

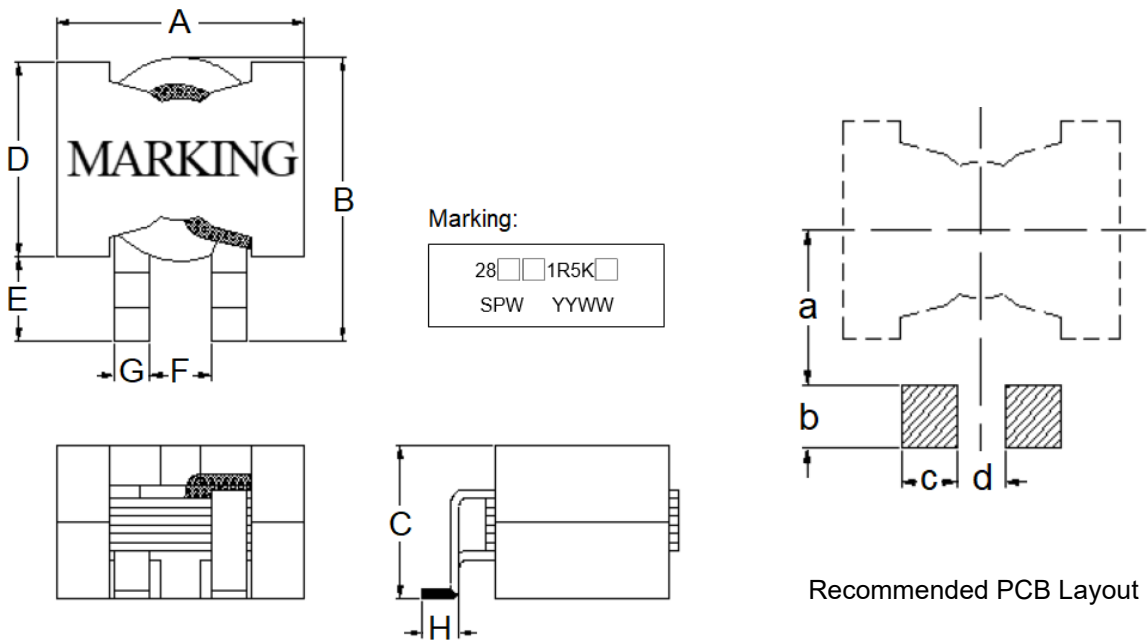
1. Part No. Expression

S P Q 2 8 1 4 1 R 5 K Z F

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

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

2. Configuration & Dimensions (Unit: mm)

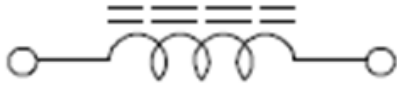


- Note: 1. The above PCB layout reference only.
 2. Recommend solder paste thickness at 0.12 mm and above.

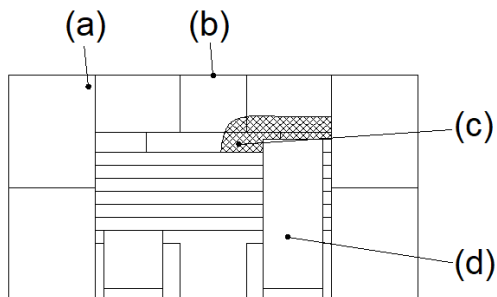
Series	A	B	C	D	E	F	G	H	a	b	c	d
SPQ2814-Z			14.22 Max									
SPQ2814-X	27.90 Max	27.94 Max	14.22 Max	19.30 Max	6.90 Ref	6.62 Ref	3.80 Ref	3.80 Ref	11.56 Ref	5.59 Ref	5.33 Ref	4.83 Ref
SPQ2817-Z			16.64 Max									

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

5. General Specifications

- (a) Operating Temp.: -40°C to +85°C (including self-temperature rise)
- (b) Storage Temp.: -40°C to +125°C (on board)
- (c) All test data referenced to 25°C ambient.
- (d) Rated DC Current: The lower value of I_{rms} and I_{sat} .
- (e) Storage Condition (Component in its packaging)
 - i) Temperature: 40°C
 - ii) Humidity: 60% RH

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6. Electrical Characteristics

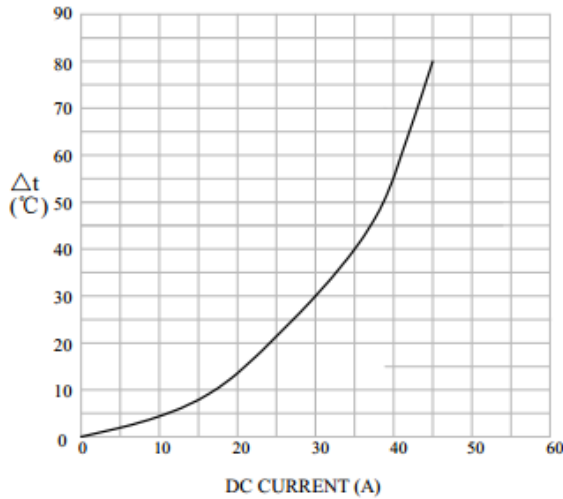
Part No	Inductance (μ H) $\pm 10\%$	I rms (A) Typ		I sat (A) Typ			DCR (m Ω) Max	SRF (MHz) Typ
		20°C	40°C	10%	20%	30%		
SPQ28141R5KZF	1.5	20.0	30.0	100	>100	>100	1.62	60.0
SPQ28142R2KXF	2.2	20.0	30.0	100	>100	>100	2.01	40.0
SPQ28142R2KZF	2.2	20.0	30.0	82.0	84.0	84.8	1.62	50.0
SPQ28173R3KZF	3.3	20.0	28.0	91.0	92.5	93.6	2.82	40.0
SPQ28143R3KXF	3.3	20.0	30.0	62.0	66.9	68.4	2.01	30.0
SPQ28143R3KZF	3.3	20.0	30.0	48.0	54.0	57.0	1.62	40.0
SPQ28174R7KZF	4.7	20.0	28.0	59.0	61.2	62.4	2.82	30.0
SPQ28144R7KXF	4.7	20.0	30.0	42.0	48.0	50.1	2.01	25.0
SPQ28144R7KZF	4.7	20.0	30.0	33.0	36.9	39.0	1.62	30.0
SPQ28176R8KZF	6.8	20.0	28.0	42.0	45.0	45.9	2.82	25.0
SPQ28146R8KXF	6.8	20.0	30.0	30.0	34.5	36.2	2.01	20.0
SPQ28146R8KZF	6.8	20.0	30.0	22.0	26.0	27.8	1.62	25.0
SPQ2817100KZF	10	20.0	28.0	28.0	31.2	32.1	2.82	20.0
SPQ2814100KXF	10	20.0	30.0	18.0	21.5	23.4	2.01	15.0
SPQ2814100KZF	10	20.0	30.0	13.0	16.2	17.6	1.62	20.0
SPQ2817150KZF	15	20.0	28.0	18.0	21.2	21.9	2.82	16.0
SPQ2814150KXF	15	20.0	30.0	11.5	14.0	15.2	2.01	12.0
SPQ2814150KZF	15	20.0	30.0	7.50	9.80	11.0	1.62	15.0
SPQ2817220KZF	22	20.0	28.0	12.0	14.0	15.0	2.82	15.0
SPQ2814220KXF	22	20.0	30.0	7.00	8.60	9.60	2.01	10.0
SPQ2814220KZF	22	20.0	30.0	4.50	6.00	6.80	1.62	10.0
SPQ2817330KZF	33	20.0	28.0	7.00	8.70	9.60	2.82	10.0
SPQ2814330KXF	33	20.0	30.0	4.00	5.10	5.90	2.01	8.0
SPQ2814330KZF	33	20.0	30.0	2.00	2.60	3.30	1.62	7.0

Test frequency: 0.1V/500KHz

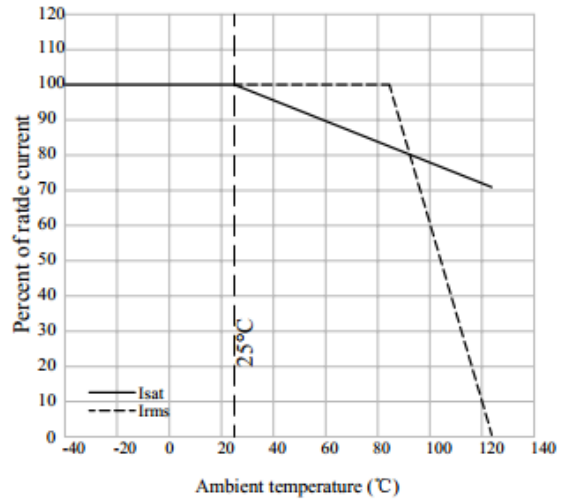
NOTE: Specifications subject to change without notice. Please check our website for latest information.

7. Characteristics Curve

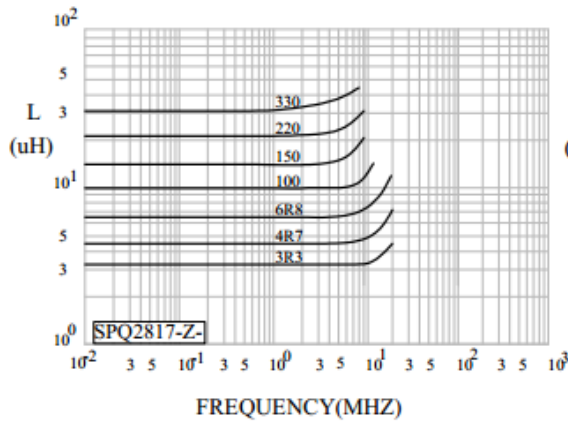
@ TEMP. RISE VS. DC CURRENT RESPONSE CURVE



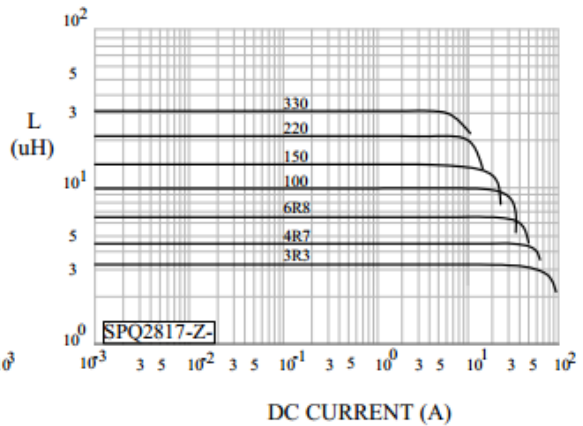
@ CURRENT DERATING RESPONSE CURVE



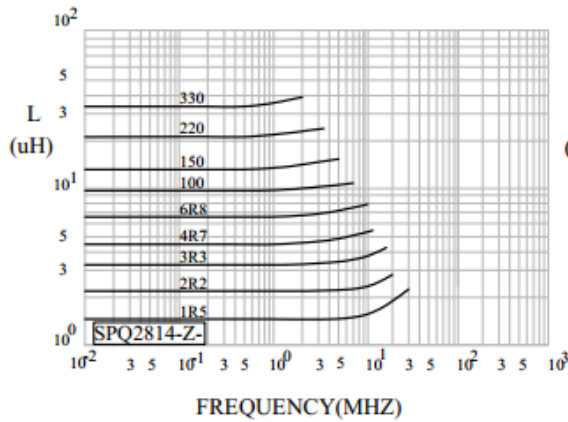
@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



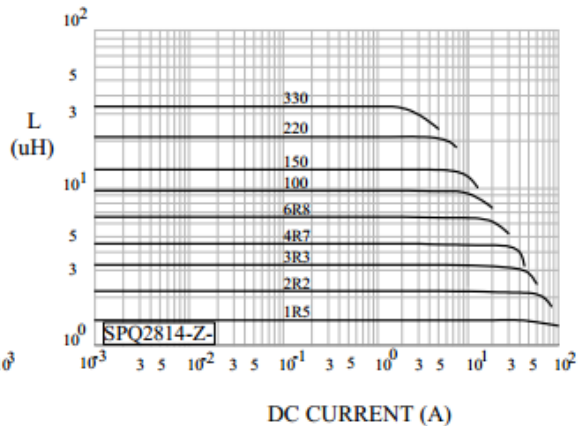
@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE

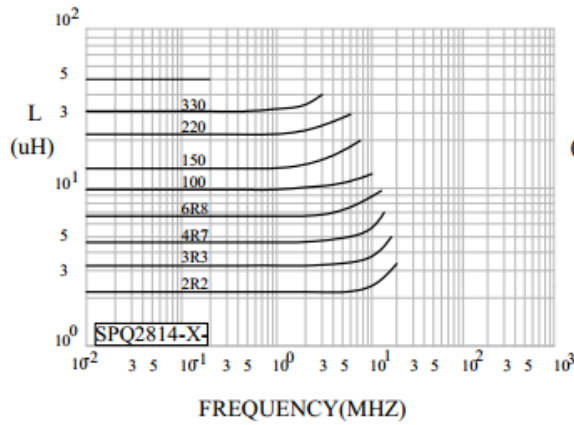


@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE

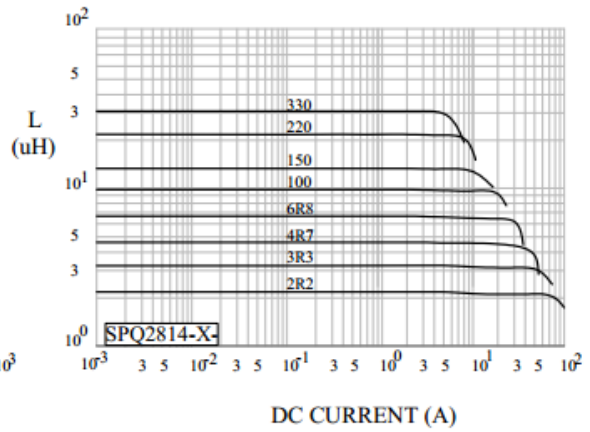


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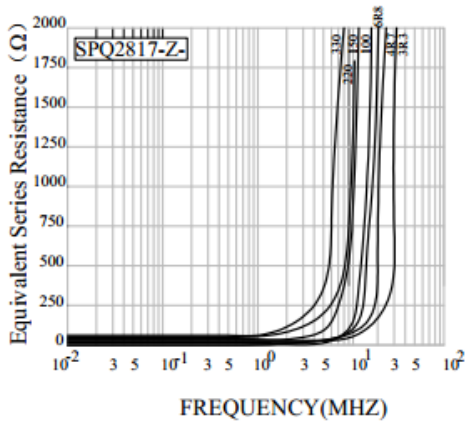
@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



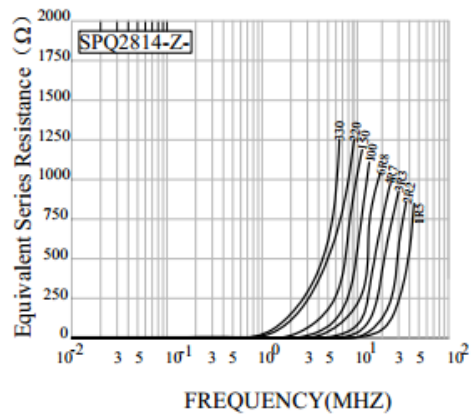
@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



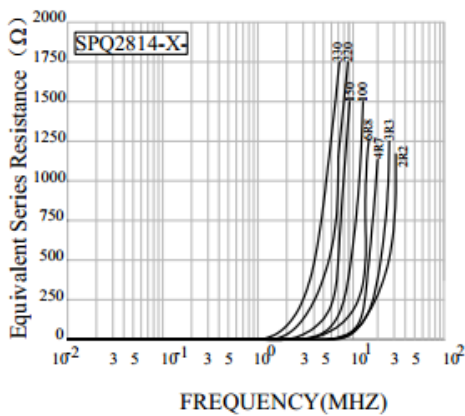
@ ESR VS. FREQUENCY RESPONSE CURVE



@ ESR VS. FREQUENCY RESPONSE CURVE



@ ESR VS. FREQUENCY RESPONSE CURVE



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8. Soldering Specification

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

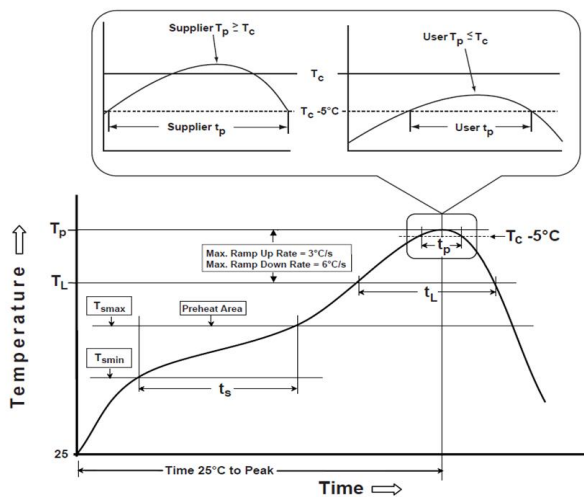
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020F).

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) 350°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



Iron Soldering times : 1 times 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})	150°C
-Temperature Max (T_{smax})	200°C
-Time (t_s) from (T_{smin} to T_{smax})	60-120seconds
Ramp-up rate (T_L to T_p)	3°C /second max.
Liquids temperature (T_L)	217°C
Time (t_L) maintained above T_L	60-150 seconds
Classification temperature (T_c)	See Table (1.2)
Time (t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	< 30 seconds
Ramp-down rate (T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

T_p: maximum peak package body temperature, **T_c**: the classification temperature.

For user (customer) **T_p** should be equal to or less than **T_c**.

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

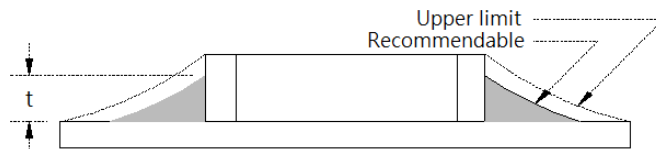
	Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

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

8-3. Soldering Volume

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceeded as shown in the Figure below.

Minimum fillet height = soldering thickness + 25% product height.



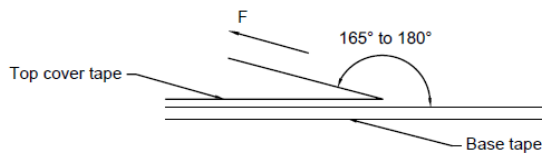
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9. Packaging Information

9-1. Packaging Quantity (Unit: Pcs)

TRAY	INNER CARTON	OUTER CARTON
25	125	250
		
250*250*24 mm	265*265*175 mm	550*280*195 mm

9-2. Tearing Off Force



The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.

(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed (mm/min)	Tape Size	8 mm	12 to 56 mm	72 mm or Wider
5~35	45~85	860~1060	300±10	Tearing Off Force (grams)	10~100	10~130	10~150

Application Notice

1. Storage Conditions

To maintain the solderability of terminal electrodes:

- Products meet IPC/JEDEC J-STD-020F standard-MSL, level 1.
- Recommended products should be used within 12 months from the time of delivery.
- The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation

- Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- Vacuum pick up is strongly recommended for individual components.
- Bulk handling should ensure that abrasion and mechanical shock are minimized.

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