kg ANGLE 90°, 1CYCLE LEAD BEND STRENGTH BE SEPARATED LOAD 1kg , 10±1 SEC LOAD:1kg ANGLE 90°, 1CYCLE VIBRATION RESISTANCE CAPACITANCE SPEC. VALUE AMPLITUDE: 1.5mm VIBRATION RESISTANCE LC(30MIN) SPEC. VALUE AMPLITUDE: 1.5mm SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:230±5°C MMERSION TIME:5±0.SEC SOLDER TEMP:230±5°C HUMIDITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:230±5°C MMERSION TIME:5±0.SEC SOLDER TEMP:230±5°C HUMIDITY LC(30MIN) 1.2TIMES ↓ OF SPEC. VAL TEMP:40±2°C HUMIDITY ESR 1.2TIMES ↓ OF SPEC. VAL TEST TIME:240±8HOURS SOLDER ABILITY CAPACITANCE SPEC. VALUE NO VOLTAGE APPLIED SOLDER ABILITY LC(30MIN) SPEC. VALUE SOLDER TEMP:260±5°C SOLDER ABILITY LC(30MIN) SPEC. VALUE SOLDER TEMP:260±5°C SOLDER ABILITY LC(30MIN) SPEC. VALUE SOLDER TEMP:260±5°C SOLDER ABILITY LC		CAPACITANCE		±30% OF INI.	VAL	4		70+2℃	
LC (30MIN) SPEC. VALUE U DIPOND LEAD STRENGTH LEAD TERMINAL SHALL NOT LOAD 1kg .10±1 SEC LEAD BEND STRENGTH BE SEPARATED LOAD 1kg .10±1 SEC VIBRATION RESISTANCE CAPACITANCE SPEC. VALUE AMPLITUDE: 1.5mm VIBRATION RESISTANCE ESR SPEC. VALUE AMPLITUDE: 1.5mm JUDITY ESR SPEC. VALUE DIPECTION:X.Y.Z 3DIRECTIONS APPEARANCE NO MARKED DEFECT TEST TIME: 6HOURS SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:230±5°C IMMERSION TIME:540.5SEC HUMIDITY CAPACITANCE 90%1 OF SPEC. VAL TEMP:40±2°C HUMIDITY:90 ~ 95%.12 LC(30MIN) 1.2TIMES ↓ OF SPE. V TEST TIME:240±8HOURS NO VOLTAGE APPLIED SOLDER ABILITY ESR SPEC. VALUE SOLDER TEMP:260±5°C SOLDER ABILITY ESR SPEC. VALUE SOLDER TEMP:		ESR		SPEC. VALU	E				
LEAD BEND STRENGTH DE SEPARATED LOAD:1kg ANGLE 90*,1CYCLE VIBRATION RESISTANCE CAPACITANCE SPEC. VALUE AMPLITUDE: 1.5mm VIBRATION RESISTANCE ESR SPEC. VALUE AMPLITUDE: 1.5mm SOLDER ABILITY LC(30MIN) SPEC. VALUE DIRECTION:X, Y, Z 3DIRECTIONS SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:230±5°C IMMERSION TIME:5±0.5SEC DIP LENGTH : TO 1.6mm FROM BOTTOM OF THE BODY HUMIDITY CAPACITANCE 90%1 OF SPEC. VAL TEMP:40±2°C HUMIDITY ESR 1.2TIMES ↓ OF SPE. V TEST TIME:240±8HOURS NO VOLTAGE APPLIED SOLDER ABILITY CAPACITANCE SPEC. VALUE SOLDER TEMP:200±5°C IMMERSION TIME:240±8HOURS NO VOLTAGE APPLIED BOLTOM OF THE BODY ESR 1.2TIMES ↓ OF SPE. V TEST TIME:240±8HOURS NO VOLTAGE APPLIED SOLDER ABILITY ESR SPEC. VALUE SOLDER TEMP:260±5°C IMMERSION TIME:10±0.5SEC LC(30MIN) SPEC. VALUE SOLDER TEMP:260±5°C IMMERSION TIME:10±0.5SEC SOLDER ABILITY ESR SPEC. VALUE SOLDER TEMP:260±5°C IMMERSION TIME:10±0.5SEC IMMERSION TIME:10±0.5SEC SOLDER ABILITY ESR SPEC. VALUE SOLDER TEM		LC (30MIN)	0	SPEC. VALU	E	<u>с</u>		20±2 C	
CAPACITANCE SPEC. VALUE AMPLITUDE: 1.5mm VIBRATION RESISTANCE ESR SPEC. VALUE AMPLITUDE: 1.5mm LC(30MIN) SPEC. VALUE DIRECTION:X,Y.Z 3DIRECTIONS APPEARANCE NO MARKED DEFECT TEST TIME: 6HOURS SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED SOLDER TEMP:230±5 °C IMMERSION TIME:5±0.5SEC DIP LENGTH : TO 1.6mm FROM BOTTOM OF THE BODY HUMIDITY CAPACITANCE 90%1 OF SPEC. VAL TEMP:40±2 °C HUMIDITY:90 ~ 95% ⊡ LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ⊡ SOLDER ABILITY ESR 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ⊡ LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ⊡ SOLDER ABILITY CAPACITANCE SPEC. VALUE SOLDER TEMP:260±5 °C SOLDER ABILITY ESR SPEC. VALUE SOLDER TEMP:260±5 °C	LEAD STR	ENGTH	LEAD		NOT	LOAD 1	۲g , ۲	10±1 SEC	
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VIBRATION RESISTANCE ESR SPEC. VALUE FREQUENCY: 10~55H2 DIRECTION:X,Y,Z 30IRECTIONS DIRECTION:X,Y,Z 30IRECTIONS DIRECTION							IDE:	1.5mm	
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SOLDER ABILITY LEAD TERMINAL SHALL NOT BE SEPARATED IMMERSION TIME:5±0.5SEC DIP LENGTH : TO 1.6mm FROM BOTTOM OF THE BODY HUMIDITY CAPACITANCE 90%1 OF SPEC. VAL TEMP:40±2°C LC(30MIN) 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% J APPEARANCE NO MARKED DEFECT NO VOLTAGE APPLIED SOLDER ABILITY CAPACITANCE SPEC. VALUE SOLDER TEMP:260±5°C SOLDER ABILITY ESR NO MARKED DEFECT NO VOLTAGE 5.0V SELF LC(30MIN) SPEC. VALUE SOLDER THE BODY SELF CAPACITANCE MORE THAN 4.2V CHARGING CONDITION RESISTANCE:0Q CHARGE TIME:24h SELF CAPACITANCE MORE THAN 4.2V NEGLIGE-NCE CONDITION IN OPEN STATE TEMP:LESS THAN 25°C HUMIDITY:LESS THAN 25°C HUMIDITY:LESS THAN 25°C ENDURANCE CAPACITANCE ±30% OF SPEC. VAL TEMP:70±2°C TEMP:22°C ENDURANCE LC(30MIN) 3TIMES ↓ OF SPE. V TEMP:70±2°C TEST TIME : 1000±24HOURS APPLIED APPEARANCE		APPEARANCE	NC) MARKED DEFEC	T				
HUMIDITY ESR 1.2TIMES ↓ OF SPE. V HUMIDITY: 00 ~ 95%. D LC(30MIN) 1.2TIMES ↓ OF SPE. V TEST TIME:240±8HOURS APPEARANCE NO MARKED DEFECT NO VOLTAGE APPLIED SOLDER ABILITY CAPACITANCE SPEC. VALUE SOLDER TEMP:260±5°C LC(30MIN) SPEC. VALUE IMMERSION TIME:10±0.5SEC DIP LENGTH : TO 1,6mm FROM APPEARANCE NO MARKED DEFECT DIP LENGTH : TO 1,6mm FROM BOTTOM OF THE BODY SELF LC(30MIN) SPEC. VALUE DIP LENGTH : TO 1,6mm FROM DISCHARGE CAPACITANCE NO MARKED DEFECT VOLTAGE:5.0V RESISTANCE:OQ MORE THAN 4.2V VOLTAGE:104:24h CHARGE TIME:24h DISCHARGE CAPACITANCE MORE THAN 4.2V VOLTAGE:0Q CHARGE TIME:24h APPEARANCE MORE THAN 4.2V NEGLIGE-NCE NO PEN STATE TEMP:LESS THAN 25°C DISCHARGE CAPACITANCE ±30% OF SPEC. VAL NEGLIGE-NCE NOW: THAN 25°C ENDURANCE ESR 4TIMES ↓ OF SPE. V TEMP:70±2°C TEST TIME: 1000±24HOURS APPEARANCE NO MARKED DEFECT APPELIED VOLTAGE: 5.5V DC TEST TIME: 5.5V DC APPEA	SOLDER ABILITY		LEAD TERMINAL SHALL NOT BE SEPARATED			IMMERSION TIME:5±0.5SEC DIP LENGTH : TO 1.6mm FROM			
HUMIDITY ESR 1.2TIMES ↓ OF SPE. V HUMIDITY:90 ~ 95% ⊒ LC(30MIN) 1.2TIMES ↓ OF SPE. V TEST TIME:240±8HOURS APPEARANCE NO MARKED DEFECT NO VOLTAGE APPLIED SOLDER ABILITY CAPACITANCE SPEC. VALUE SOLDER TEMP:260±5 °C LC(30MIN) SPEC. VALUE SOLDER TEMP:260±5 °C LC(30MIN) SPEC. VALUE DIP LENGTH : TO 1.6mm FROM APPEARANCE NO MARKED DEFECT BOTTOM OF THE BODY VOLTAGE:5.0V APPEARANCE NO MARKED DEFECT SELF CAPACITANCE MORE THAN 4.2V VOLTAGE:5.0V DISCHARGE CAPACITANCE MORE THAN 4.2V VOLTAGE:5.0V RESISTANCE:0.00 CHARGING VOLTAGE:5.0V RESISTANCE:0.0Q CHARACTERISTICS CAPACITANCE MORE THAN 4.2V NEGLIGE-NCE IN OPEN STATE ENDURANCE CAPACITANCE ±30% OF SPEC. VAL NOBUTION 24h NEGLIGENCE IN OPEN STATE ENDURANCE ESR 4TIMES ↓ OF SPE. V TEMP:70±2°C TEST TIME : 1000±24HOURS APPEARANCE NO MARKED DEFECT APPLIED VOLTAGE : 5.5V DC APPLIED VOLTAGE : 5.5V DC APPEARANCE		CAPACITANCE	90%↑ OF SPEC. VAL			TFMP:40+2℃			
Image: Solution in the second sec		ESR	1.2	V	HUMIDITY:90 ~ 95%고				
SOLDER ABILITYCAPACITANCESPEC. VALUESOLDER TEMP:260±5℃SOLDER ABILITYESRSPEC. VALUEIMMERSION TIME:10±0.5SECLC(30MIN)SPEC. VALUEDIP LENGTH : TO 1.6mm FROMAPPEARANCENO MARKED DEFECTBOTTOM OF THE BODYSELF DISCHARGE CHARACTERISTICSCAPACITANCEMORE THAN 4.2VCHARGING CONDITIONVOLTAGE:5.0V RESISTANCE:0Ω CHARGE TIME:24hENDURANCECAPACITANCEMORE THAN 4.2VCHARGING CONDITIONVOLTAGE:5.0V RESISTANCE:0Ω CHARGE TIME:24hENDURANCECAPACITANCEMORE THAN 4.2VNEGLIGE-NCE CONDITIONIN OPEN STATE TEMP:LESS THAN 25℃ HUMIDITY:LESS THAN 25℃ HUMIDITY:LESS THAN 25℃ TEST TIME : 1000±24HOURS APPEARANCECAPACITANCE ±30% OF SPEC. VAL ESRTEMP:70±2℃ TEST TIME : 1000±24HOURS APPLIED VOLTAGE : 5.5V DCSUDCE VOLTACECAPACITANCE ±90% OF SPEC. VAL ESRTEMP:70±2℃, VOLTAGE:6.3V CHARGE:30SEC, DISCHARGE:5MIN. 20SEC, OVELET		LC(30MIN)	1.2	TIMES ↓ OF SPE.	V	TEST TIME:240±8HOURS			
SOLDER ABILITY ESR SPEC. VALUE IMMERSION TIME:10±0.5SEC SOLDER ABILITY LC(30MIN) SPEC. VALUE DIMMERSION TIME:10±0.5SEC APPEARANCE NO MARKED DEFECT DIP LENGTH : TO 1.6mm FROM BOTTOM OF THE BODY BOTTOM OF THE BODY SELF DISCHARGE CAPACITANCE MORE THAN 4.2V CHARGING CONDITION VOLTAGE:5.0V RESISTANCE:0Ω CHARGE TIME:24h LC(30MIN) MORE THAN 4.2V NEGLIGE-NCE CONDITION VOLTAGE:5.0V RESISTANCE:0Ω CHARGE TIME:24h ENDURANCE CAPACITANCE MORE THAN 4.2V NEGLIGE-NCE CONDITION VOLTAGE:5.0V RESISTANCE:0Ω CHARGE TIME:24h ENDURANCE CAPACITANCE ±30% OF SPEC. VAL NEGLIGE-NCE CONDITION IN OPEN STATE TEMP:10±2°C ENDURANCE CAPACITANCE ±30% OF SPEC. VAL TEMP:70±2°C TEST TIME : 1000±24HOURS APPLIED VOLTAGE : 5.5V DC APPEARANCE NO MARKED DEFECT TEMP:70±2°C, VOLTAGE:6.3V APPEARANCE NO MARKED DEFECT CHARGE:30SEC, VOLTAGE:6.3V CAPACITANCE ±90% OF SPEC. VAL TEMP:70±2°C, VOLTAGE:6.3V ESR 1.2TIMES ↓ OF SPE. V CHARGE:30SEC, VOLTAGE:6.3V		APPEARANCE	NC) MARKED DEFEC	т				
SOLDER ABILITYESRSPEC. VALUEIMMERSION TIME:10±0.5SECLC(30MIN)SPEC. VALUEDIP LENGTH : TO 1.6mm FROM BOTTOM OF THE BODYAPPEARANCENO MARKED DEFECTBOTTOM OF THE BODYSELF DISCHARGE CHARACTERISTICSCAPACITANCEMORE THAN 4.2VCHARGING CONDITIONVOLTAGE:5.0V RESISTANCE:0Q CHARGE TIME:24hENDURANCECAPACITANCEMORE THAN 4.2VNEGLIGE-NCE CONDITION24h NEGLIGENCE IN OPEN STATE TEMP:LESS THAN 25°C HUMIDITY:LESS 100000000000000000000000000000000000		CAPACITANCE	SPEC. VALUE		SOLDER TEMP:260+5°C				
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SELF CAPACITANCE MORE THAN 4.2V CHARGING CONDITION VOLTAGE:5.0V RESISTANCE:0Q CHARGE TIME:24h DISCHARGE CHARACTERISTICS CAPACITANCE MORE THAN 4.2V REGLIGE-NCE CONDITION 24h NEGLIGENCE IN OPEN STATE TEMP:LESS THAN 25°C HUMIDITY:LESS 1000CYCLE HUMIDITY:LESS 1000CYCLE HUMIDITY:LESS 1000CYCLE HUMIDITY:LESS 1000CYCLE HUMIDITY:LESS 10000CYCLE HUMIDITY:LESS 1000CYCLE HUMIDITY:LESS 1000CYCLE HUMIDITY:	JOLDEN ADIENT	LC(30MIN)		SPEC. VALUE		DIP LENGTH : TO 1.6mm FF			
SELF DISCHARGE CHARACTERISTICSCAPACITANCEMORE THAN 4.2VCHARGING CONDITIONRESISTANCE:0Ω CHARGE TIME:24hMORE THAN 4.2VMORE THAN 4.2VNEGLIGE-NCE CONDITION24h NEGLIGENCE IN OPEN STATE TEMP:LESS THAN 25°C HUMIDITY:LESS THAN RH 70%ENDURANCECAPACITANCE ±30% OF SPEC. VAL ESRTEMP:70±2°C TEST TIME : 1000±24HOURS APPEARANCETEMP:70±2°C TEST TIME : 1000±24HOURS APPLIED VOLTAGE : 5.5V DCSUPCE VOLTACECAPACITANCE ±90% OF SPEC. VAL ESRTEMP:70±2°C, VOLTAGE:6.3V CHARGE:5MIN.		APPEARANCE	NC) MARKED DEFEC	Т				
DISCHARGE CHARACTERISTICSCAPACITANCEMORE THAN 4.2VNEGLIGE-NCE CONDITION24h NEGLIGENCE IN OPEN STATE TEMP:LESS THAN 25°C HUMIDITY:LESS THAN 25°C HUMIDITY:LESS THAN 25°C HUMIDITY:LESS THAN 25°C HUMIDITY:LESS THAN 25°C TEMP:10001100NENDURANCECAPACITANCE±30% OF SPEC. VAL TESRTEMP:70±2°C TEST TIME : 1000±24HOURS APPLIED VOLTAGE : 5.5V DCENDURANCENO MARKED DEFECTTEMP:70±2°C TEST TIME : 1000±24HOURS APPLIED VOLTAGE : 5.5V DCSUPCE VOLTACECAPACITANCE±90% OF SPEC. VAL TESRTEMP:70±2°C, VOLTAGE:6.3V CHARGE:30SEC., DISCHARGE:5MIN. 20SEC						ana	RESI	ISTANCE:0Ω	
ENDURANCE ESR 4TIMES ↓ OF SPE. V TEMP:70±2℃ LC(30MIN) 3TIMES ↓ OF SPE. V TEST TIME : 1000±24HOURS APPEARANCE NO MARKED DEFECT APPLIED VOLTAGE : 5.5V DC CAPACITANCE ±90% OF SPEC. VAL TEMP:70±2℃, VOLTAGE:6.3V SUPCE VOLTACE ESR 1.2TIMES ↓ OF SPE. V CHARGE:30SEC., DISCHARGE:5MIN.					NEGLI		GE-NCE ITION IN OPEN STATE TEMP:LESS THA HUMIDITY:LESS		
ENDURANCE ESh 411MES ↓ OF SPE. V TEST TIME : 1000±24HOURS LC(30MIN) 3TIMES ↓ OF SPE. V APPLIED VOLTAGE : 5.5V DC APPEARANCE NO MARKED DEFECT APPLIED VOLTAGE : 5.5V DC CAPACITANCE ±90% OF SPEC. VAL TEMP:70±2°C, VOLTAGE:6.3V SUDCE VOLTACE ESR 1.2TIMES ↓ OF SPE. V CHARGE:30SEC., DISCHARGE:5MIN.		CAPACITANCE				TEST TIME : 1000±24HOURS			
LC(30MIN) 3TIMES ↓ OF SPE. V APPLIED VOLTAGE : 5.5V DC APPEARANCE NO MARKED DEFECT APPLIED VOLTAGE : 5.5V DC CAPACITANCE ±90% OF SPEC. VAL TEMP:70±2℃, VOLTAGE:6.3V CHARGE:30SEC., DISCHARGE:5MIN. SUDCE VOLTACE ESR 1.2TIMES ↓ OF SPE. V				· · · · · · · · · · · · · · · · · · ·					
APPEARANCE NO MARKED DEFECT CAPACITANCE ±90% OF SPEC. VAL TEMP:70±2℃, VOLTAGE:6.3V SUDCE VOLTACE ESR 1.2TIMES ↓ OF SPE. V CHARGE:30SEC., DISCHARGE:5MIN.				•					
ESR 1.2TIMES ↓ OF SPE. V CHARGE:30SÉC., DISCHARGE:5MIN.		APPEARANCE	NC	MARKED DEFEC	Т				
		CAPACITANCE	$\pm 90\%$	OF SPEC. VAL					
		ESR		•					
LC(30MIN) 1.2TIMES ↓ OF SPE. V CHARGE RESISTANCE:150~560Ω	JUNGE VULIAGE	LC(30MIN)				GE RESISTANCE:150~560Ω			
APPEARANCE NO MARKED DEFECT DISCHARGE RESISTANCE:02		APPEARANCE	NO M	IARKED DEFECT	DISCH	IARGE RESISTANCE:00			





7. Packing Specification (Ammo Packing)

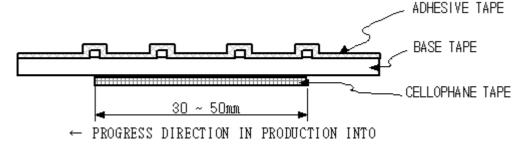
The tape with capacitor is creased each 25 pitches and packed zigzag into the case, when body of the capacitor is piled on other body under it.



8. Splicing of tape

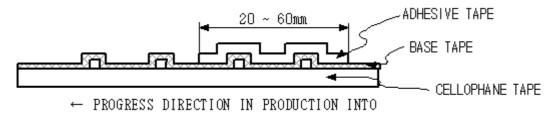
1) When base tape is spliced;

Base tape shall be spliced by cellophane tape

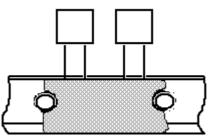


2) When adhesive tape is spliced ;

Adhesive tape shall be spliced with overlapping



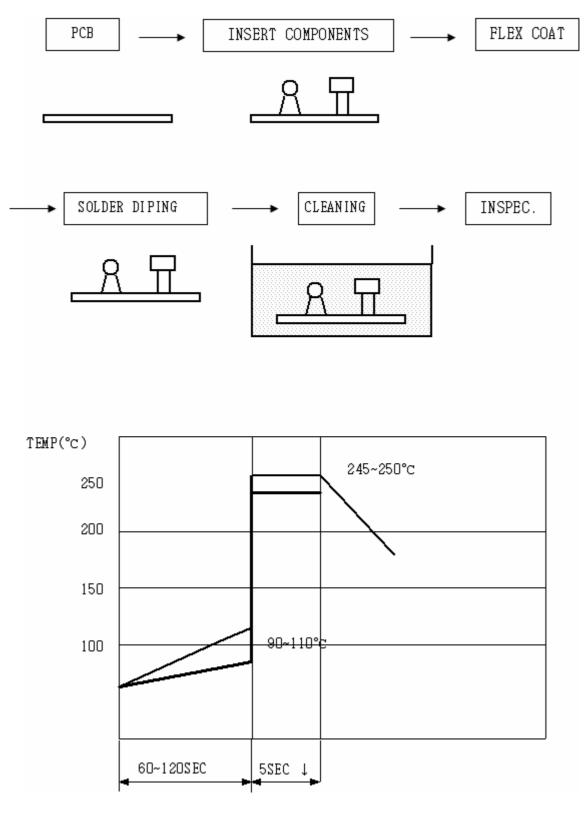
3) When both tapes are spliced at a time ;Base tape and adhesive tape shall be spliced with splicing tape





8. Solder heating condition

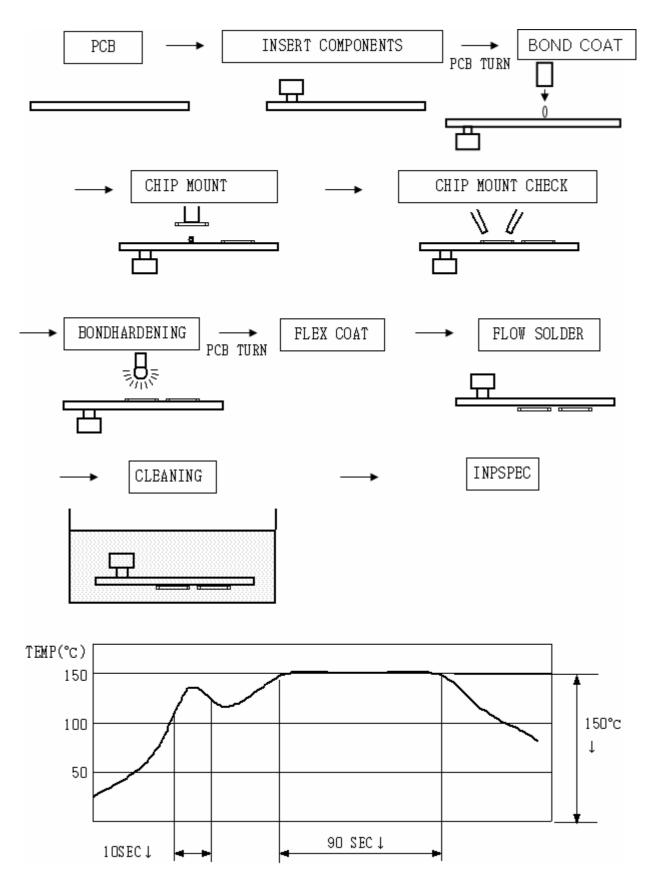
1) Solder dipping method



2) Reflow soldering method



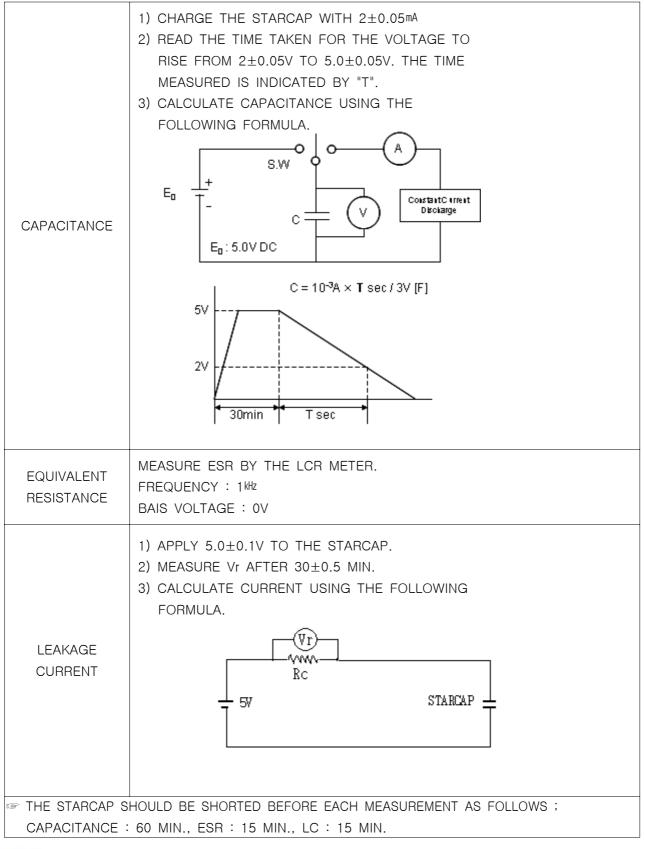








9. Measuring Method Of Characteristics





10. Caution For Use

Please be careful following point when you use STARCAP.

- Don't apply more than rated voltage.
 If you apply more than rated voltage, STARCAP's electrolyte is electrolyzed.
 And its ESR gets higher. At the worst, it is broken.
- 2) Don't use for ripple absorption.
- 3) Polarity

The STARCAP is non-polar fundamentally. However STARCAP is made polarity, when it is packed.

Please mount it in accordance with its polarity for the maintaining best condition.

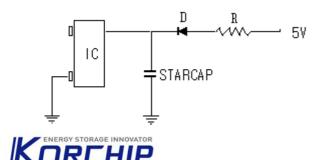
- 4) Operating temperature and life Generally speaking, STARCAP has a lower leakage current, longer back-up time and longer life in the low temp.
 But, it has a higher leakage current, shorter back-up time and shorter life in the high temp.
 Please design to keep STARCAP away a calorific parts.
- 5) Cleaning

STARCAP is a proof against cleaning. Cleaning guarantee is as follows ; Solvent : Freon Test 45°C. Ultrasonic wave : Less than 38^{kHz}, Less than 20 Watt/Liter. Immersing time : Less than 10 Min. ultrasonic wave must not be centered.

6) Soldering

When you solder by solder iron, please do quickly it within 3 Sec. Please don't touch the resin case of STARCAP by solder iron. Because the resin may be melted by its heat.

7) Following Figure Show The General Back-up Circuit.



- D: Diode for protection of counter
- R : Resistor for protection of electric power source

STARCAP

8) Short Circuit STARCAP

You can short-circuit between terminals without resister. However when you short circuit frequently, please let us know. We think that frequently condition id as follows; Charge : 30 Sec., Discharge : 30 Sec., Cycle : 1000 Cycle, Temp.: 85°C

- 9) Storage
 Please store STARCAP in following condition ;
 Temp. : 15 ~ 35°C, Humidity : 45 ~ 75% RH, Non-dust
- 10) Please don't disassemble STARCAP. Because its electrolyte is organic solvent.
- 11) When you use bond cure skin, please contact us for its condition.
- 12) Series connection of STARCAP causes a difference of applied voltage for each STARCAP, because of dispersion of capacitance and ESR. As a result, it's possible to apply over-rated voltage.
 Please inform us if you are using STARCAP in series connection.
 And please design so as not to apply over-rated voltage to each STARCAP, and use STARCAPs in same lot.

11. PACKING WAY

PRODUCT		QI	JANTITY(PC	S)	SIZE(W×H×T)		
		Vinyl bag	Inner Box	Outer Box	Inner Box(mm)	Outer Box(mm)	
SCDA5R5223	Taping	_	1,000	5,000	340×260×50	350×270×270	
30DA0H0223	Bulk	500	2,500	10,000	295×230×140	485×310×310	
SCDA5R5473	Taping	_	1,000	5,000	340×260×50	350×270×270	
30DA0n0473	Bulk	500	2,500	10,000	295×230×140	485×310×310	
SCDA5R5104	Taping	_	1,000	5,000	340×260×50	350×270×270	
	Bulk	500	2,500	10,000	295×230×140	485×310×310	



STARCAP