



- ◆ Suitable for “through hole” mounting directly onto the PCB of data communication, signal or telephone equipment.
- ◆ Available for working voltages of up to 6, 15, 30 and 50 volts, and telephone systems with a maximum working or ringing voltage of 190 volts.

Application

Use within OEM data communication, signal and telephone systems, where transient overvoltage protection needs to be integral to the unit. For further information on PCB mount applications, see separate Application Note AN003 (contact Furse for a copy).

Electrical specification

	ESP PCB/06D	ESP PCB/15D	ESP PCB/30D	ESP PCB/50D	ESP PCB/TN
Nominal voltage¹	6V	15V	30V	50V	*
Max working voltage²	7.79V	19V	37.1V	58V	190V
Current rating (signal)	300mA	300mA	300mA	300mA	300mA
In-line resistance (per line ±10%)	9.4W	9.4W	9.4W	9.4W	4.4W
Bandwidth (-3dB 50W system)	800kHz	2.5MHz	4MHz	6MHz	>50MHz

¹ Nominal voltage (DC or AC peak) measured at <5µA (ESP PCB/15D, ESP PCB/30D, ESP PCB/50D) and <200µA (ESP PCB/06D).

² Maximum working voltage (DC or AC peak) measured at <1mA leakage (ESP PCB/15D, ESP PCB/30D, ESP PCB/50D), <10mA (ESP PCB/06D) and <95µA (ESP PCB/TN).

* Post transient recovery voltage >80V.

Transient specification

	ESP PCB /06D	ESP PCB /15D	ESP PCB /30D	ESP PCB /50D	ESP PCB /TN
Let-through voltage (all conductors)¹ 5kV, 10/700µs test to: <i>BS 6651:1999 Appendix C, Cat C-High</i> <i>ITU (formerly CCITT) IX K17</i>	10.5V	23.8V	43.4V	74.9V	200V
Maximum surge current²					
- per signal wire	10kA	10kA	10kA	10kA	10kA
- per pair	20kA	20kA	20kA	20kA	20kA

¹ The maximum transient voltage let-through the protector throughout the test (±10%), line to line & line to earth. Response time <10ns.

² Tested with 8/20µs waveshape to ITU (formerly CCITT), BS 6651:1999 Appendix C. PCB tracking and connectors external to the protector, may limit its capability.

Mechanical specification

	ESP PCB/06D	ESP PCB/15D	ESP PCB/30D	ESP PCB/50D	ESP PCB/TN
Temperature range	-25 to +70°C	-25 to +70°C	-25 to +70°C	-25 to +70°C	-25 to +70°C
Connection type	0.64mm (0.025”) square PCB pins, 1.2mm diameter PCB holes recommended				
Dimensions	<p>Depth=20mm (~0.8”) Weight=35g Pins are centrally positioned Pin 1 connects through to pin 3 Pin 2 connects through to pin 4 (Underside pin view)</p>				

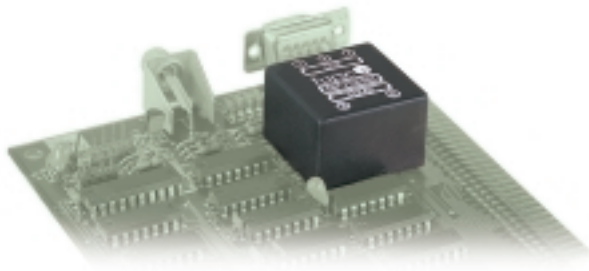
For wire-in, twisted pair signalling applications, use the ESP D Series.
For systems requiring a PCB mounted protector with a very low resistance, higher current or higher bandwidth, the ESP PCB/**E Series is suitable.

Features & benefits

- ✓ Suitable for wave soldering.
- ✓ Low let-through voltage between all lines.
- ✓ Provides repeated protection in lightning intense environments.
- ✓ Low in-line resistance minimises unnecessary reductions in signal strength.
- ✓ Two pin clean end and three pin line end to ensure correct insertion.
- ✓ Simple earthing via central pin on line side.
- ✓ ABS housing.
- ✓ UK OfTel Approval NS/G/1235/W/100025

Installation

Connect in series, soldering pins direct onto PCB. Tracks to line and earth pins should be as wide as practical.



For wire-in, twisted pair signalling applications needing low resistance, higher current or higher bandwidth, see pages 74-75. For systems requiring a PCB mounted protector, the lower cost ESP PCB/**D Series may be suitable (see page 84).

Features & benefits

- ✓ Suitable for wave soldering.
- ✓ Low let-through voltage between all lines.
- ✓ Provides repeated protection in lightning intense environments.
- ✓ Very low (1W) in-line resistance allows protection in resistance critical applications, eg alarm loops.
- ✓ High (1.25A) maximum running current.
- ✓ Higher bandwidth enables higher frequency (high traffic or bit rate) data communications.
- ✓ Two pin clean end and three pin line end to ensure correct insertion.
- ✓ Simple earthing via central pin on line side.
- ✓ ABS housing.
- ✓ UK oftel approval NS/G/1235/W/100025.

Installation

Connect in series, soldering pins direct onto PCB. Tracks to line and earth pins should be as wide as practical.

- ◆ Suitable for “through hole” mounting directly onto the PCB of signal or data communication equipment which require a lower in-line resistance, an increased current or a higher bandwidth than the PCB/**D series.
- ◆ Suitable for AC & DC power applications of up to 1.25A.
- ◆ Available for working voltages of up to 6, 15, 30 & 50 volts.

Application

Use where transient overvoltage protection needs to be integral to the OEM signal or data communication systems, and where these systems are resistance sensitive, or have a higher frequency or running current.

Electrical specification

	ESP PCB/06E	ESP PCB/15E	ESP PCB/30E	ESP PCB/50E
Nominal voltage¹	6V	15V	30V	50V
Max working voltage²	7.79V	16.7V	36.7V	56.7V
Current rating (signal)	1.25A	1.25A	1.25A	1.25A
In-line resistance (per line ±10%)	1.0W	1.0W	1.0W	1.0W
Bandwidth (-3dB 50W system)	1.5MHz	>10MHz	>10MHz	>10MHz

1 Nominal voltage (DC or AC peak) measured at <10µA (ESP PCB/15E, ESP PCB/30E, ESP PCB/50E) and <200µA (ESP PCB/06E).

2 Maximum working voltage (DC or AC peak) measured at <5mA leakage (ESP PCB/15E, ESP PCB/30E, ESP PCB/50E), <10mA (ESP PCB/06E).

Transient specification

	ESP PCB/06E	ESP PCB/15E	ESP PCB/30E	ESP PCB/50E
Let-through voltage (all conductors)¹				
5kV, 10/700µs test to:	10.8V	26.2V	44.3V	65.8V
BS 6651:1999 Appendix C, Cat C-High ITU (formerly CCITT) IX K17				
Maximum surge current²				
- per signal wire	10kA	10kA	10kA	10kA
- per pair	20kA	20kA	20kA	20kA

1 The maximum transient voltage let-through the protector throughout the test (±10%), line to line & line to earth. Response time <10ns.

2 Tested with 8/20µs waveshape to ITU (formerly CCITT), BS 6651:1999 Appendix C. PCB tracking and connectors external to the protector, may limit its capability.

Mechanical specification

	ESP PCB/06E	ESP PCB/15E	ESP PCB/30E	ESP PCB/50E
Temperature range	-25 to +70°C	-25 to +70°C	-25 to +70°C	-25 to +70°C
Connection type	0.64mm (0.025”) square PCB pins, 1.2mm diameter PCB holes recommended			
Dimensions				
	Depth=20mm (~0.8”) Weight=35g Pins are centrally positioned Pin 1 connects through to pin 3 Pin 2 connects through to pin 4 (Underside pin view)			