

OBO PRO.2 INC.

啓弘股份有限公司

No. 18, Yanwu Rd., Taoyuan City, Taiwan 330, R.O.C.
 TEL: 886-3-346-8636 FAX: 886-3-346-8645~6
 E-MAIL: sales@obopro2.com Website: www.obopro2.com

Specification for Approval

NO.:

Part Name : Piezoelectric Buzzer
 Model No. : OBO-27C4
 Date : MAR.16,2004

Page	Cover Page	1	2	3	4	5	6	7	8	9	10	11	12	
Version	K	K	K	K	K	K	K	K						

CHANGES

No.	Date	ECN. No.	Version	Description	Sign
--	MAY.31,02'	---	J	New Document	Yu Lin
△	MAR.16,04'	0309018	K	1.Change the material of plastic housing. 2.Increase reliability test.	Penny Wu

Please kindly make approval of our samples, And return this form by fax or airmail, Thanks for your kind attention and co-operation.

(請對我們公司樣品給予承認,承認後加蓋承認章以傳真或郵寄方式回覆,謝謝貴公司的支持與合作)

Customer Name : _____

Customer Part No. : _____

Designed By	Checked By	Approval By

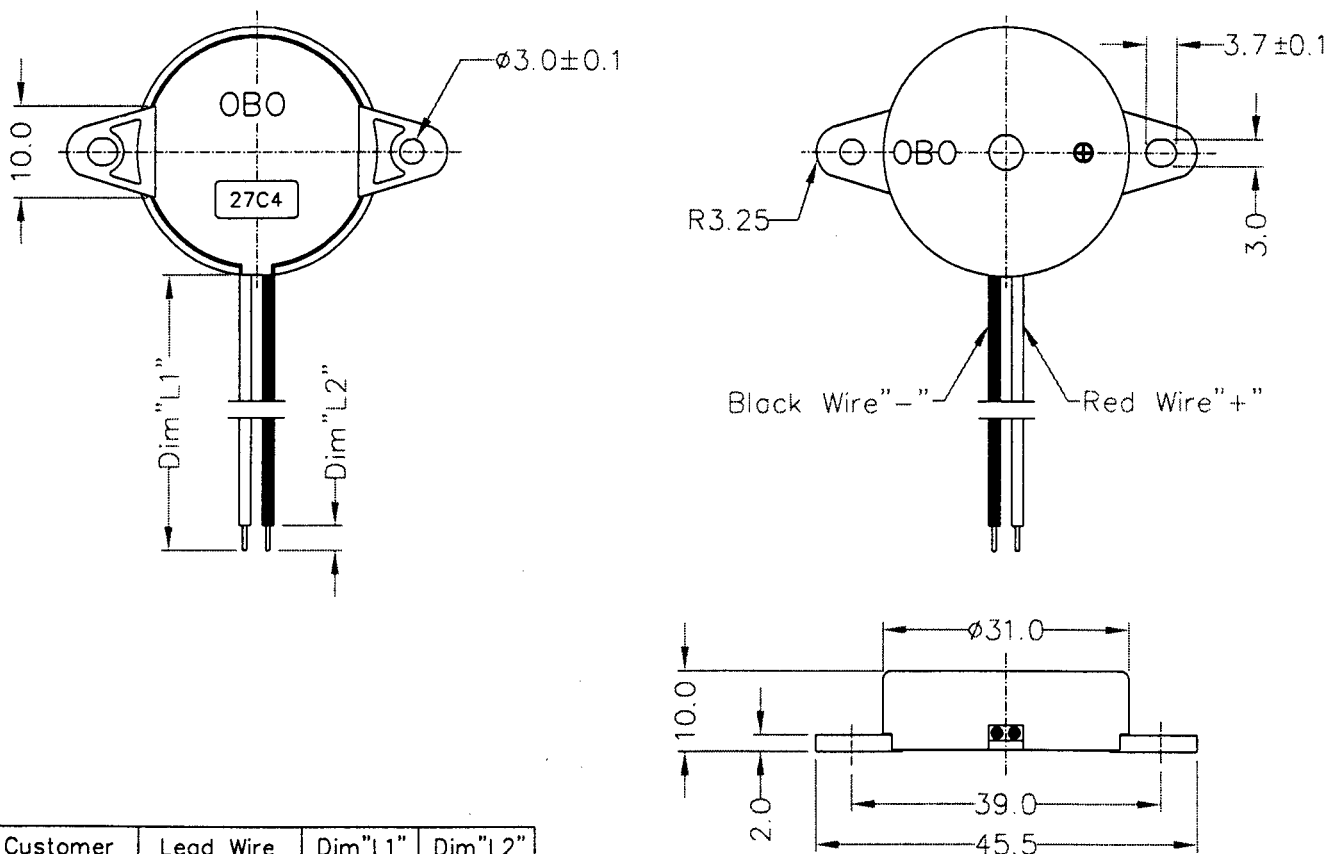
Model No: OBO-27C4

Built-in Circuit, Lead Wire Type

1. General Requirements

Items	Spec.
Sound Pressure Level	85dB min./30cm/DC9V
Oscillating Frequency	3.5 ± 0.5KHz
Current Consumption	8mA max./DC9V
Tone	Continuous Tone
Operating Voltage	DC 3 to 30V
Case Material	PBT
Operating Temp. Range	-30°C to +70°C
Storage Temp. Range	-40°C to +85°C
Weight	7 gms

2. Mechanical Layout and Dimensions



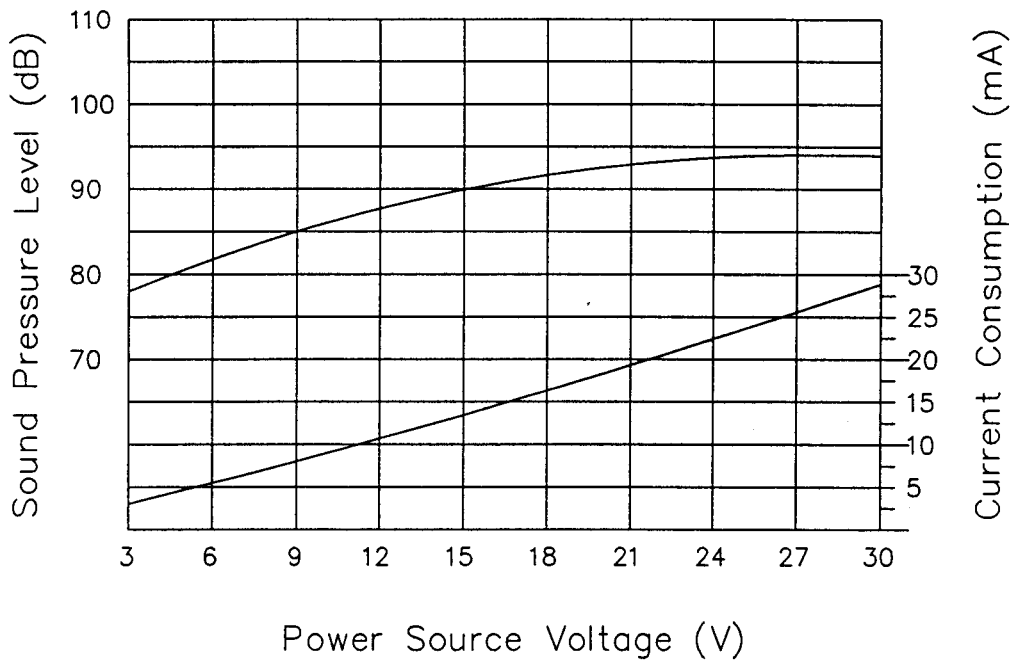
Customer	Lead Wire	Dim "L1"	Dim "L2"
Standard	UL1095#28	75±5	3±1

Unit : mm Tolerance : ± 0.5

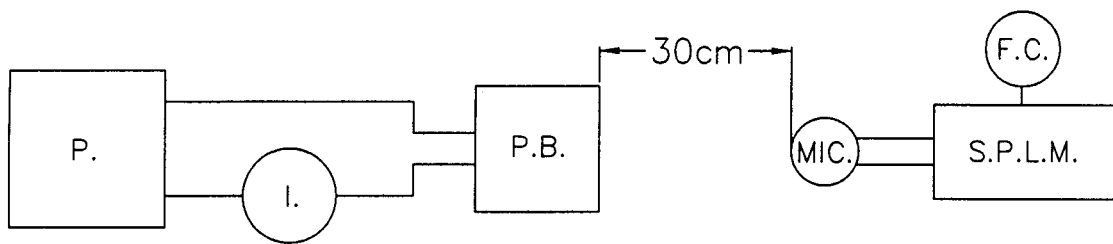
Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳蓓寧	陳建合 3/19/04	陳建合 3/19/04	1	27C4	K	MAR.16,2004

3. Voltage/Sound Pressure /Current Consumption

- 3.1 Measurement Distance : 30cm.
- 3.2 Sound Level Meter By IEC651 TYPE2
- 3.3 Current Consumption By GDM-8145
- 3.4 DC Power Supply By GPC-3030D



4. Measuring Method



- P. : DC Power Supply GPC-3030D or Equivalent
- S.P.L.M. : Sound Pressure Level Meter IEC651 TYPE2
- I. : Multimeter GDM-8145 or Equivalent
- F.C. : Function Generator GFG-8016G or Equivalent
- P.B. : Piezoelectric Buzzer

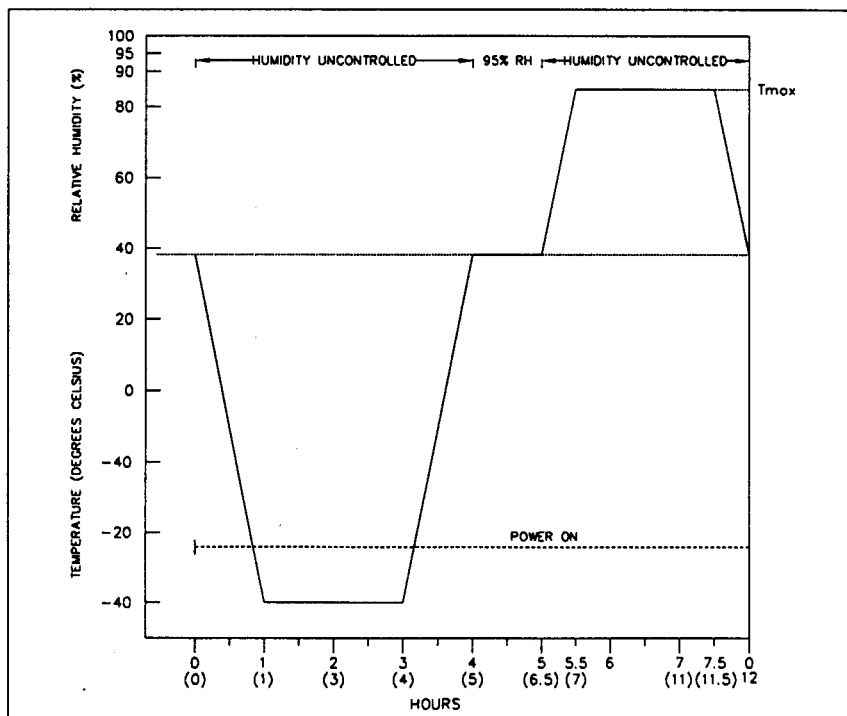
Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳倍寧 PENNY 93.03.16	陳建合 7/19/04	陳建合 7/19/04	2	27C4	K	MAR.16,2004

5. Reliability Test Conditions

5.1 LIFE TEST

Purpose	To describe the functionality and durability in an accelerated manner by exposing the assembly to repetitive cycles of worst case temperature/humidity conditions within the range of expected environment extremes.
Test Procedure	<p>The samples are exposed to the temperature/humidity/power profile in Figure 1. for 99 operational (power on) hours.</p> <ol style="list-style-type: none"> At time = 0 hour stabilize the chamber temperature at 38°C with humidity uncontrolled , lower the temperature TO -40°C over a period of 1 hour. At time = 1.0 hour stabilize the temperature at -40°C for 2 hours. At time = 3.0 hour, begin to ramp up the temperature over the next hour to 38°C. At time = 4.0 hour, stabilize the chamber temperature at 38°C and 95% relative humidity for 1 hour. At time = 5.0 hours, being to ramp up the temperature to 85°C in 0.5 hours. At time = 5.5 hours, stabilize the temperature at 85°C for 2 hours. At time = 7.5 hours, being to lower the chamber temperature to 38°C within 0.5 hours. At time = 9.0 hours, repeat steps 1-7, total 12 cycle. Power On = DC12V

FIGURE 1 : LIFE TEST TEMPERATURE / HUMIDITY / POWER PROFILE ***



Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳蓓寧 PENNY 93.03.16	陳建合 3/19/04	陳建合 3/19/04	3	27C4	K	MAR.16,2004

5.2 THERMAL SHOCK

Purpose	To describe functionality after exposure to sudden changes in temperature.
Test Procedure	<ol style="list-style-type: none"> 1. Place the sample in a low temperature chamber at -40°C for 30 minutes. 2. Transport the samples to a high temperature chamber in a maximum of 30 seconds, set to $+85^{\circ}\text{C}$. 3. Soak st $+85^{\circ}\text{C}$ for 30 minutes. 4. Transport to the low temperature chamber within 30 seconds. 5. Repeat steps 1-4 for a total of 50 cycles.

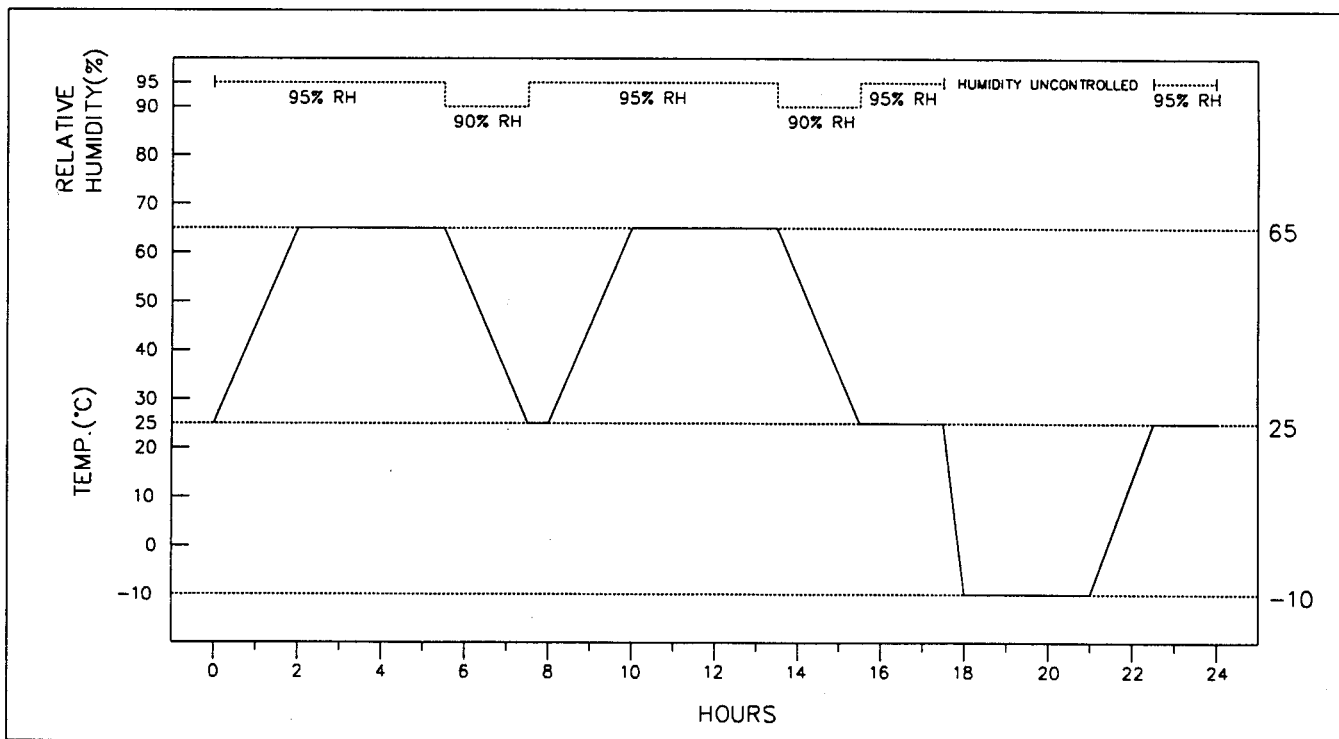
5.3 HUMIDITY CYCLE

Purpose	To describe an accelerated manner, functionality and durability of samples to repetitive cycles of extreme humidity and temperature.
Test Procedure	<p>Follow the profile in Figure 2 with the folloeing steps:</p> <ol style="list-style-type: none"> 1. At time = 0 hour, stsbilize the chamber temperature at 25°C, ramp up the temperature to 65°C within the two hours, and maintain the relative humidity at 95% for 5.5 hours. 2. At time = 2.0 hours, stabilize the camber temperature at 65°C for 3.5 hours. 3. At time = 5.5 hours, lower the temperature to 25°C within the next two hours while maintaining the relative humidity at 90%. 4. At time = 7.5 hours, stabilize the temperature at 25°C for 0.5 hours while maintaining the relative humidity at 95% for six hours. 5. At time = 8.0 hours, ramp up the temperature to 65°C within the next two hours. 6. At time = 10.0 hours, stabilize the temperature at 65°C for 3.5 hours.

Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳蓓寧 PENNY 93.03.16	陳建台 3/19/04	陳建台 3/19/04	4	27C4	K	MAR.16,2004

Test Procedure	<p>7. At time = 13.5 hours, lower the temperature to 25°C within the next two hours while maintaining the relative humidity at 90%.</p> <p>8. At time = 15.5 hours, stabilize the chamber temperature at 25°C for two hours while maintaining the relative humidity at 95%.</p> <p>9. At time = 17.5 hours, lower the temperature to -10°C within the next 0.5 hours and turn off the humidity for five hours.</p> <p>10. At time = 18.0 hours, stabilize the temperature at -10°C for three hours.</p> <p>11. At time = 21.0 hours, ramp up the temperature to 25°C within the next 1.5 hours.</p> <p>12. At time = 22.5 hours, stabilize the temperature at 25°C for 1.5 hours while maintaining the relative humidity at 95%.</p> <p>13. At time = 24.0 hours repeat steps 1-12, total 4 cycle.</p>
----------------	--

FIGURE 2 : HUMIDITY CYCLE TEST PROFILE



Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳落寧 PENNY 93.03.16	陳建合 3/19/04	陳建合 3/19/04	5	27C4	K	MAR.16,2004

5.4 MECHANICAL VIBRATION

Purpose	To describe functionality and endurance after exposure to vibrations.
Test Procedure	33Hz, Sinewave sweep(4G), X,Y,Z direction, 4 hours each direction Amplitude 1.5mm, Total 12 hours. Power On = DC12V

5.5 DROP TEST

Purpose	To describe functionality and structural rigidity after exposure to handling and shipping shocks.
Test Procedure	Drop the sample from a height of 75cm onto a concrete surface. Orientate the sample so that impacts are applied once in 6 directions. Inspect for functionality and physical damage.

5.6 PULL STRENGTH TEST

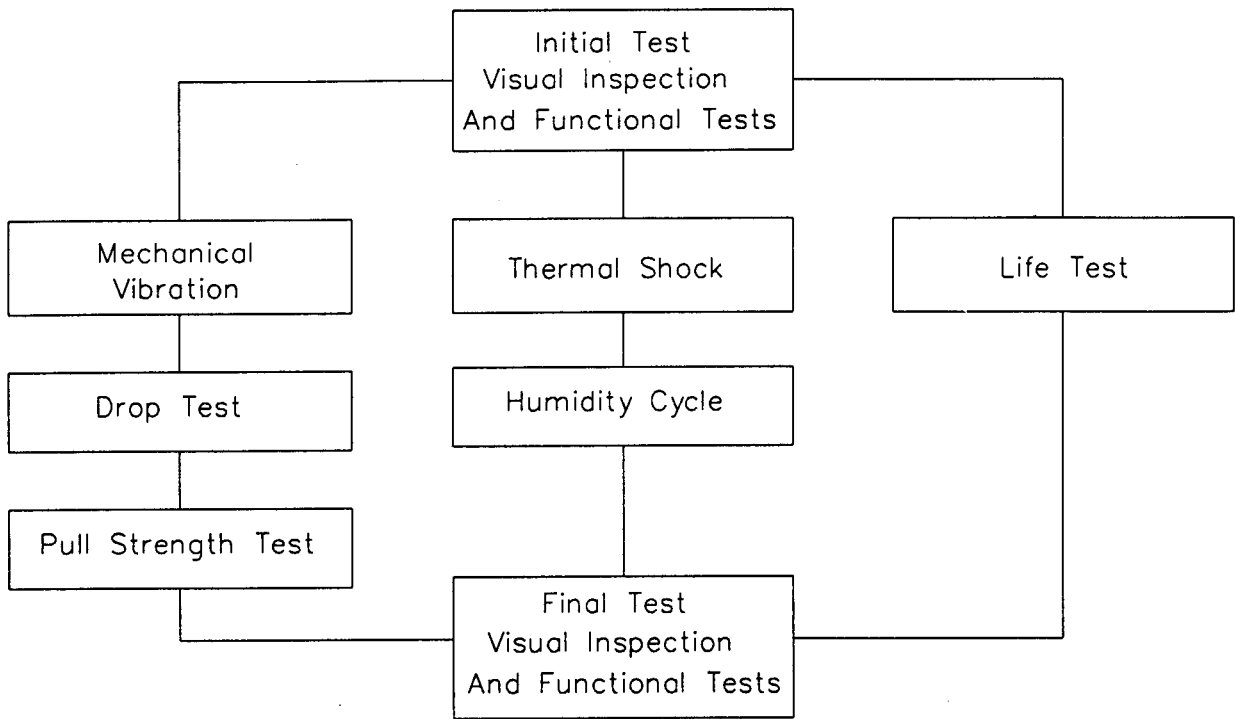
Purpose	To describe disconnection between connector and sample after exposure to the pull strength test.
Test Procedure	The sample assembly shall suffer from a pull strength of Min. 2KGs continuous applied between the connector and the sample.

Remarks :

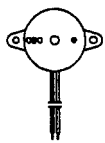
1. Sounder shall be measured after being placed in natural condition for 4 hours.
2. After the test the part shall meet specifications without any degradation in appearance and performance except SPL: Initial±10dB

Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳蓓寧 PENNY 93.03.16	陳建合 3/19/04	陳建合 3/19/04	6	27C4	K	MAR.16,2004

6. Test Flow

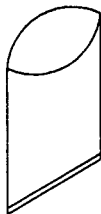


7. Package

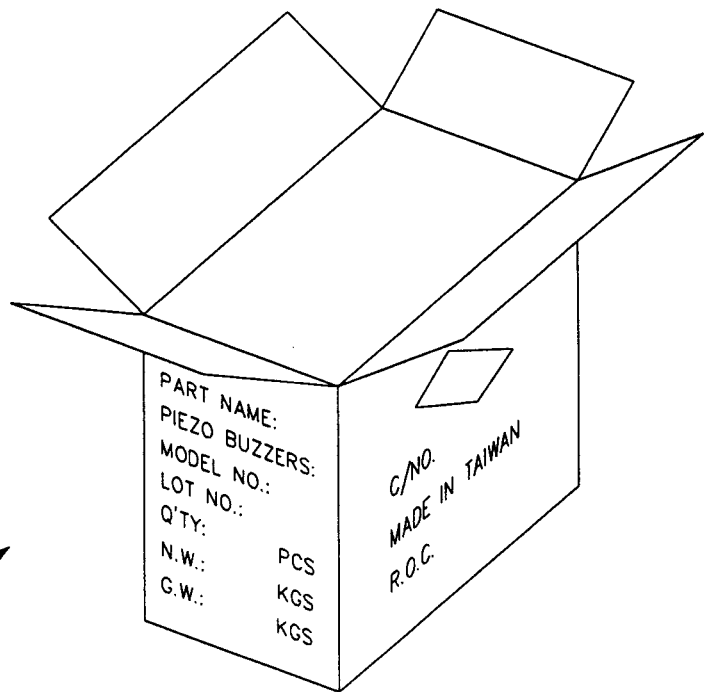


OBO Piezoelectric Buzzers	
MODEL NO.	
LOT NO.	
QUANTITY	
DATE	

20pcs / Label
(80*50*0.08mm)



20pcs / PE Bag
22*15.5*0.005cm



60 Bag(1200pcs) / Carton
0.96*(35.2*23.3*33.6cm)

Drawing by	Checked by	Approved by	Page No.	Model No.	Version	Date
吳蓓寧 PENNY 93.03.16	陳建合 3/19/04	陳建合 3/19/04	7	27C4	K	MAR.16,2004