CHIP SURGE PROTECTOR

DESCRIPTION:

ALPCSPXXXXVXXX-XXX Series is Provides Higher Power Dissipation and High Surge Current Capability and Low Camping Voltage. Designed to support wide range of applications, Power Supply, network interface and excellent environmental performance with RoHS Compliant.

FEATURES:

- Multi-Layers Construction Provides Higher Power Dissipation
- High Surge Current Capability and Low Camping Voltage
- Better than UL94V-0 Flammability Rating
- Operating Temperature: -55 ~ 125°C
- Leakage Current <40µA
- Inherent Bi-directional Clamping
- SMD type, Small Size Suitable for High Density Mounting
- Excellent Solderability (Ni, Sn plating)
- "Zero" Lead Inductance
- RoHS Compliant.

APPLICATIONS:

- Power Supply
- Network Interface
- LED Lighting
- Security System
- PLC
- Industrial Instrument
- Smart Meters

ORDERING PART NUMBER

PART NUMBERING SYSTEM	ORDERING PART NUMBER
ALPCSPXXXXVXXX-XXX **Example: ALP CSP 1206 V240 - 251** ALP — ALPINESEMI® CSP — Chip Surge Protector 1206 — Protector Device Sizes: 0603, 0805, 0806, 1206, 1210, 1812, 2220 V240 — Varistor Voltage: i.e., 240 = 24 x 10^0 V = 24V 251 — Surge Current Capability: i.e., 251=25 x 10^1 =250A (@8/20µs)	**ALPCSPXXXXVXXX-XXX-SM** **Example: ALPCSP1206V240-251-SM**

All ALPINESEMI™ parts are manufacturered at the facility approved ISO/TS 16949, ISO 9001 and ISO 14001

ELECTRICAL SPECIFICATIONS - 0603 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP0603V120-300	5.5	4.0	12 [10-14]	23	1.0	0.05	30
ALPCSP0603V120-600	5.5	4.0	12 [10-14]	23	1.0	0.1	60
ALPCSP0603V140-300	9	6.4	14 [11-16]	30	1.0	0.05	30
ALPCSP0603V140-101	9	6.4	14 [11-16]	30	1.0	0.1	100
ALPCSP0603V180-300	14	10.0	18 [16-22]	35	1.0	0.05	30
ALPCSP0603V180-101	14	10.0	18 [16-22]	35	1.0	0.1	100
ALPCSP0603V240-101	18	12.7	24 [22-28]	45	1.0	0.1	100
ALPCSP0603V330-300	26	18.4	33 [31-38]	60	1.0	0.05	30
ALPCSP0603V330-101	26	18.4	33 [31-38]	60	1.0	0.1	100
ALPCSP0603V420-101	30	21.3	42 [37-46]	70	1.0	0.1	100
ALPCSP0603V500-800	38	30.0	50 [46-54]	80	1.0	0.08	80
ALPCSP0603V600-600	48	34.1	60 [54-67]	110	1.0	0.08	60
ALPCSP0603V680-300	56	40.0	68 [61-75]	125	1.0	0.05	30
ALPCSP0603V750-300	60	46.0	75 [69-83]	130	1.0	0.05	30
ALPCSP0603V820-300	65	50.0	82 [73-91]	135	1.0	0.05	30
ALPCSP0603V101-200	85	60.0	100 [90-110]	165	1.0	0.03	20

All ALPINESEMI™ parts are manufacturered at the facility approved ISO/TS 16949, ISO 9001 and ISO 14001

ELECTRICAL SPECIFICATIONS – 0805 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP0805V120-600	5.5	4	12 [10-14]	23	5.0	0.2	60
ALPCSP0805V120-121	5.5	4	12 [10-14]	23	5.0	0.3	120
ALPCSP0805V120-151	5.5	4	12 [10-14]	23	5.0	0.4	150
ALPCSP0805V140-600	9.0	6.4	14 [11-16]	30	5.0	0.2	60
ALPCSP0805V140-121	9.0	6.4	14 [11-16]	30	5.0	0.3	120
ALPCSP0805V140-151	9.0	6.4	14 [11-16]	30	5.0	0.4	150
ALPCSP0805V180-600	14	10	18 [16-22]	35	5.0	0.2	60
ALPCSP0805V180-121	14	10	18 [16-22]	35	5.0	0.3	120
ALPCSP0805V180-151	14	10	18 [16-22]	35	5.0	0.4	150
ALPCSP0805V240-600	18	12.7	24 [22-28]	45	5.0	0.2	60
ALPCSP0805V240-121	18	12.7	24 [22-28]	45	5.0	0.3	120
ALPCSP0805V240-151	18	12.7	24 [22-28]	45	5.0	0.4	150
ALPCSP0805V300-600	22	15.6	30 [26-34]	50	5.0	0.2	60
ALPCSP0805V300-121	22	15.6	30 [26-34]	50	5.0	0.3	120
ALPCSP0805V330-600	26	18.4	33 [31-38]	60	5.0	0.2	60
ALPCSP0805V330-121	26	18.4	33 [31-38]	60	5.0	0.3	120
ALPCSP0805V420-600	30	21.3	42 [37-46]	70	5.0	0.2	60
ALPCSP0805V420-121	30	21.3	42 [37-46]	70	5.0	0.3	120

ELECTRICAL SPECIFICATIONS – 0806 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP0806V140-201	9	6.4	14 [11-16]	30	5.0	0.3	200
ALPCSP0806V140-401	9	6.4	14 [11-16]	30	5.0	0.5	400
ALPCSP0806V180-201	14	10.0	18 [16-22]	35	5.0	0.3	200
ALPCSP0806V180-401	14	10.0	18 [16-22]	35	5.0	0.5	400
ALPCSP0806V240-201	18	12.7	24 [22-28]	45	5.0	0.3	200
ALPCSP0806V240-401	18	12.7	24 [22-28]	45	5.0	0.5	400
ALPCSP0806V330-201	26	18.4	33 [31-38]	60	5.0	0.3	200
ALPCSP0806V330-401	26	18.4	33 [31-38]	60	5.0	0.5	400
ALPCSP0806V420-201	30	21.3	42 [37-46]	70	5.0	0.3	200
ALPCSP0806V420-401	30	21.3	42 [37-46]	70	5.0	0.5	400
ALPCSP0806V500-401	38	30.0	50 [46-54]	80	5.0	0.7	400
ALPCSP0806V600-301	48	34.1	60 [54-67]	110	5.0	0.7	300
ALPCSP0806V680-301	56	40.0	68 [61-75]	125	5.0	0.7	300
ALPCSP0806V750-301	60	46.0	75 [69-83]	130	5.0	0.7	300
ALPCSP0806V820-301	65	50.0	82 [73-91]	135	5.0	0.7	300
ALPCSP0806V101-201	85	60.0	100 [90-110]	165	5.0	0.7	200
ALPCSP0806V121-201	100	75.0	120 [108-132]	200	5.0	0.7	200
ALPCSP0806V151-151	125	95.0	150 [135-185]	260	5.0	0.5	150
ALPCSP0806V181-101	150	115	180 [162-198]	325	5.0	0.5	100

All ALPINESEMI™ parts are manufacturered at the facility approved ISO/TS 16949, ISO 9001 and ISO 14001

ELECTRICAL SPECIFICATIONS – 1206 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP1206V120-251	5.5	4.0	12 [10-14]	23	5.0	0.3	250
ALPCSP1206V140-251	9	6.4	14 [12-16]	30	5.0	0.3	250
ALPCSP1206V140-501	9	6.4	14 [12-16]	30	5.0	0.6	500
ALPCSP1206V180-251	14	10.0	18 [16-22]	35	5.0	0.3	250
ALPCSP1206V180-501	14	10.0	18 [16-22]	35	5.0	0.6	500
ALPCSP1206V240-251	18	12.7	24 [22-28]	45	5.0	0.3	250
ALPCSP1206V240-501	18	12.7	24 [22-28]	45	5.0	0.6	500
ALPCSP1206V330-251	26	18.4	33 [31-38]	60	5.0	0.3	250
ALPCSP1206V330-501	26	18.4	33 [31-38]	60	5.0	0.6	500
ALPCSP1206V420-201	30	21.3	42 [37-46]	70	5.0	0.4	200
ALPCSP1206V420-501	30	21.3	42 [37-46]	70	5.0	0.7	500
ALPCSP1206V500-201	38	30.0	50 [46-54]	80	5.0	0.4	200
ALPCSP1206V500-501	38	30.0	50 [46-54]	80	5.0	0.8	500
ALPCSP1206V600-151	48	34.1	60 [54-67]	110	5.0	0.4	150
ALPCSP1206V600-501	48	34.1	60 [54-67]	110	5.0	1.0	500
ALPCSP1206V680-151	56	40.0	68 [61-75]	125	5.0	0.4	150
ALPCSP1206V680-501	56	40.0	68 [61-75]	125	5.0	1.2	500
ALPCSP1206V750-151	60	46.0	75 [69-83]	130	5.0	0.4	150
ALPCSP1206V750-501	60	46.0	75 [69-83]	130	5.0	1.2	500
ALPCSP1206V820-151	65	50.0	82 [73-91]	135	5.0	0.5	150
ALPCSP1206V820-501	65	50.0	82 [73-91]	135	5.0	1.2	500
ALPCSP1206V101-151	85	60.0	100 [90-110]	165	5.0	0.5	150
ALPCSP1206V101-401	85	60.0	100 [90-110]	165	5.0	1.2	400
ALPCSP1206V121-151	100	75.0	120 [108-132]	200	5.0	0.5	150
ALPCSP1206V121-401	100	75.0	120 [108-132]	200	5.0	1.2	400
ALPCSP1206V151-301	125	95.0	150 [135-185]	260	5.0	1.2	300
ALPCSP1206V181-201	150	115	180 [162-198]	325	5.0	1.2	200

ELECTRICAL SPECIFICATIONS – 1210 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP1210V120-401	5.5	4.0	12 [10-14]	23	5.0	0.5	400
ALPCSP1210V140-401	9	6.4	14 [12-16]	30	5.0	0.5	400
ALPCSP1210V180-401	14	10.0	18 [16-22]	35	5.0	0.5	400
ALPCSP1210V180-102	14	10.0	18 [16-22]	35	5.0	1.5	1000
ALPCSP1210V240-401	18	12.7	24 [22-28]	45	5.0	0.5	400
ALPCSP1210V240-102	18	12.7	24 [22-28]	45	5.0	1.5	1000
ALPCSP1210V330-401	26	18.4	33 [31-38]	60	5.0	0.5	400
ALPCSP1210V330-102	26	18.4	33 [31-38]	60	5.0	1.5	1000
ALPCSP1210V420-301	30	21.3	42 [37-46]	70	5.0	0.5	300
ALPCSP1210V420-102	30	21.3	42 [37-46]	70	5.0	2	1000
ALPCSP1210V500-301	38	30.0	50 [46-54]	80	5.0	0.8	300
ALPCSP1210V500-102	38	30.0	50 [46-54]	80	5.0	2.5	1000
ALPCSP1210V600-301	48	34.1	60 [54-67]	110	5.0	0.8	300
ALPCSP1210V600-102	48	34.1	60 [54-67]	110	5.0	3	1000
ALPCSP1210V680-301	56	40.0	68 [61-75]	125	5.0	1	300
ALPCSP1210V680-801	56	40.0	68 [61-75]	125	5.0	3	800
ALPCSP1210V680-122	56	40.0	68 [61-75]	125	5.0	4	1200
ALPCSP1210V750-301	60	46.0	75 [69-83]	130	5.0	1	300
ALPCSP1210V750-801	60	46.0	75 [69-83]	130	5.0	3	800
ALPCSP1210V750-122	60	46.0	75 [69-83]	130	5.0	4	1200
ALPCSP1210V820-301	65	50.0	82 [73-91]	135	5.0	1.6	300
ALPCSP1210V820-122	65	50.0	82 [73-91]	135	5.0	4	1200
ALPCSP1210V101-201	85	60.0	100 [90-110]	165	5.0	0.7	200
ALPCSP1210V101-401	85	60.0	100 [90-110]	165	5.0	1.6	400
ALPCSP1210V101-152	85	60.0	100 [90-110]	165	5.0	5	1500
ALPCSP1210V121-201	100	75.0	120 [108-132]	200	5.0	1	200
ALPCSP1210V121-102	100	75.0	120 [108-132]	200	5.0	5	1000
ALPCSP1210V151-801	125	95.0	150 [135-185]	260	5.0	5	800
ALPCSP1210V181-801	150	115	180 [162-198]	325	5.0	5	800

ELECTRICAL SPECIFICATIONS – 1812 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP1812V120-801	5.5	4.0	12 [10-14]	23	5.0	1.2	800
ALPCSP1812V140-801	9	6.4	14 [12-16]	30	5.0	1.2	800
ALPCSP1812V180-801	14	10.0	18 [16-22]	35	5.0	1.2	800
ALPCSP1812V180-202	14	10.0	18 [16-22]	35	5.0	2.0	2000
ALPCSP1812V240-801	18	12.7	24 [22-28]	45	5.0	1.2	800
ALPCSP1812V240-202	18	12.7	24 [22-28]	45	5.0	2.0	2000
ALPCSP1812V330-801	26	18.4	33 [31-38]	60	5.0	1.5	800
ALPCSP1812V330-142	26	18.4	33 [31-38]	60	5.0	1.8	1400
ALPCSP1812V330-202	26	18.4	33 [31-38]	60	5.0	2.2	2000
ALPCSP1812V420-801	30	21.3	42 [37-46]	70	5.0	1.5	800
ALPCSP1812V420-202	30	21.3	42 [37-46]	70	5.0	2.5	2000
ALPCSP1812V500-801	38	30.0	50 [46-54]	80	5.0	1.5	800
ALPCSP1812V500-202	38	30.0	50 [46-54]	80	5.0	2.5	2000
ALPCSP1812V600-601	48	34.1	60 [54-67]	110	5.0	1.2	600
ALPCSP1812V600-202	48	34.1	60 [54-67]	110	5.0	3	2000
ALPCSP1812V680-601	56	40.0	68 [61-75]	125	5.0	1.2	600
ALPCSP1812V680-202	56	40.0	68 [61-75]	125	5.0	3.5	2000
ALPCSP1812V750-601	60	46.0	75 [69-83]	130	5.0	1.2	600
ALPCSP1812V750-202	60	46.0	75 [69-83]	130	5.0	3.5	2000
ALPCSP1812V820-601	65	50.0	82 [73-91]	135	5.0	1.5	600
ALPCSP1812V820-202	65	50.0	82 [73-91]	135	5.0	3.5	2000
ALPCSP1812V820-302	65	50.0	82 [73-91]	135	5.0	7.5	3000
ALPCSP1812V101-501	85	60.0	100 [90-110]	165	5.0	2	500
ALPCSP1812V101-152	85	60.0	100 [90-110]	165	5.0	6.5	1500
ALPCSP1812V121-501	100	75.0	120 [108-132]	200	5.0	2	500
ALPCSP1812V121-152	100	75.0	120 [108-132]	200	5.0	7	1500
ALPCSP1812V151-501	125	95.0	150 [135-165]	260	5.0	2	500
ALPCSP1812V151-102	125	95.0	150 [135-165]	260	5.0	7	1000
ALPCSP1812V181-501	150	115	180 [162-198]	325	5.0	1.8	500
ALPCSP1812V181-102	150	115	180 [162-198]	325	5.0	7	1000

ELECTRICAL SPECIFICATIONS – 2220 Type

ELECTRICAL SPECIFICATIONS							
Product Code	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20µs		Energy @10/1000 µs	Peak Pulse Current @8/20µs
	DC (V)	AC (V)	V_N (V)	V_C (V)	I_C (A)	E_T (J)	I_{PP} (A)
ALPCSP2220V120-122	5.5	4.0	12 [10-14]	23	5.0	1.5	1200
ALPCSP2220V140-122	9	6.4	14 [12-16]	30	10.0	1.5	1200
ALPCSP2220V180-122	14	10.0	18 [16-22]	35	10.0	1.5	1200
ALPCSP2220V180-302	14	10.0	18 [16-22]	35	10.0	4	3000
ALPCSP2220V240-122	18	12.7	24 [22-28]	45	10.0	1.5	1200
ALPCSP2220V240-302	18	12.7	24 [22-28]	45	10.0	4	3000
ALPCSP2220V330-122	26	18.4	33 [31-38]	60	10.0	1.5	1200
ALPCSP2220V330-302	26	18.4	33 [31-38]	60	10.0	4	3000
ALPCSP2220V420-122	30	21.3	42 [37-46]	70	10.0	2.6	1200
ALPCSP2220V420-302	30	21.3	42 [37-46]	70	10.0	7	3000
ALPCSP2220V500-122	38	30.0	50 [46-54]	80	10.0	2.6	1200
ALPCSP2220V500-302	38	30.0	50 [46-54]	80	10.0	8	3000
ALPCSP2220V500-502	38	30.0	50 [46-54]	80	10.0	10	5000
ALPCSP2220V500-802	38	30.0	50 [46-54]	80	10.0	6	8000
ALPCSP2220V600-901	48	34.1	60 [54-67]	110	10.0	3	900
ALPCSP2220V600-302	48	34.1	60 [54-67]	110	10.0	10	3000
ALPCSP2220V680-901	56	40.0	68 [61-75]	125	10.0	3	900
ALPCSP2220V680-502	56	40.0	68 [61-75]	125	10.0	17	5000
ALPCSP2220V750-901	60	46.0	75 [69-83]	130	10.0	2.7	900
ALPCSP2220V750-502	60	46.0	75 [69-83]	130	10.0	5	5000
ALPCSP2220V820-901	65	50.0	82 [73-91]	135	10.0	3	900
ALPCSP2220V820-302	65	50.0	82 [73-91]	135	10.0	10	3000
ALPCSP2220V820-502	65	50.0	82 [73-91]	135	10.0	18	5000
ALPCSP2220V101-801	85	60.0	100 [90-110]	165	10.0	4	800
ALPCSP2220V101-452	85	60.0	100 [90-110]	165	10.0	21	4500
ALPCSP2220V121-801	100	75.0	120 [108-132]	200	10.0	4	800
ALPCSP2220V121-402	100	75.0	120 [108-132]	200	10.0	21	4000
ALPCSP2220V151-202	125	95.0	150 [135-165]	260	5.0	12	2000
ALPCSP2220V181-152	150	115	180 [162-198]	325	5.0	12	1500

TYPICAL DEVICE RATING AND CHARACTERISTICS CURVES

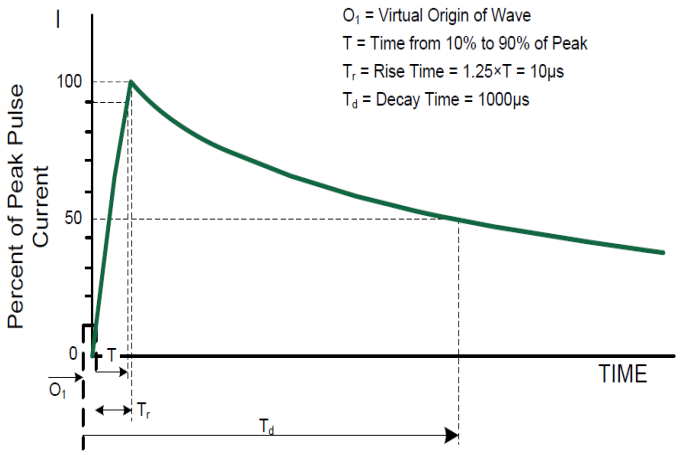


Fig.1 Pulse Waveform - 10/1000μs waveform

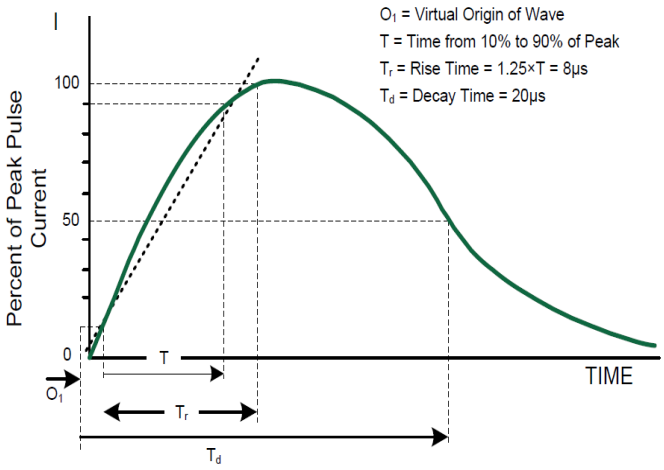


Fig.2 Pulse Waveform - 8/20μs waveform

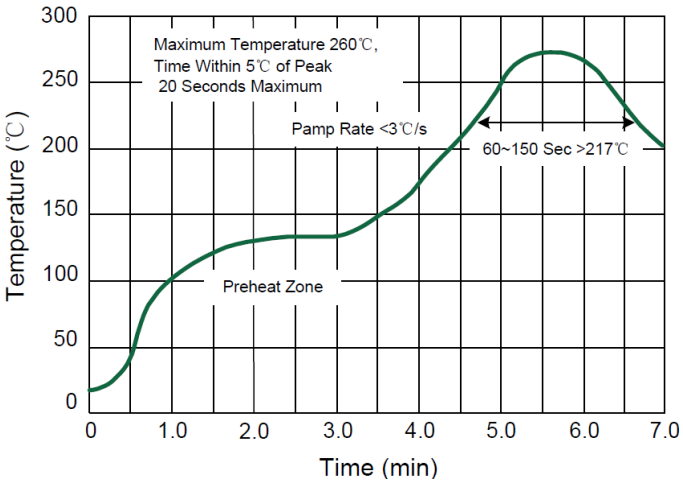


Fig.3 Lead–free Re-flow Solder Profile

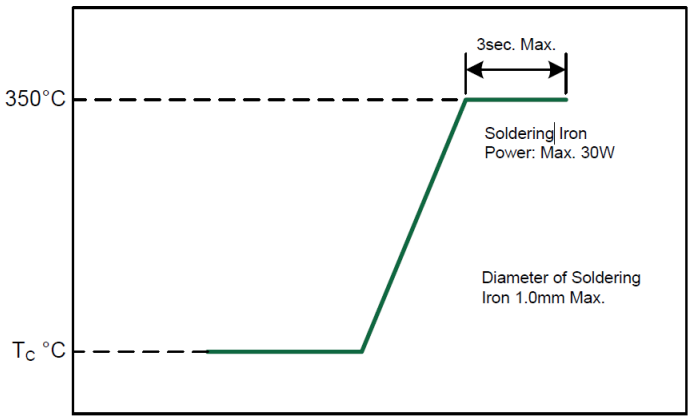


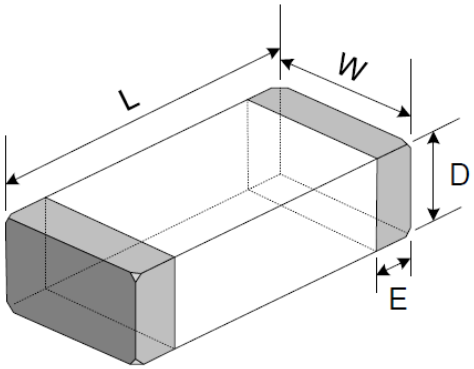
Fig.4 Iron Soldering Profile

STORAGE

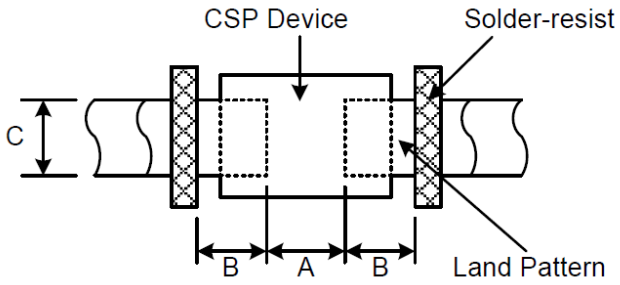
- Operating and storage temperature range (individual chip without packing): -55℃ ~ +125℃.
- Storage temperature range (packaging conditions): -10℃~+40℃ RH 70% (Max.).
- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at 40℃ or less and 70% RH or less.
- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust of harmful gas (e.g. HCl, sulfurous gas of H2S).
- Packaging material may be deformed if package is stored where they are exposed to heat of direct sunlight.
- Solderability shall be guaranteed for 12 months from the date of delivery on condition that they are stored at the environment specified in Clause 2. For those parts, which passed more than 12 months shall be checked solder-ability before use

PACKAGE INFORMATION

DIMENSIONS



Product Dimensions

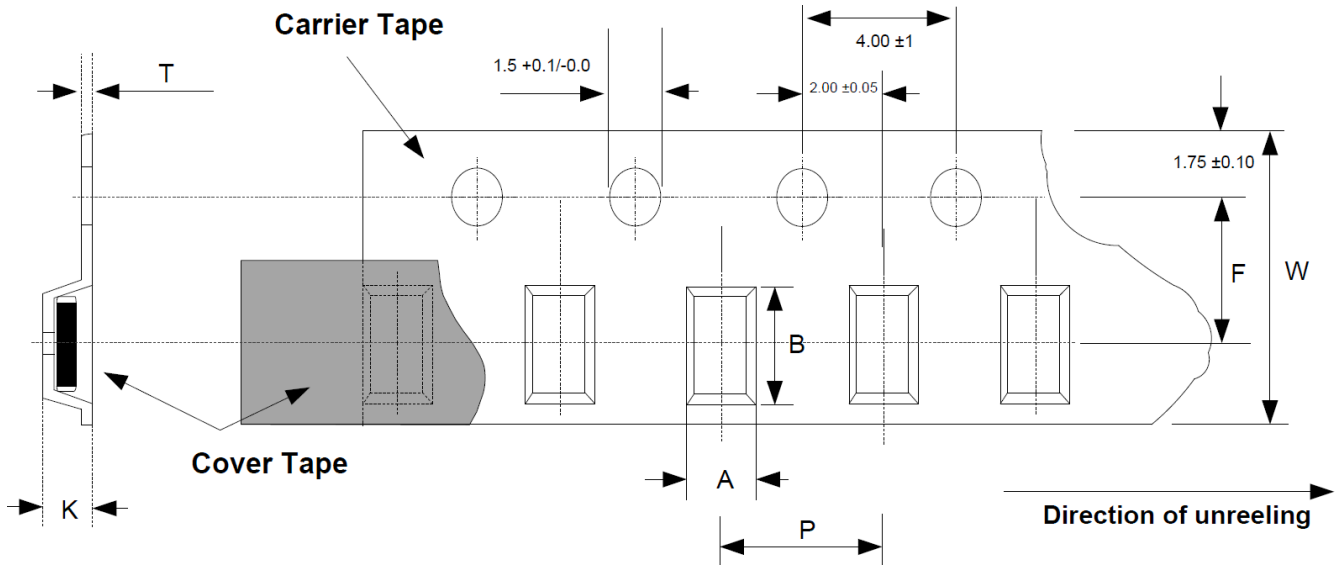


Recommended PCB Pattern

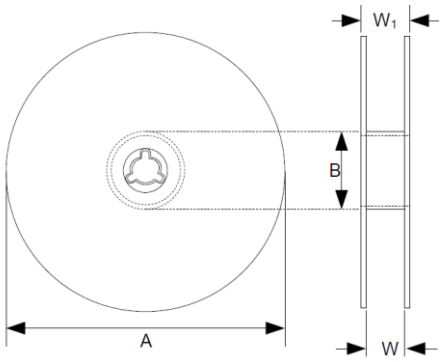
SIZE	L	W	D Max.	E	A	B	C
0603	1.6±0.15	0.8±0.15	1.0	0.1~0.5	0.6~0.8	0.6~0.8	0.6~0.8
0805	2.0±0.2	1.25±0.2	1.05	0.2~0.8	1.2~1.6	0.8~1.2	0.9~1.6
0806	2.2±0.2	1.6 +0.4/-0.2	2.0	0.25~0.75	1.2~1.6	0.8~1.2	1.6~2.0
1206	3.2±0.2	1.6±0.2	2.0	0.25~0.75	1.8~2.5	1.0~1.5	1.2~2.0
1210	3.2±0.3	2.5±0.25	2.5	0.25~0.75	1.9~2.1	1.2~1.5	2.6~2.8
1812	4.5±0.4	3.2±0.3	3.2	0.25~1.0	2.8~3.0	1.5~1.8	3.3~3.6
2220	5.9±0.2	5.1±0.2	3.2	0.25~1.3	4.0~4.2	1.8~2.0	5.2~5.5

All ALPINESEMI™ parts are manufacturered at the facility approved ISO/TS 16949, ISO 9001 and ISO 14001

TAPE SPECIFICATIONS REEL



Dimension	0603	0805	0806	1206	1210	1812	2220
A	1.00±0.20	1.50±0.20	2.10±0.10	2.10 ±0.10	3.00 ±0.10	3.80 ±0.10	5.40 ±0.10
B	1.80±0.20	2.30±0.20	2.50±0.20	3.90 ±0.10	3.90 ±0.10	5.20 ±0.10	6.10 ±0.10
K	1.10.	1.10.	2.20.	2.20.	2.90.	3.80.	3.80.
P	4.00 ±0.10	4.00 ±0.10	4.00 ±0.10	4.00 ±0.10	4.00 ±0.10	8.00 ±0.10	8.00 ±0.10
W	8.00 ±0.30	8.00 ±0.30	8.00 ±0.30	8.00 ±0.30	8.00 ±0.30	12.00 ±0.20	12.00 ±0.20
F	3.50 ±0.05	3.50 ±0.05	3.50 ±0.05	3.50 ±0.05	3.50 ±0.05	5.50 ±0.05	5.50 ±0.05
K max	1.10.	1.10.	2.20.	2.20.	2.90.	3.80.	3.80.
T max	0.33	0.33	0.33	0.33	0.33	0.33	0.40
Quantity	4K pcs	4K pcs	2K pcs	2K/3K pcs	1.5K/2K pcs	2K/4K pcs	2K/3K pcs
Reel Size	7 Inch (178mm)					13 Inch (330mm)	

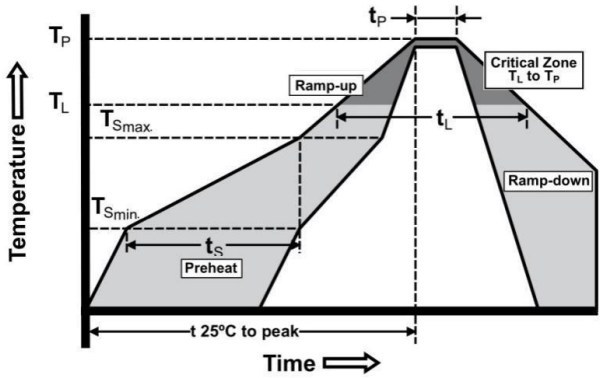


Type	Dimensions (mm)			
	A	B	W	W1
7''	178±2.0	58±2.0	8.4+1.5/-0.0	Max. 14.4
13''	330±2.0	100±2.0	12.4+2.0/-0.0	Max. 14.4

RECOMMENDED SOLDER CURVE

Reflow Soldering:

- Temperature: 260°C
- Time: 30 sec Max.
- Recommend Reflow profile



Profile Feature	Pb Free Assembly
Average Ramp-up Rate (Ts_{max} to Tp)	3°C sec Max.
Preheat Temperature Min. (Ts_{min}) Temperature Max. (Ts_{max}) Time (Ts_{min} toTs_{max})	 150°C 200°C 60sec ~ 120sec
Peak Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature(tp)	20sec
Melting tin time(t_L)	60sec ~ 150sec
Ramp-down Rate	6°C /sec Max.
Time 25°C to peak Temperature	8minutes Max.

Wave soldering

- Reservoir Temperature: 260℃
- Time in Reservoir: 10sec Max.

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CUSTOMER NOTE:

DISCLAIMER

The product information and the selection guide facilitates the selection of the ALPINESEMI™'s Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review the Data sheet(s) so as to confirm that the Device(s) meets functionality parameters for your application. The information furnished on the Data Sheet and the ALPINESEMI™'s Web Site is believed to be accurate and reliable at the time of preparation of this document. ALPINESEMI™ however, does not assume any inaccuracies that may arise when the components are mounted and removed. Furthermore, ALPINESEMI™ does not assume liability whatsoever, arising out of the application or the use of any of ALPINESEMI™'s product(s). Neither, does it convey any license under its patent rights nor the rights of others. These products are not guaranteed for use in life saving/support appliances or systems. ALPINESEMI™'s customers using these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and ALPINESEMI™ will not be responsible in any way(s) for any damage(s) resulting from such use.

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Component Disposal Instructions

1. ALPINESEMI™ Semiconductor Devices are RoHS compliant and hence customers are requested to dispose as per the prevailing Environmental Legislation put forth in their specific country.

2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

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