

保电通（东莞）电子科技有限公司

PROTECTOM (DONGGUAN) ELECTORM TECHNOLOGY CO., LTD



E Series SMD2920

E Series 2920 Surface Mount PTC Devices

--3RD FLOOR,BUILDING A11,HUAZHI BRANCH,DAOJIAO TOWN,
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Performance Specification

Model	Marking	V _{max} (V dc)	I _{max} (A)	I _{hold} @25°C (A)	I _{trip} @25°C (A)	P _d Typ. (W)	Maximum Time To Trip		Resistance	
							Current (A)	Time (Sec)	R _{i min} (Ω)	R _{1max} (Ω)
SMD2920E030SF60V	E030	60	10	0.30	0.60	1.5	1.5	3.0	0.600	4.800
SMD2920E030SF72V	E030	72	10	0.30	0.60	1.5	1.5	3.0	0.600	4.800
SMD2920E050SF60V	E050	60	10	0.50	1.00	1.5	2.5	4.0	0.180	1.400
SMD2920E075SF33V	E075	33	40	0.75	1.50	1.5	8.0	0.3	0.100	1.000
SMD2920E075SF60V	E075	60	40	0.75	1.50	1.5	8.0	0.3	0.100	1.000
SMD2920E100SF33V	E100	33	40	1.10	2.20	1.5	8.0	0.5	0.065	0.410
SMD2920E100SF60V	E100	60	40	1.10	2.20	1.5	8.0	0.5	0.065	0.410
SMD2920E125SF33V	E125	33	40	1.25	2.50	1.5	8.0	2.0	0.050	0.250
SMD2920E150SF33V	E150	33	40	1.50	3.00	1.5	8.0	2.0	0.035	0.230
SMD2920E150SF42V	E150	42	40	1.50	3.00	1.5	8.0	2.0	0.035	0.230
SMD2920E185SF33V	E185	33	40	1.85	3.70	1.5	8.0	2.5	0.030	0.150
SMD2920E185SF42V	E185	42	40	1.85	3.70	1.5	8.0	2.5	0.030	0.150
SMD2920E200SF16V	E200	16	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920E200SF24V	E200	24	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920E200SF33V	E200	33	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920E200SF42V	E200	42	40	2.00	4.00	1.5	8.0	4.5	0.020	0.120
SMD2920E250SF16V	E250	16	40	2.50	5.00	1.5	8.0	16.0	0.020	0.085
SMD2920E250SF24V	E250	24	40	2.50	5.00	1.5	8.0	16.0	0.020	0.085
SMD2920E250SF33V	E250	33	40	2.50	5.00	1.5	8.0	16.0	0.020	0.085
SMD2920E260SF6V	E260	6	40	2.60	5.20	1.5	8.0	10.0	0.014	0.075
SMD2920E260SF16V	E260	16	40	2.60	5.20	1.5	8.0	10.0	0.014	0.075
SMD2920E260SF24V	E260	24	40	2.60	5.20	1.5	8.0	10.0	0.014	0.075
SMD2920E300SF6V	E300	6	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920E300SF16V	E300	16	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920E300SF24V	E300	24	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920E300SF30V	E300	30	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920E300SF33V	E300	33	40	3.00	6.00	1.5	8.0	20.0	0.012	0.048
SMD2920E400SF6V	E400	6	40	4.00	8.00	1.5	20.0	4.0	0.008	0.040
SMD2920E400SF16V	E400	16	40	4.00	8.00	1.5	20.0	4.0	0.008	0.040
SMD2920E400SF24V	E400	24	40	4.00	8.00	1.5	20.0	4.0	0.008	0.040
SMD2920E500SF6V	E500	6	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920E500SF12V	E500	12	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920E500SF16V	E500	16	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920E500SF24V	E500	24	40	5.00	10.00	1.5	25.0	5.0	0.005	0.031
SMD2920E600SF6V	E600	6	40	6.00	12.00	1.5	25.0	6.0	0.004	0.020
SMD2920E600SF12V	E600	12	40	6.00	12.00	1.5	25.0	6.0	0.004	0.020
SMD2920E600SF16V	E600	16	40	6.00	12.00	1.5	25.0	6.0	0.004	0.020
SMD2920E700SF6V	E700	6	40	7.00	14.00	1.5	25.0	6.0	0.0025	0.010
SMD2920E700SF12V	E700	12	40	7.00	14.00	1.5	25.0	6.0	0.0025	0.010

- V max = Maximum operating voltage device can withstand without damage at rated current (I max).
- I max = Maximum fault current device can withstand without damage at rated voltage (V max).
- I hold = Hold Current. Maximum current device will not trip in 25°C still air.
- I trip = Trip Current. Minimum current at which the device will always trip in 25°C still air.
- Pd = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.
- Ri min/max = Minimum/Maximum device resistance prior to tripping at 25°C.
- R1max = Maximum device resistance is measured one hour post reflow.

CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

PPTC 使用注意事项:

- PPTC 为热敏元件，对环境温度比较敏感，建议在 PPTC 周围不要设计热源元件，尽量减少外部热源的影响。
 - 请在规格书规定的参数下使用，超出电压电流规格值，会导致 PPTC 出现电弧，阻值升高，甚至烧片。
 - 规格书的电气特性，均是基于在保电通指定测试板经过一次回流焊之后的测试；如果客户有二次回流焊或者注塑点胶等其他热工序，会对上述参数有一定程度的衰减，需要验证其适用性。
 - PPTC 贴片产品是为 SMT 工艺设计的封装形式，焊接工艺为回流焊；要求客户遵守我们推荐的焊盘布局和回流焊配置文件。不正确的电路板布局或回流配置可能会对 PPTC 的可焊性性能产生负面影响。焊接工艺可参考保电通推荐的回流焊曲线。如果回流焊温度超过推荐的值，PPTC 将有可能受到损伤。使用手工焊及波峰焊接 PPTC 可能会导致产品焊后电阻超出规格。
 - 某些注塑料、单组份、双组份固化胶粘剂、硅胶、侵蚀性溶剂污染 PPTC 材料破坏芯片，需要对注塑料胶料等材料牌号以及应用参数（如温度、时间等）进行验证，以确保产品及工艺的匹配性，确认不会影响 PPTC 性能之后方可使用。
- PPTC 在充电线端应用中，建议使用 PP 类材料做内膜，禁止使用 TPE 类与 PVC 类等材料做内膜。
- PPTC 贴装或使用过程中，不建议使用洗板水或其他清洗剂进行清洗。如必须使用，需要验证各类清洗剂、洗板水以及溶剂的适用性，确认不会影响 PPTC 性能之后方可使用。已知对 PPTC 有影响的化学药品包括但不限于醚类、苯类、酮类以及脂类等较强溶解性、破坏性的有机化合物，清洗后将产品放置于敞开的环境中至少 24 小时，将残留的溶剂进行充分的挥发。
 - 装配过程中，避免用暴力砸、挤、压、拉、扭、刺等方式作用 PPTC 本体，以免引起 PPTC 性能衰减。
 - PPTC 元件是为电路中偶尔出现的过流而设计的，不建议用在连续且持续过流的电路中。
 - 保电通 SMD PPTC 湿敏等级为 2 级，为密封包装。客户如在库存中发现有包装破损的，立即将产品隔离处理；使用时如有余料，需恢复之前包装状态，做密封保存，否则会影响产品性能导致焊后电阻越规格。
 - 产品废弃时，可按照一般电子废弃物处理，具体材料组成可参见 MSDS

Environmental Specifications

Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change
Ambient operating conditions : - 40 °C to +85 °C		
Maximum surface temperature of the device in the tripped state is 125 °C		

Agency Approval and Environmental Compliance

Agency	File Number	Regulation	Standard
UL	E524436		LCS210427075AR
TUV	pending		pending

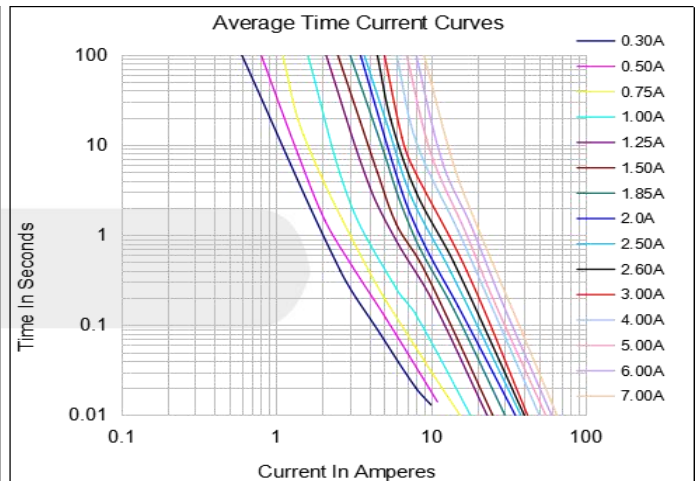
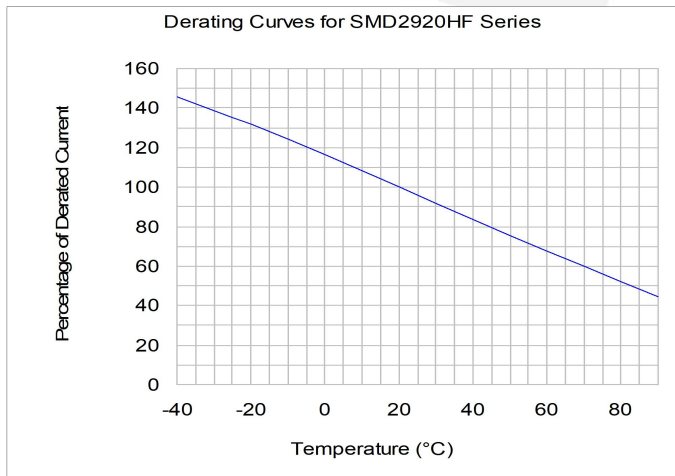
Thermal Derating Chart

Recommended Hold Current(A) at Ambient Temperature(°C)

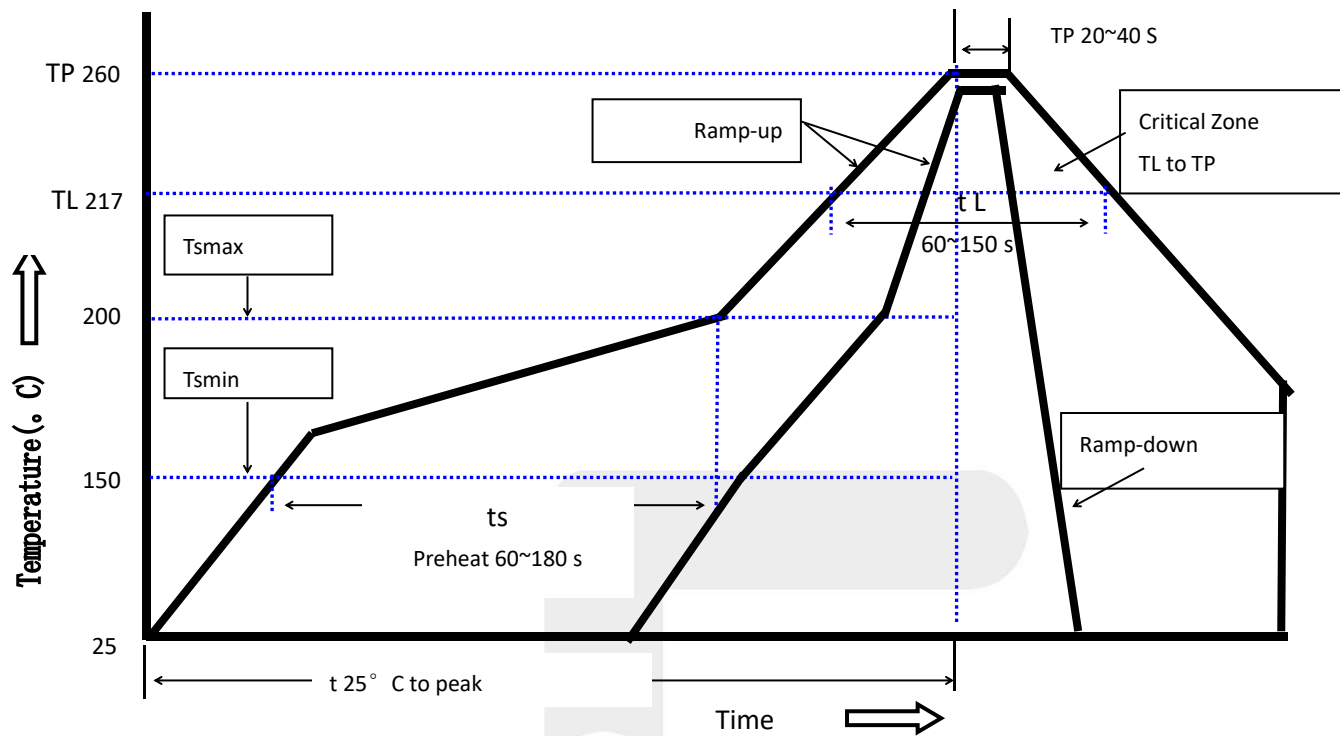
Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD2920E030SF	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
SMD2920E050SF	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
SMD2920E075SF	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
SMD2920E100SF	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
SMD2920E125SF	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
SMD2920E150SF	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
SMD2920E185SF	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
SMD2920E200SF	3.02	2.68	2.34	2.00	1.66	1.50	1.32	1.16	0.90
SMD2920E250SF	3.78	3.35	2.93	2.50	2.08	1.88	1.65	1.45	1.13
SMD2920E260SF	3.64	3.25	2.91	2.60	2.26	2.08	1.95	1.74	1.13
SMD2920E300SF	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
SMD2920E400SF	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
SMD2920E500SF	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
SMD2920E600SF	8.60	7.70	6.80	6.00	4.95	4.60	4.06	3.65	3.15
SMD2920E700SF	10.03	8.98	7.93	7.00	5.77	5.36	4.73	4.26	3.68

Thermal Derating Curve

Average Time-Current Curve



Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate(Ts max to T p)	3°C/second max.
Preheat	
-Temperature Min(Ts min)	150°C
-Temperature Max(Ts max)	200°C
-Time(Ts min to Ts max)	60~180 seconds
Time maintained above:	
-Temperature(TL)	217°C
-Time(tL)	60~150 seconds
Peak Temperature(Tp)	260°C
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max
Storage Condition	0°C~30°C,30%~60%RH

Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free

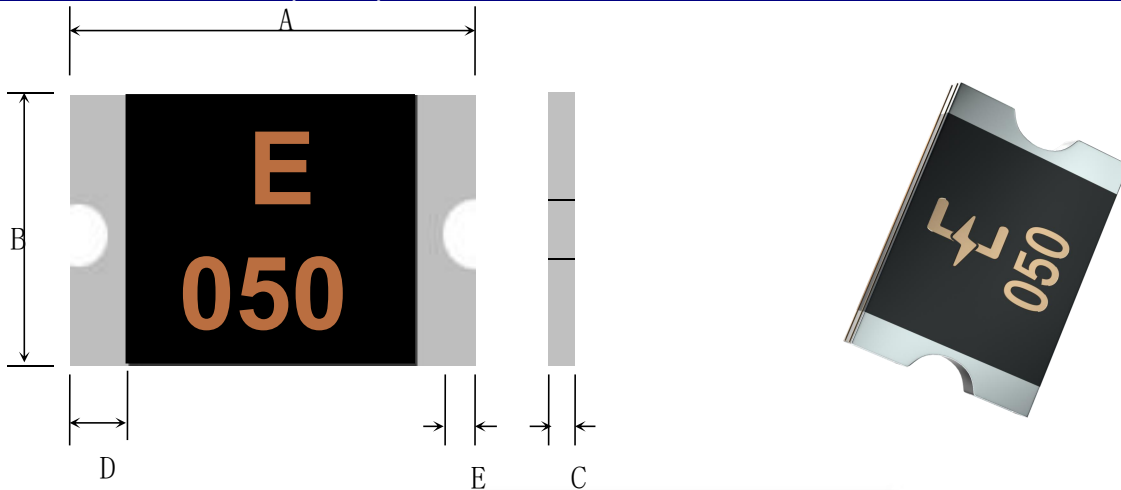
Recommended maximum paste thickness is 0.25mm

Devices can be cleaned using standard industry methods and solvents.

Note 1:All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Physical Dimensions(mm.)



注：E 为“闪电 E” LOGO

Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD2920E030SF60V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E030SF72V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E050SF60V	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920E075SF33V	6.73	7.98	4.80	5.44	0.70	1.30	0.30	0.25
SMD2920E075SF60V	6.73	7.98	4.80	5.44	0.80	1.60	0.30	0.25
SMD2920E100SF33V	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
SMD2920E100SF60V	6.73	7.98	4.80	5.44	1.00	2.10	0.30	0.25
SMD2920E125SF33V	6.73	7.98	4.80	5.44	0.40	1.00	0.30	0.25
SMD2920E150SF33V	6.73	7.98	4.80	5.44	0.50	1.30	0.30	0.25
SMD2920E150SF42V	6.73	7.98	4.80	5.44	0.50	1.30	0.30	0.25
SMD2920E185SF33V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E185SF42V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E200SF16V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E200SF24V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E200SF33V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E200SF42V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E250SF16V	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920E250SF24V	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920E250SF33V	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920E260SF6V	6.73	7.98	4.80	5.44	0.7	1.40	0.30	0.25
SMD2920E260SF16V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E260SF24V	6.73	7.98	4.80	5.44	0.70	1.40	0.30	0.25
SMD2920E300SF6V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E300SF16V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E300SF24V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E300SF30V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E300SF33V	6.73	7.98	4.80	5.44	0.60	1.20	0.30	0.25
SMD2920E400SF6V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25

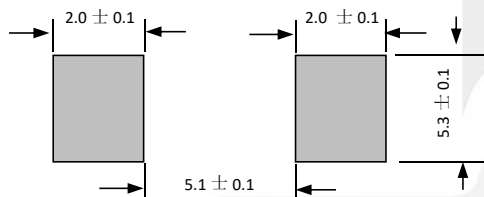
SMD2920E400SF16V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E400SF24V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E500SF6V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E500SF12V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E500SF16V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E500SF24V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E600SF6V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E600SF12V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E600SF16V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E700SF6V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25
SMD2920E700SF12V	6.73	7.98	4.80	5.44	1.00	1.60	0.30	0.25

Termination Pad Characteristics

Terminal pad materials: Tin-plated Nickel-Copper

Terminal pad solder ability: Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3.

Recommended Pad Layout (mm.)



Packaging Quantity

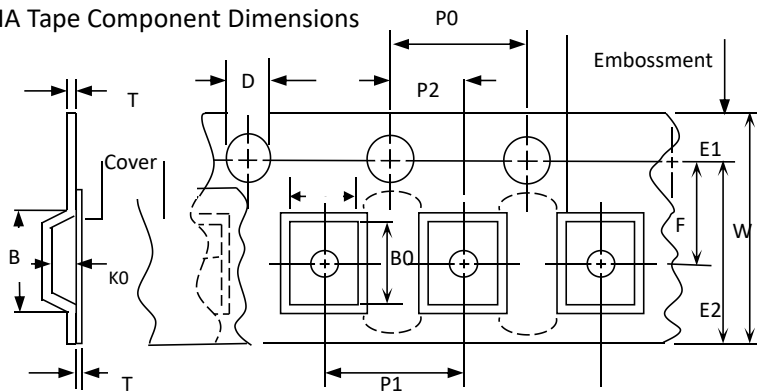
Part Number	Quantity
SMD2920 Series	1500 or 2000 pcs/reel

Tape & reel packaging per EIA481-1

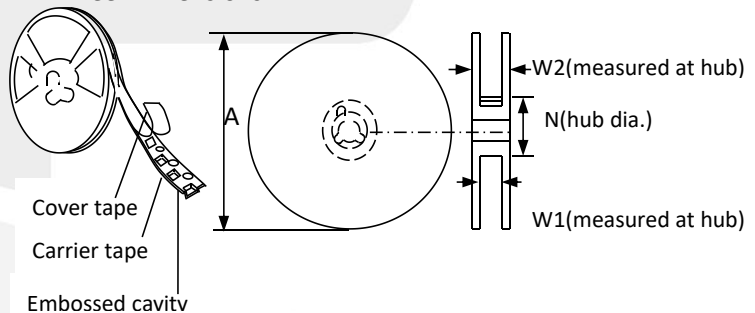
Tape And Reel Specifications (mm)

Governing Specifications	EIA 481-2
W	16.00 ± 0.3
P0	4.00 ± 0.10
P1	8.00 ± 0.10
P2	2.00 ± 0.05
A0	5.70 ± 0.10
B0	8.00 ± 0.10
B1max.	12.10
D0	1.50 + 0.1, -0
F	7.50 ± 0.05
E1	1.75 ± 0.10
E2min.	14.25
T	0.60
T1max.	0.10
K0	0.80 ± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	60
W1	16.40 ± 0.5
W2	22.40

EIA Tape Component Dimensions



EIA Reel Dimensions



Storage And Handling

- Storage conditions: 0°C~30°C , 30%~60% R.H.
- Devices may not meet specified performance if storage conditions are exceeded.

Part Number System

SMD 2920 E □□□ S E □□ V

special voltage Rating(Optional)

Lead-Free

Tin-plated Nickel-Copper

Holding Current Rating

PROTECTOM

Device Dimensions: Length/width(Unit:1/100 inch) Size 7555mm / 2920inch

Surface Mount Device