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ESD PERSONNEL GROUNDING

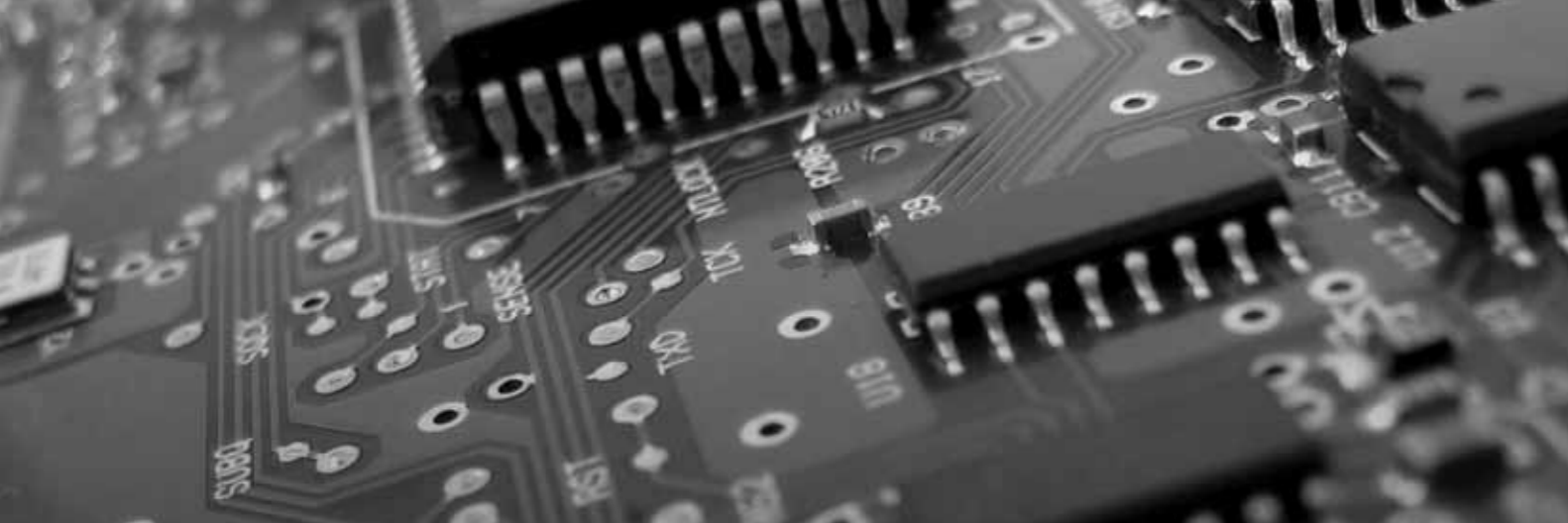
People are one of the prime generators of static electricity. The simple act of walking around or repairing a board can generate several thousand volts on the human body, this static charge can easily discharge into a static sensitive device.

For this reason, static control programs place considerable emphasis on controlling personnel generated electrostatic discharge. Similarly, the movement of carts and other wheeled equipment through the facility also can generate static charges that can transfer to the products being transported on this equipment.

Effective ESD grounds are of critical importance in any operation, and ESD grounding should be clearly defined and regularly evaluated.



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ESD Personnel Grounding

A primary means of protecting of ESD susceptible items is to provide a ground path to bring ESD protective materials and personnel to the same electrical potential.

All conductors in the environment, including personnel, must be bonded or electrically connected and attached to a known ground or contrived ground, creating an equal balance between all items and personnel. Electrostatic protection can be maintained at a potential above a "zero" voltage ground reference as long as all items in the system are at the same potential.

WRIST STRAPS

Typically, wrist straps are the primary means of controlling static charge on personnel. When properly worn and connected to ground, a wrist strap keeps the person wearing it near ground potential. Because the person and other grounded objects in the work area are at or near the same potential, there can be no hazardous discharge between them.

HEEL, TOE & SOLE GROUNTERS

Used in combination with ESD protective floor materials, static control shoes, grounders, casters and wheels provide the necessary electrical contact between the person or object and the floor material.

Coiled Earth Lead

FEATURES:

- Excellent quality for use with any kind of wrist band.
- Strong connection between the cord and snap/banana plug/ring

MATERIAL:

- Special conductive wire
- Each coiled cord contains 10 strands
- Outer covered with Non-Conductive PU
- 10mm snap to banana plug/crocodile clip
- Diameter of cord: 2.4 mm
- Diameter of coil cord: 1.02 cm
- Resistivity : 1M Ω +/- 10%



PRODUCT CODE:	DESCRIPTION:	LENGTH (FT):	ADDITIONAL DETAILS:
067-0015	Coiled Earth Lead – 4mm Stud / Banana Socket	6ft	Each
067-0016	Coiled Earth Lead – 10mm Stud / 10mm Stud	10ft	Each
067-0017	Coiled Earth Lead – 10mm Stud / Banana Socket	10ft	Each
067-0018	Coiled Earth Lead – 4mm Stud / 10mm Stud	6ft	Each

Coiled Earth Lead Dual Wire

MATERIAL:

- Twin cable in 2.0mm (\pm 0.1mm)
- Tinsel # 1/7 inner conductors
- PU curly cord
- PVC moulding
- Spring loaded two female 4mm snaps with 1Meg Ω resistor on each snap at one end, and monoplug at the other end
- Use with 066-0036 'Dual Wire Wrist Band'



PRODUCT CODE:	DESCRIPTION:	LENGTH (FT):	ADDITIONAL DETAILS:
067-0029	Coiled Earth Lead Dual Wire – 2 x 4mm	6ft	Each

Straight Earth Lead

FEATURES:

- Low profile cone prevents cord becoming detached
- Suitable for use with all types of ESD Matting

MATERIAL:

- Special conductive wire
- Each straight cord contains 10 special conductive wires
- Outer covered with Non-Conductive PU
- Length: 10ft (both product codes)
- Diameter of cord: 2.4 mm
- Resistivity : 1M Ω +/- 10%

AVAILABILITY:

067-0037: One end supplied with a single ring terminal the other end features a 10mm female snap and 2 x 4mm banana sockets.

Product Code: 067-0037



Product Code: 067-0038



AVAILABILITY:

067-0038: One end supplied with a single ring terminal the other end features a 10mm female snap with smooth conical cover.

PRODUCT CODE:	DESCRIPTION:	LENGTH (FT):	ADDITIONAL DETAILS:
067-0037	Straight Earth Lead – 10mm stud – ring terminal	10ft	Each
067-0038	Straight Earth Lead – Conical head: 10mm stud – ring terminal	10ft	Each

Straight Earth Lead

FEATURES:

Black straight earth lead with 10mm stud to ring terminal, for use within EPA's.

DETAILS:

- Lead length: 1.5m
- 10mm stud to ring terminal
- Colour: Black



PRODUCT CODE:	DESCRIPTION:	LENGTH (M):	ADDITIONAL DETAILS:
067-0034	Straight Earth Lead – 10mm stud – ring terminal	1.5	Each



Straight Earth Lead

FEATURES:
Black straight earth lead with 10mm stud to 10mm stud, for use within EPA's.

DETAILS:

- Lead length: 3.7m
- 10mm stud to 10mm stud
- Colour: Black



PRODUCT CODE:	DESCRIPTION:	LENGTH (M):	ADDITIONAL DETAILS:
067-0028	10mm Stud to 10mm Stud	3.7	Each

4 Claw Snap Fastener

FEATURES:

- Prongs are designed to pierce bench mat
- Prongs fold over on underside to mat to hold 10mm stud
- Made of stainless steel



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
067-0035	10mm Male	n/a	Each
067-0036	10mm Female	n/a	Each

Press Studs & Tool

FEATURES:

- Earth grounding points on bench and floor mats are used to connect ground cords, these must be riveted through the mat material
- The punch and anvil are simple but effective tools to achieve a neat finish with firm materials, no thicker than 4mm
- Both tools are mild steel, with a bright zinc and passivate finish



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
067-0025	Press Stud Tool – Punch and Anvil	-	Each
067-0021	10mm Press Studs	10mm – Male	Pack of 100

Crocodile Clip

FEATURES:

- Stainless steel
- Depth external 12mm
- Length external 50mm
- Width external 8mm

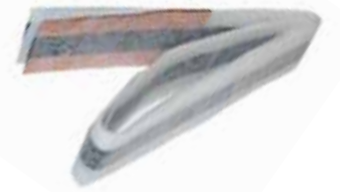


PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
067-0006	Crocodile Clip	-	Pack of 10

Disposable Wristband

FEATURES:

- Copper foil : Conductive, size : 75mm (L) x 25mm (W) x 0.3mm (T)
- PE strap : Black, static dissipative, size: 150mm (L) x 10mm (W)
- Resistance : 10e⁵ Ω
- Polypropylene strap: White, non-conductive, size: 150mm (L) x 25mm (W)
- Ideally suited for short term use, plant visitors and field engineers, shipping along with components and devices such as memory upgrades
- Individually bagged with instructions for use



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
066-0052	Disposable Wristband	-	Each

Economy Wrist Strap Set

FEATURES:

- A comfortable, fully adjustable wristband incorporating a 10mm press stud. Supplied complete with a durable coiled earth lead, with either a 10mm press stud or a 4mm banana termination.



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
066-0053	Economy Wrist Strap Set	10mm – 4mm banana	Each
066-0055	Economy Wrist Strap Set	10mm – 10mm stud	Each



Fabric Adjustable Wrist Strap Hypo Allergenic

FEATURES:

- Sky blue band
- Fully adjustable
- Available with a 4mm or 10mm stud
- High quality conductive interior, made of stainless steel nylon filament
- Outer side process with non-conductive nylon yarn
- Hypo allergenic stainless steel design
- Surface resistivity of $10^3\Omega$

Resistance from Band	< $10^5\Omega$	Test Method EN 61340-55-1
Underside of Band	< $10^4\Omega$	Test Method EN 61340-5-1
Top Side of Band	< $10^6\Omega$	Test Method EN 61340-5-1



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
066-0002	Fabric Adjustable Wrist Strap Hypo Allergenic	10mm	Each
066-0008	Fabric Adjustable Wrist Strap Hypo Allergenic	4mm	Each

Fabric Adjustable Wrist Band Dual Wire

FEATURES:

- Black band / fully adjustable
- Supplied with 4mm stud
- High quality conductive interior, made of stainless steel nylon filament lined with 10 rows of double ply silver coated nylon yarn
- Outer side process with non-conductive nylon yarn
- Surface resistivity of $10^3\Omega$
- Termination: two pieces of small sized premium crochet band assembled to dual fabric buckle w/two male 4mm snap connectors
- Plastic parts made of antistatic nylon material

Notes: Use in conjunction with 067-0029 Dual Wire Coiled Earth Lead



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
066-0036	Fabric Adjustable Wristband Dual Wire	4mm	Each

Cleanroom Adjustable Wristband

FEATURES:

- Wristband with 10mm snap / fully adjustable
- Outer Surface : Plastic
- Interior Surface : Conductive rubber
- Lightweight, excellent for use in cleanroom environment
- Recommended for use in Class 100
- Particle Free – does not generate any particles whilst in use
- Plastic material for easy cleaning
- Built in 1 mega Ω resistor for user safety



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
066-0051	Cleanroom Adjustable Wristband	10mm	Each

Disposable Heel Grounder

FEATURES:

The disposable heel grounder is designed for plant visitors and other temporary workers who enter static controlled areas. It is made from antistatic fabrics and provides safe and effective resistance. The disposable heel grounder uses the conductive yarn in the antistatic fabric to create and maintain electrical contact between the ground and body and can optimise static dissipation.



- Easy to Use / Comfortable to Wear / Economic Cost
- Non-Marking
- Surface Resistivity $10^5/sq$

PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
068-0009	Disposable Heel Grounder	-	Pack of 100
068-0019	Disposable Heel Grounder Dispenser	-	Each

Heel Grounder

FEATURES:

- Velcro / Clip type
- Double layered conductive cup (3.5mm x 230mm)
- Each heel grounder incorporates a 1Mega Ω safety resistor
- All heel grounders are designed for use in conjunction with ESD flooring or mats
- Recommended to be worn on both feet
- Reusable and can be washed by hand in mild detergents
- Clip type with snap release – easy to wear and take off
- Hard wearing heel grounders designed for long term use

Image shown 068-0003

Image shown 068-0005



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL NOTES:
068-0003	Heel Grounder with velcro	One Size	Each
068-0005	Heel Grounder with clip	One Size	Each

Sole Grounder

FEATURES:

- Velcro Type with D Ring for size adjustment
- Double layers, conductive cup
- 3/4" Black velcro / 2 pcs D-Ring / 3/4" Elastic Strap

Open the buckle and velcro straps. Place the sole grounder on the bottom of the shoe. Close the toe strap by feeding the velcro through the plastic ring. Close the ankle strap. Place the ribbon inside the sock or shoe.

Notes: Recommended to be worn on both feet. The toe grounder must be tested from time to time using a footwear test station.





Sole Grounder

PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
068-0020	Small	160 x 168	-
068-0021	Medium	165 x 185	-
068-0022	Large	170 x 210	-
068-0023	X-Large	175 x 228	-

Toe Grounder – Adjustable / Non Adjustable

FEATURES:

- Fastening with stretch (elastic) back
- Adjustable velcro to fit various shoe sizes (adjustable only)
- Double layer conductive rubber cup (3.5mm x 19cm)
- Outer conductive surface (black): 10^3 to $10^4 \Omega$
- Inner anti-static surface (ivory): 10^8 to $10^9 \Omega$
- Conductive tab (Grey): 10^3 to $10^4 \Omega$
- Each toe grounder with one built in 1Meg resistor

Notes: Recommended to be worn on both feet. The toe grounder must be tested from time to time using a footwear test station.



068-0018 – Adjustable

068-0007 – Non-Adjustable

PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
068-0018	Toe Grounder – Adjustable	One Size	-
068-0007	Toe Grounder – Non Adjustable	One Size	-

Surface Resistance Meter

This meter has been designed to measure both surface resistance and resistance to ground. To measure surface material place the meter on the area to be tested and press the test button. For measuring resistance to ground, place the ground lead into the earth leakage socket, connect the crocodile clip to the area to be tested and press the test button.

The meter will test conductive, static dissipative and insulative surfaces using two parallel bars set to give ohms per square readings. Conductive is indicated by green LEDs from 10^3 – 10^5 , static dissipative by yellow LEDs from 10^6 – 10^{11} and insulative by RED LEDs 1012+.

FEATURES:

- Conductive indicated by green LEDs
- Static dissipative indicated by yellow LEDs
- Insulative by red LEDs
- Accuracy of +/- 1/2 decade



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0050	Surface Resistance Meter 9V	130 x 70 x 25	Each

Footwear Tester

FEATURES:

- This instrument has been developed to test footwear.
- The wall mounted instrument indicates left and right feet and will show the status of each foot by means of high and low indicators.
- To test footwear simply stand on the dual footplate and touch the touchplate.
- The instrument also has a low battery indicator.



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0037	Footwear Tester	217 x 137 x 40	Each

Dual Footwear and Wristband Tester

FEATURES:

- This instrument has been developed to test footwear and wristbands simultaneously.
- The wall mounted instrument indicates left and right feet and wristband and cord status by the means of high and low fail indicators. Stand on the dual footplate and touch the touchplate to test footwear and to test wristband and cords plug your wristband into the input socket.
- All three can be tested at the same time if required.
- There is also a low battery indicator.



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0036	Dual Footwear and Wristband Tester	217 x 137 x 40	Each

Wristband Tester 9V with Wall Mount and Footplate

FEATURES:

- This wristband tester has been designed to measure both high and low fail and pass functions.
- It also has a low battery indicator to indicate battery replacement.
- Testing of your wristband is achieved by placing the jack plug into the socket and wearing the wristband – touch the touchplate and the status of the wristband will be shown.



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0019	Wristband Tester 9V	129 x 63 x 25	Each

Portable Wrist Strap Tester

FEATURES:

- Portable instrument.
- Used for checking fitted wrist bands and cords.
- Fitted with a banana socket and 10mm stud.
- Mains operated.





Portable Wrist Strap Tester

PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
093-0011	Portable Wrist Strap Tester	-	Each

Constant Mat Monitor

FEATURES:

- This unique monitor is dedicated to continually monitoring your electrostatic protected area (EPA).
- It monitors a constant connection to ground and a constant connection to your benchmat. If at any time the connections break an audible alarm will sound.
- The EPA status is clearly shown on the display panel and the zone which has been disconnected will be indicated.
- Reconnect and the pass indicator will show.



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0035	Constant Mat Monitor	124 x 49 x 25	Each

Single Line Constant Monitor

FEATURES:

- This unique monitor has been designed to monitor your electrostatic protected area (EPA) in three zones, earth, mat and wristband.
- It monitors a constant connection to ground, constant connection to your benchmat and constant connection to your wristband and cord.
- If at any time the connections break an audible alarm will sound. The status of your EPA is clearly shown on the display panel indicating the fault that needs attention.



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0034	Single Line Constant Monitor	124 x 49 x 25	Each

Slimline Dual Line Constant Monitor

FEATURES:

- This unique monitor has been designed to monitor your electrostatic protected area (EPA) in three zones, earth, mat, and wristband.
- It monitors a constant connection to ground, constant connection to your benchmat and a dual wristband and cord. If at any time the connections break an audible alarm will sound.
- The status of your EPA is clearly shown on the display panel indicating the fault that needs attention.



PRODUCT CODE:	DESCRIPTION:	SIZE (MM):	ADDITIONAL NOTES:
093-0038	Slimline Dual Line Constant Monitor	124 x 49 x 25	Each

Earth Bonding Point

FEATURES:

- Earthing point with 10mm stud



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
070-0003	Earth Bonding Point	Single 10mm Stud	Each

Earth Bonding Plugs

EARTH BONDING PLUG BANANA SOCKET & STUD

FEATURES:

- Incorporates 2 banana sockets and a 10mm male stud for connection grounding wire
- Designed to fit UK and Euro standard mains plug outlets



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
070-0052	Earth Bonding Plug	2 x Banana Socket & 1 x 10mm Stud	UK Plug
070-0021	Earth Bonding Plug	2 x Banana Socket & 1 x 10mm Stud	Euro Plug

EARTH BONDING PLUG SHROUDED BANANA SOCKET & STUD

FEATURES:

- Incorporates 2 shrouded banana sockets and a 10mm male stud for connection grounding wire
- Please note image is for illustration purposes only, this plug is designed to fit UK standard mains plug outlets



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
070-0012	Earth Bonding Plug	2 x Shrouded Banana Socket & 1 x 10mm Stud	UK Plug

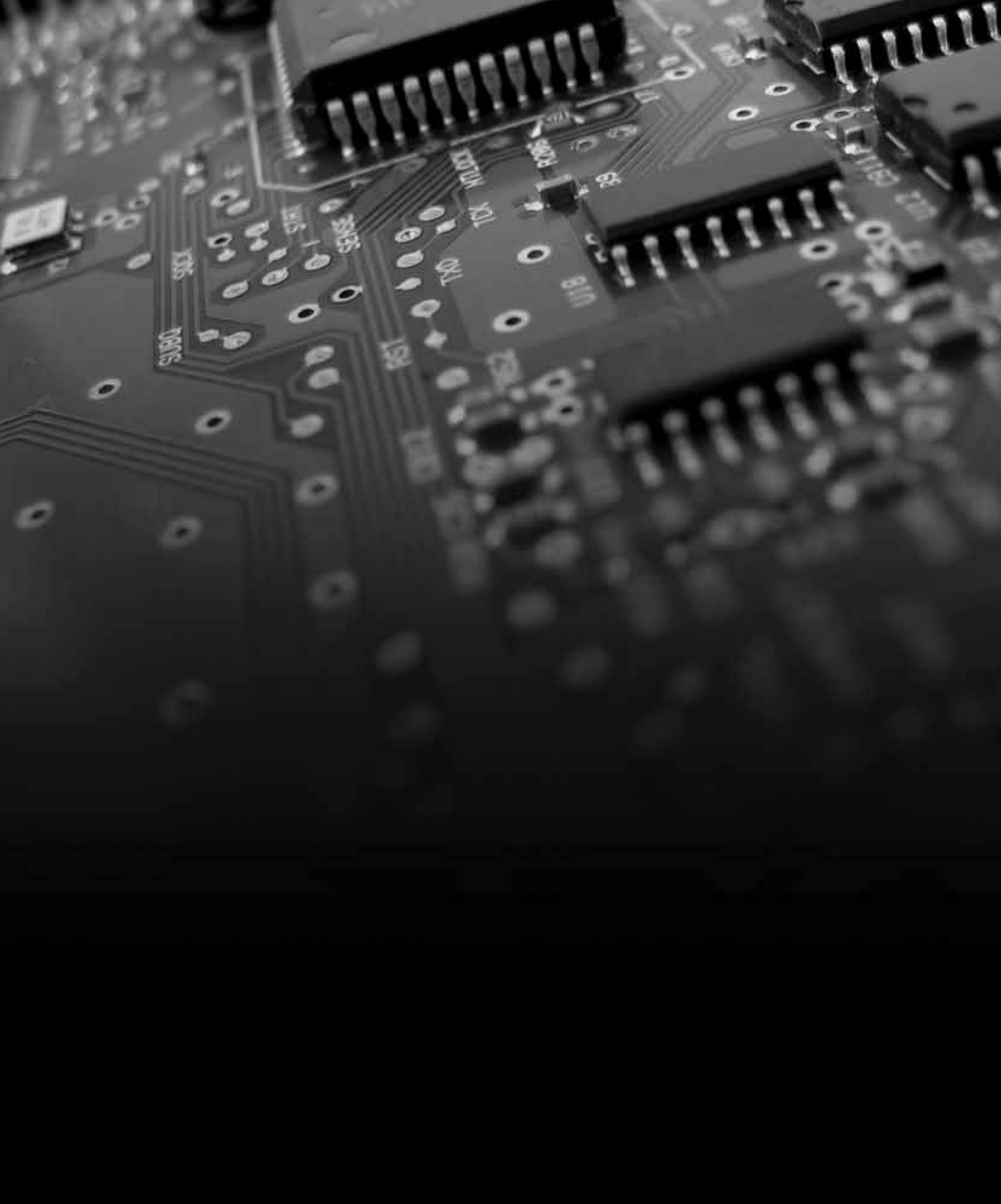
EARTH BONDING PLUG 1X10MM STUD WITH 1M RESISTOR

FEATURES:

- Incorporates a 10mm male stud for connection grounding wire
- Designed to fit UK and Euro standard mains plug outlets
- Neutral and mains voltage pins are plastic, earth pin is metal



PRODUCT CODE:	DESCRIPTION:	SIZE:	ADDITIONAL DETAILS:
070-0051	Earth Bonding Plug	1 x 10mm Stud	1Meg Ω Resistor – UK Plug
070-0013	Earth Bonding Plug	1 x 10mm Stud	1Meg Ω Resistor – Euro Plug



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