Planar Inductor – *SPQQ27 Series*

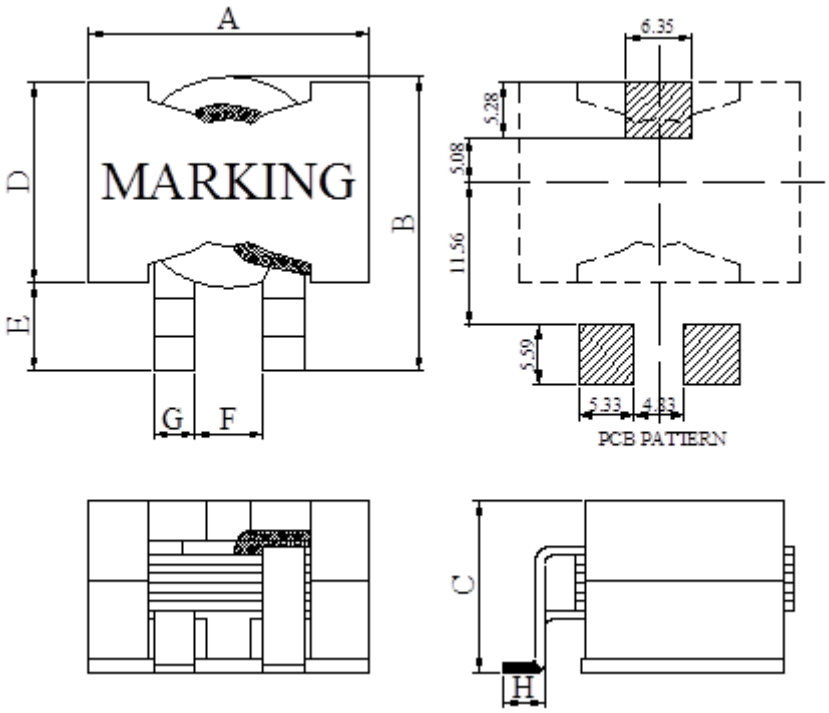
1. Part No. Expression

S P Q Q 2 7 1 5 1 R 5 K Z F

(a) (b) (c) (d)(e)(f)

(a)	Series Code	(d)	Tolerance Code
(b)	Dimension Code	(e)	Special Code
(c)	Inductance Code	(f)	Packaging Code

2. Configuration & Dimensions (Unit: mm)



-Size C:

SPQQ2715-Z- 15.36 Max

SPQQ2715-X- 15.36 Max

SPQQ2718-Z- 17.78 Max

-Marking:

27□□1R5K□
SPW YYWW

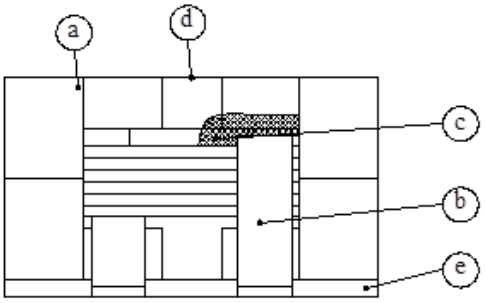
Note: Recommend solder paste thickness at 0.12 mm and above

A	B	D	E	F	G	H
27.90 Max	27.94 Max	19.80 Max	6.90 Ref	6.63±0.51	3.80 Ref	3.80 Min

NOTE: Specifications subject to change without notice. Please check our website for latest information.

3. Schematic

4. Material List



(a) Core
(b) Wire
(c) Adhesive
(d) Ink
(e) Base

5. General Specification

(a) Reliability test for this part meets AEC-Q200 standard.
(b) Operating Temp.: -40°C to +85°C with (40°C rise) Irms current, +85°C to +125°C with derated current
(c) Storage Temp.: -40°C to +125°C (on board)
(d) Storage Condition (Component in its packaging)
    i) Temperature: Less than 40°C
    ii) Humidity: Less than 60% RH

6. Electrical Characteristics

Part No.	Inductance (μH) @500kHz/0.1V	I rms(A)		I sat(A)			DCR (mΩ) Max.	SRF (MHz) Typ.
		20°C Typ.	40°C Typ.	10% Typ.	20% Typ.	30% Typ.		
SPQQ27151R5KZF	1.5±10%	20.0	30.0	100	>100	>100	1.65	60.0
SPQQ27152R2KXF	2.2±10%	20.0	30.0	100	>100	>100	2.05	40.0
SPQQ27152R2KZF	2.2±10%	20.0	30.0	82.0	84.0	84.8	1.65	50.0
SPQQ27183R3KZF	3.3±10%	20.0	28.0	91.0	92.5	93.6	2.86	40.0
SPQQ27153R3KXF	3.3±10%	20.0	30.0	62.0	66.9	68.4	2.05	30.0
SPQQ27153R3KZF	3.3±10%	20.0	30.0	48.0	54.0	57.0	1.65	40.0
SPQQ27184R7KZF	4.7±10%	20.0	28.0	59.0	61.2	62.4	2.86	30.0
SPQQ27154R7KXF	4.7±10%	20.0	30.0	42.0	48.0	50.1	2.05	25.0
SPQQ27154R7KZF	4.7±10%	20.0	30.0	33.0	36.9	39.0	1.65	30.0
SPQQ27186R8KZF	6.8±10%	20.0	28.0	42.0	45.0	45.9	2.86	25.0
SPQQ27156R8KXF	6.8±10%	20.0	30.0	30.0	34.5	36.2	2.05	20.0
SPQQ27156R8KZF	6.8±10%	20.0	30.0	22.0	26.0	27.8	1.65	25.0
SPQQ2718100KZF	10±10%	20.0	28.0	28.0	31.2	32.1	2.86	20.0
SPQQ2715100KXF	10±10%	20.0	30.0	18.0	21.5	23.4	2.05	15.0
SPQQ2715100KZF	10±10%	20.0	30.0	13.0	16.2	17.6	1.65	20.0
SPQQ2718150KZF	15±10%	20.0	28.0	18.0	21.2	21.9	2.86	16.0
SPQQ2715150KXF	15±10%	20.0	30.0	11.5	14.0	15.2	2.05	12.0
SPQQ2715150KZF	15±10%	20.0	30.0	7.50	9.80	11.0	1.65	15.0
SPQQ2718220KZF	22±10%	20.0	28.0	12.0	14.0	15.0	2.86	15.0
SPQQ2715220KXF	22±10%	20.0	30.0	7.00	8.60	9.60	2.05	10.0
SPQQ2715220KZF	22±10%	20.0	30.0	4.50	6.00	6.80	1.65	10.0
SPQQ2718330KZF	33±10%	20.0	28.0	7.00	8.70	9.60	2.86	10.0
SPQQ2715330KXF	33±10%	20.0	30.0	4.00	5.10	5.90	2.05	8.0
SPQQ2715330KZF	33±10%	20.0	30.0	2.00	2.60	3.30	1.65	7.0

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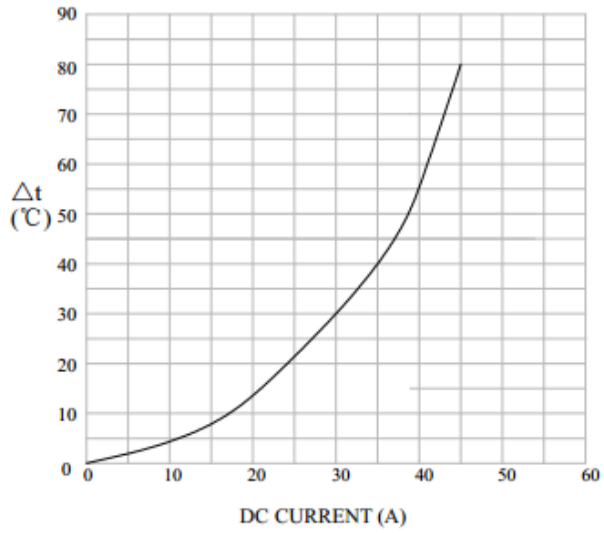
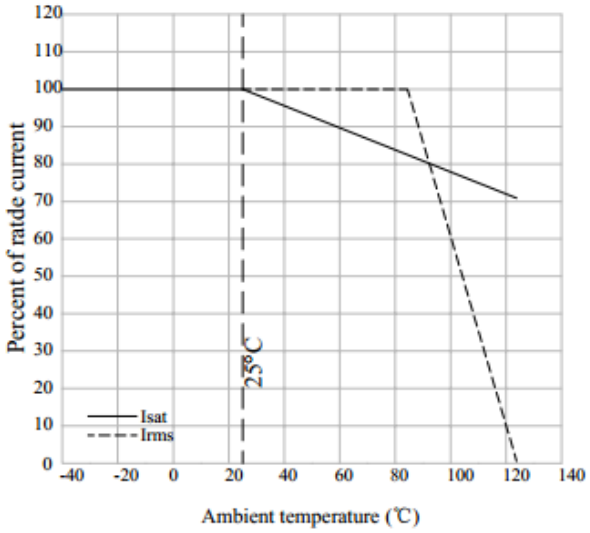
7. Characteristics Curves

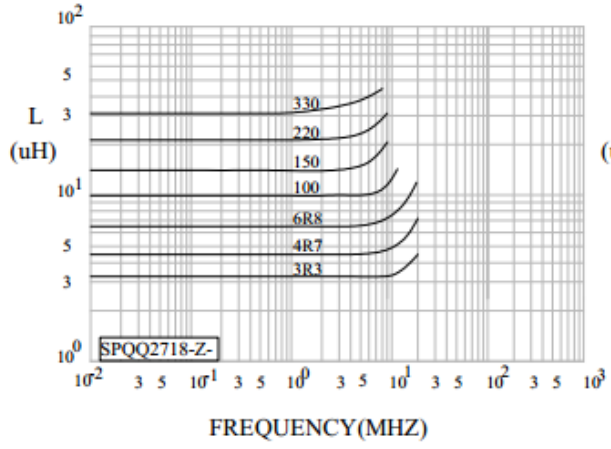
@ TEMP. RISE VS. DC CURRENT RESPONSE CURVE



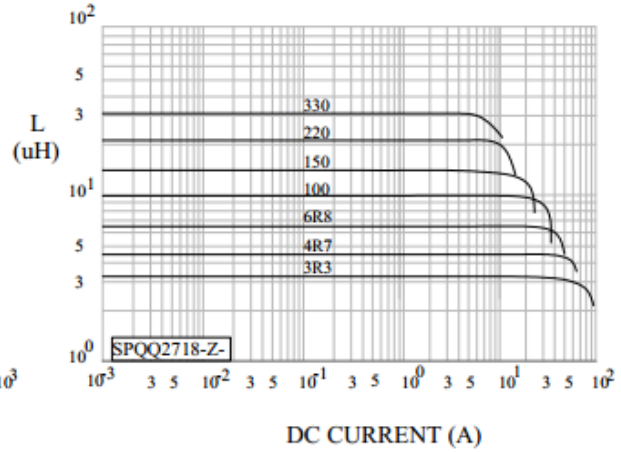
@ CURRENT DERATING RESPONSE CURVE



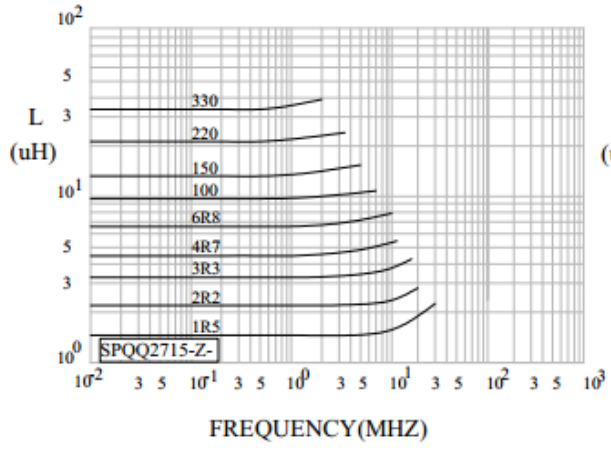
@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



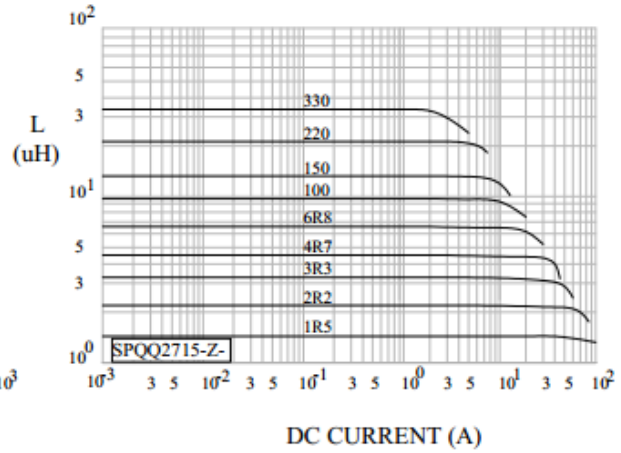
@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



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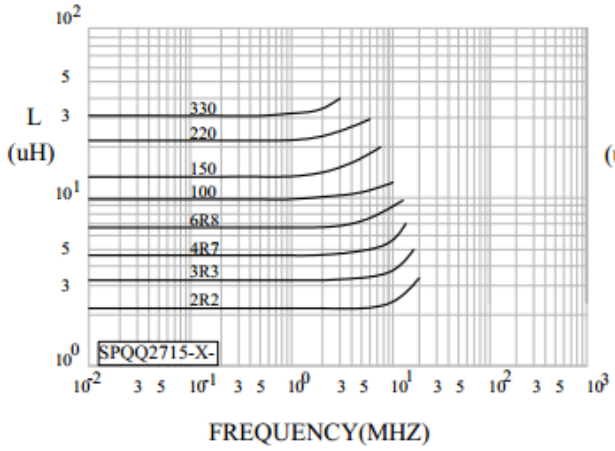
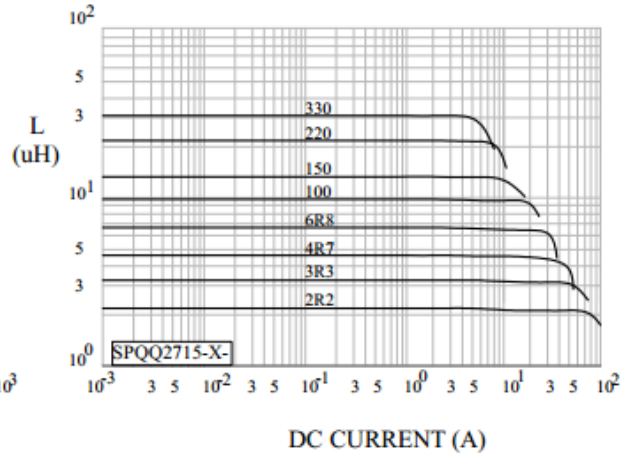
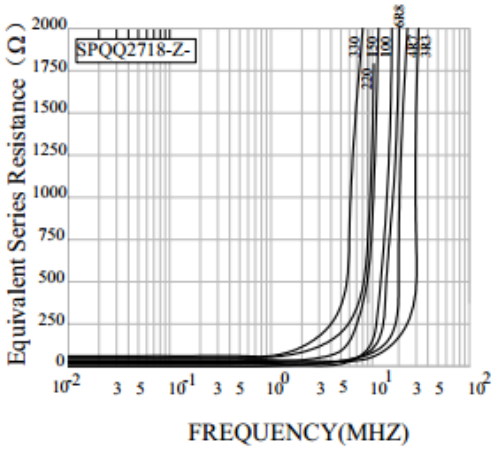
@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



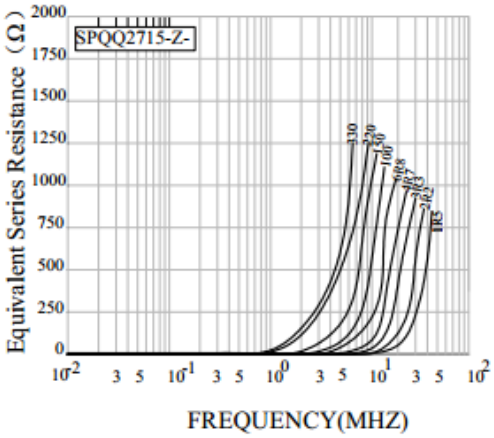
@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



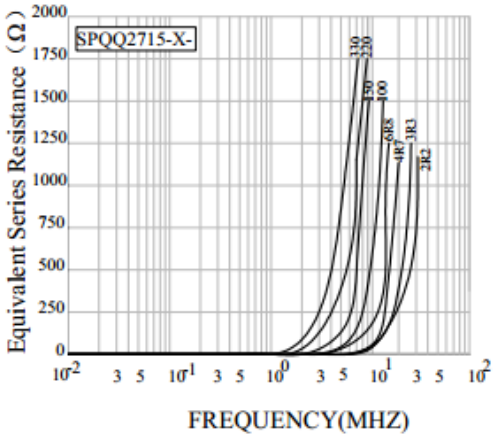
@ ESR VS. FREQUENCY RESPONSE CURVE



@ ESR VS. FREQUENCY RESPONSE CURVE



@ ESR VS. FREQUENCY RESPONSE CURVE



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8. Soldering and Mounting

Mildly activated rosin fluxes are preferred. Our terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

8-1. IR Soldering Reflow

Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

8-2. Iron Reflow

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended (Figure 2).

Note:

(a) Preheat circuit and products to 150°C.

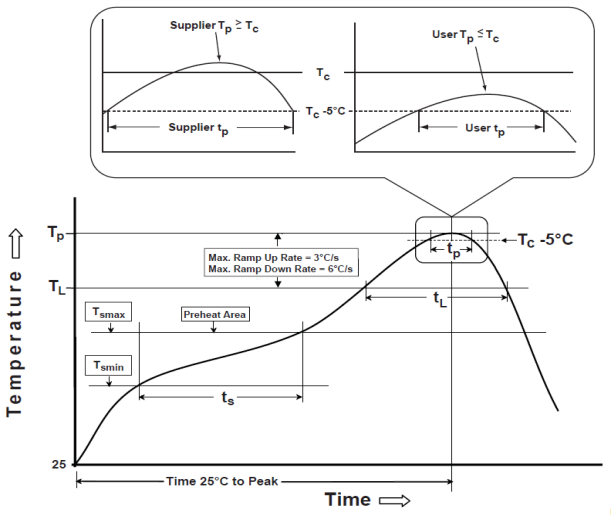
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

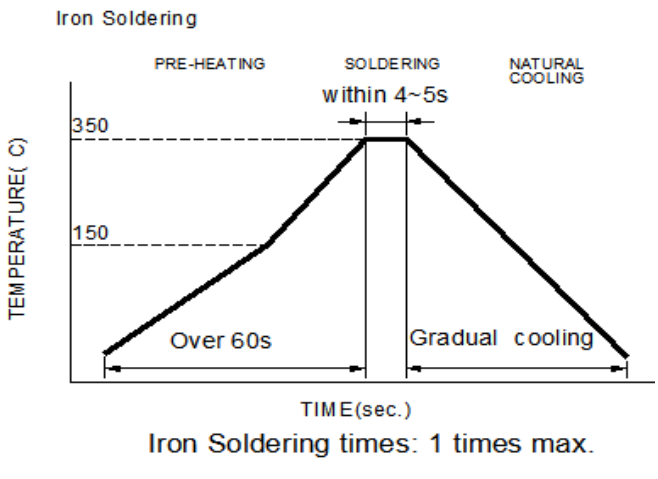
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(f) Limit soldering time to 4~5 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

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Table (1.1) Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60-120seconds
Ramp-up rate ($T_L$to T_p)	3°C /second max.
Liquids temperature (T_L) Time (t_L) maintained above T_L	217°C 60-150 seconds
Classification temperature (T_c)	See Table (1.2)
Time (t_p) at Tc- 5°C (Tp should be equal to or less than Tc.)	*< 30 seconds
Ramp-down rate (T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

Tp: maximum peak package body temperature, **Tc**: the classification temperature.

For user (customer) **Tp** should be equal to or less than **Tc.**

*Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.

Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

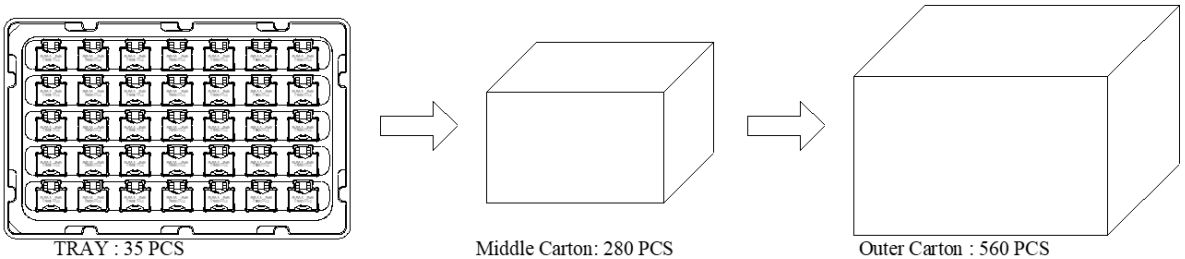
	Package Thickness	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E.

9. Packaging Information

Series	Inner Package Q'ty	Middle Package Q'ty	Outer Package Q'ty	Fig
SPQQ2718	35 Pcs	280 Pcs	560 Pcs	1
SPQQ2715	35 Pcs	315 Pcs	630 Pcs	2

Fig1

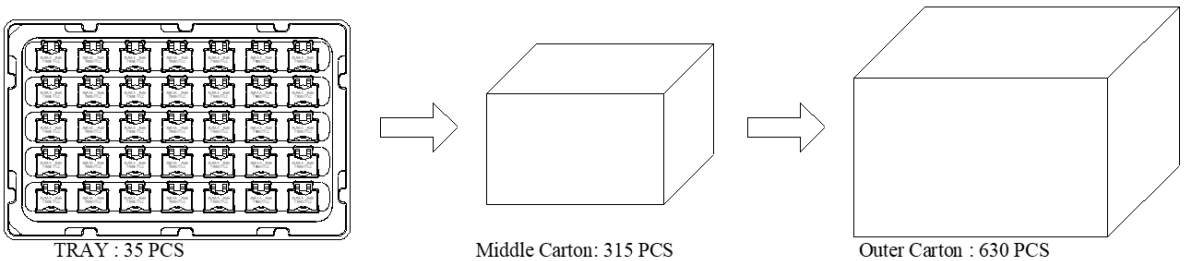


TRAY : 35 PCS
SIZE : 330mmx210mmx24mm

Middle Carton: 280 PCS
SIZE : 350mmx213mmx178mm

Outer Carton : 560 PCS
SIZE : 445mmx360mmx193mm

Fig2



TRAY : 35 PCS
SIZE : 330mmx210mmx21.8mm

Middle Carton: 315 PCS
SIZE : 350mmx213mmx178mm

Outer Carton : 630 PCS
SIZE : 445mmx360mmx193mm

Application Notice

1. Storage Conditions

To maintain the solderability of terminal electrodes:

(a) Recommended products should be used within 12 months from the time of delivery.

(b) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation

(a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.

(b) Vacuum pick up is strongly recommended for individual components.

(c) Bulk handling should ensure that abrasion and mechanical shock are minimized.