TWIN SMD CERAMIC PTC THERMISTOR

DESCRIPTION:

The component consists of two high-performance ceramic PTCs mounted in a lead-frame for (SMD) direct soldering onto a printed-circuit board (PCB) or substrate. The ceramic PTCs are soldered to the lead frame by a reflow process, during which the solder layer is melted to the metallized ceramic surface using a low residue flux. This structure can hold the low matched resistance in a loop. The component in accordance to RoHS.

FEATURES:

- Very small footprint, allowing to increase the number of lines per PCB
- Matched pairs in one component, significantly reducing the assembly time
- Limited height and weight, used on high speed pick-and-place circuit assembly
- Flat pick-up ceramic area for easy placement
- Smaller ceramics for faster response time
- Thermal coupled PTC's for enhanced protection
- Four spaced terminations for heat flow regulation and improved mechanical stability
- RoHS compliant and suitable for Pb-baring and Pb-free reflow soldering
- Compliant with ITU-T K.21
- Basic level lightning surges (10/700 µs)
- Basic level power induction (600V, 1A, 0.2s)
- Power contact criteria A/B (230V, 15min.)

APPLICATIONS

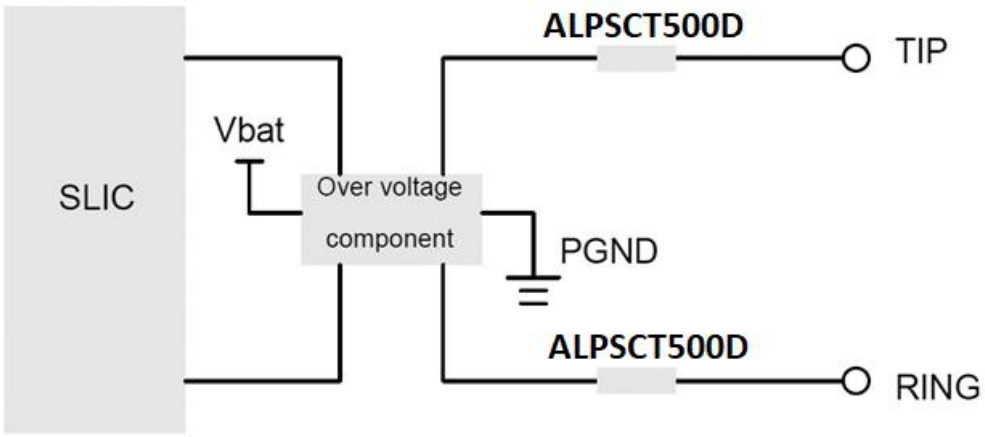
Dual SMD PTC are typically used as the principle overcurrent protectors in Telecom product interface circuit.

- Transmission equipment such as Central Office linecard, DLC linecard, NGN linecard, MSAN linecard, FTTx linecard.
- Customer Premises Equipment (CPE) such as IAD-VoDSL, ATA, STB, VoIPGW, VoCable, Wireless VoIP router, PC telephony card.
- PBX's and other switches.
- Primary protection including main distribution frames, building entrance equipment and station protection modules.

STANDARDS

- Housing material according to UL94-V0.
- Climatic category acc. to IEC 68-1 40/125/56.
- Compliant with ITU-T K21.

TYPICAL VoIP SLIC PROTECTION CIRCUIT



BASIC REFERENCE DATA

MAXIMUM RATINGS @ T_A = 25 °C unless otherwise specified		
PARAMETER	**VALUE**	**UNIT**
Rated voltage (RMS)	230	V
Maximum voltage (RMS)	250	V
Operating temperature range	0 to +70	°C
Weight	~1.557	g
Resistance	50 ±20%	Ω
The initial resistance difference of Two PTC thermistors in one house	1.0	Ω

ELECTRICAL CHARACTERISTICS @ T_A = 25 °C unless otherwise specified

PARAMETER	MIN	TYP.	MAX	UNIT
Rated zero power resistance (25℃)	40	50	60	Ω
The initial resistance difference of two PTC thermistor in one device at 25℃			1.0	Ω
Hold current at 25 ±2℃ 40 ±2℃ 60 ±2℃	 90 60 45			mA
Trip time 2.5A → 0.5A 1A → 0.5A 0.75A → 0.15A			 200 1 5	 mS S S
Surge test: 10/1000μs, 1KV, 25A, impulse 30 times, No crack and fire.		25		A
Power induction test: 600V_{AC}, 1A, On 0.2s, Off 60s, 10 times, No damage and fire		600		V
Power conduct test: 250 V_{AC}, no current-limited resistance for 15min, no damage.		250		V
Power contact test: 220 V_{AC}, 3A, on 1 min, off 10 min, 20 times, ΔR/R≤20%.		220 3		V A
Operating temperature range (V=0) (V=V_{max})		 -40 ~ +85 0 ~ +70		 ℃

PHYSICAL SPECIFICATIONS	
Lead material	Tin plated brass
Case material	PPS
Solder heat withstand	IEC-STD 68-2-20
Lead solderability	EIC60068-2-58
Flammability rating	IEC 695-2-2 Needle Flame Test for 20 s
Storage humidity	Per IPC/JEDEC J-STD-020A Level 2a

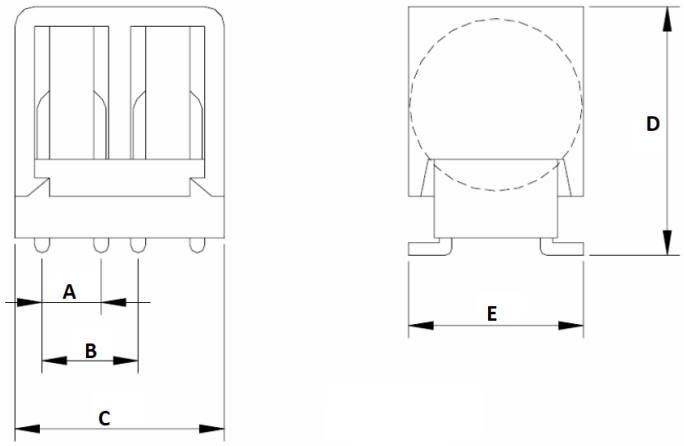
ENVIRONMENTAL SPECIFICATIONS		
NO.	ITEM	TEST CONDITION
1	Dry Hot	125℃, 1000h, V=0V
2	Dry cold	-40℃, 1000h, V=0V
3	Humidity aging	40℃, RH: 95%, 1000h, V=0V
4	Thermal shock	85°C, -40°C (10 times)
5	Solvent resistance	MIL-STD-202, Method 215F

ITU K.21 Performance

	TEST NO.	ITU K.21	
		BASIC TEST LEVEL	ENHANCED TEST LEVEL
Power Induction	1	A	A
	2	B	C
Power Contact	3	D	E
Lightning Surge	4	F	G
	5	H	I
ITU K.21 TEST CONDITION OVERVIEW			
Power Induction	A	$600V_{AC}$, R=600 Ohm, t=0, 2S, Criteria A	
	B	$600V_{AC}$, R=600 Ohm, t=1, 0S, with GDT, Criteria A	
	C	$1500V_{AC}$, R=200 Ohm, t=2, 0S, with GDT, Criteria A	
Power contact	D	$230V_{AC}$, t=15min, R=10-1000 Ohm, Criteria B	
	E	$230V_{AC}$, t=15min, R=10, 20, 40, 80, 1000 Ohm, Criteria B R=160, 300, 600 Ohm, Criteria A	
Lightning Surge	F	$U_{c(max)}$=1,0KV_{AC}, R=25 Ohm, t=10/700 Gs, without GDT, Criteria A	
	G	$U_{c(max)}$=1,5KV_{AC}, R=25 Ohm, t=10/700 Gs, without GDT, Criteria A	
	H	$U_{c(max)}$=4,0KV_{AC}, R=25 Ohm, t=10/700 Gs, with GDT, Criteria A	
	I	$U_{c(max)}$=6,0KV_{AC}, R=25 Ohm, t=10/700 Gs, with GDT, Criteria A	
Criteria A: no damage, function must be fulfilled. Criteria B: no fire hazard			

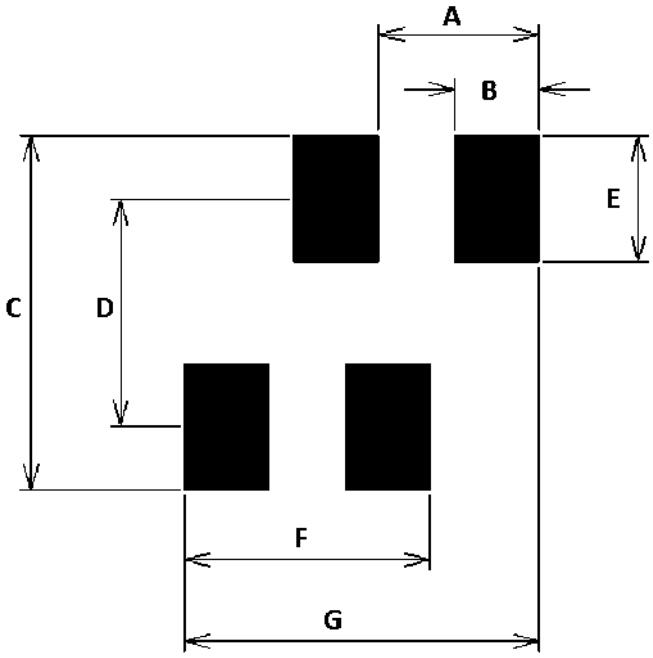
PACKAGE INFORMATION

ALPSCT500D



OUTLINE DIMENSIONS	
SYMBOL	MILLIMETERS
A	2.6
B	3.8
C	8.75
D	9.9
E	7.2

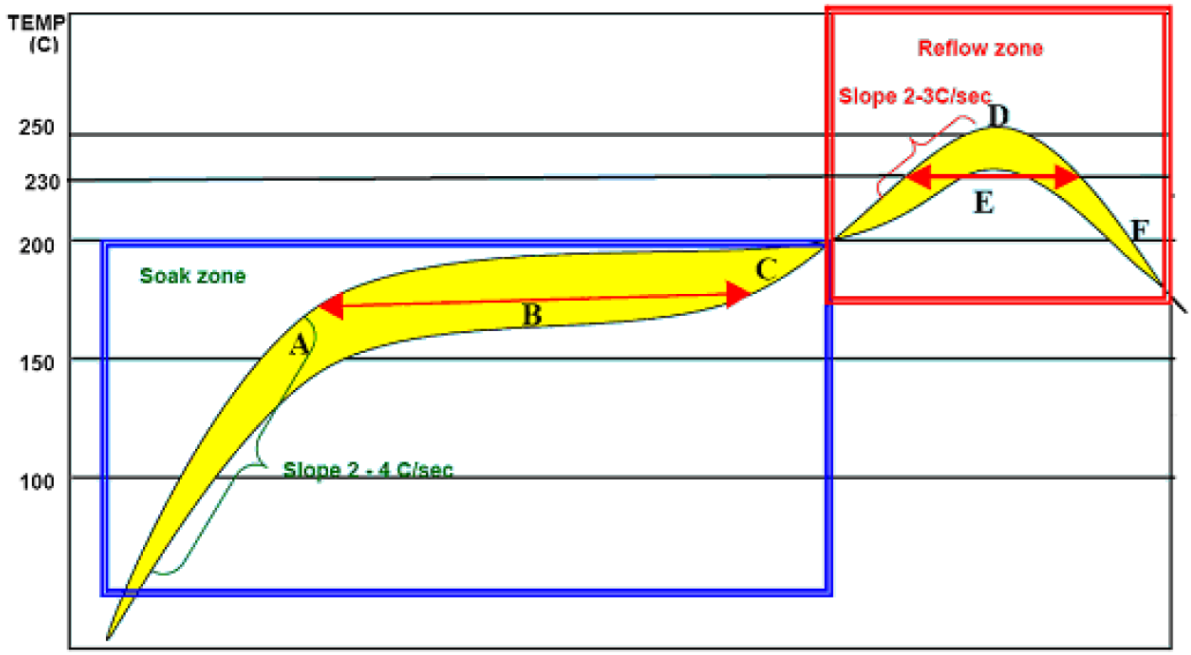
SUGGESTED SOLDER PAD LAYOUT



OUTLINE DIMENSIONS	
SYMBOL	MILLIMETERS
A	3.80
B	2.00
C	8.40
D	5.40
E	3.00
F	5.80
G	8.40

Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm
3. The pad layout is for reference purposes only.

REFLOW SOLDERING AND REWORK RECOMMENDATIONS



REFLOW SOLDER CURVE

Item	Process	Description	Reach Temp.	Time or Rate
A	Soak Start	From ambient to soak temperature and soak start	150℃ - 180℃	2℃ - 4℃ / sec
B	Soak time	Soak time	---	60s - 120s
C	Soak end	Soak end	180℃ - 200℃	---
D	Peak Temp.	From soak temperature to Peak temperature	260℃	2℃ - 3℃ / sec
E	Time above	Main heating time	230℃ - 260℃	40s - 60s
F	Cooling	From main heating temperature to 100℃	100℃	Max. 4℃ / sec

Notes:

1. Peak temperature can be high to 260℃, and the recommendation time is as below
   at 230℃ 40s ~ 60s
   at 240℃ 30s ~ 40s
   at 260℃ ~ 3s
2. Recommended reflow methods: IR, Vapor phase oven, hot air oven, wave solder.
3. Devices can be cleaned using standard industry methods and solvents.
4. Component can withstand 270℃ 10 sec.
5. If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

STORAGE

The production should be in the environment of good ventilation. The indoor temperature is -40℃～+55℃, and the relative humidity ≦85%（at 25℃）, without acid, alkali, and other harmful impurity.

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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sales@alpinesemi.com
www.alpinesemi.com