













**ROA 128 5552 series Electronic Loads**  
 Input 0.2-20 V, Current up to 45 A /25 W

1/28701-ROA 128 5552 Rev C

201

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### Trigger Control

The electronic load start a load pulse by detecting an external triggering signal via the trigger input pin.

In a test system with parallel configuration one of the electronic loads are set as master for the trigger signal and all trigger pins shall be tied together (open collector).

The trigger signal is active low.

### Over Voltage SW Protection

The electronic load measures the voltage between positive load input pin and ground. The OVP (overvoltage protection) alarm is activated if the input load voltage is outside the  $V_L$  range, according to the Electrical Characteristics.

### Over Temperature SW and HW Protection

If the heat sink temperature increases above  $T_{P1max}$  the electronic load is disabled. This function is fully autonomous and do not rely on the controller SW. The protection is non-latching and the electronic load will restart when the temperature is within the range specified in the Maximum Ratings. The over temperature protection indirectly act as a current limiter.

The controller will also register an over temperature condition and set the over temperature alarm. The PMBus temperature alarm is not set until the fault register is read.

### Over Current Protection (OCP)

The electronic load has a SW current limiting function. The current sense resistors from each load branch are monitored by the controller ADC and the current signal sample rate is 1 MHz. All samples are controlled by an analog watchdog, and if a sample is over the trigger level an IRQ are set.

A secondary current limit function is achieved by the over temperature protection and shutdown (see above).

### Display and LED

The electronic load has a display for presenting the local address and other status codes.

The electronic load is also equipped with a red and green status LED.

## Thermal Consideration

### General

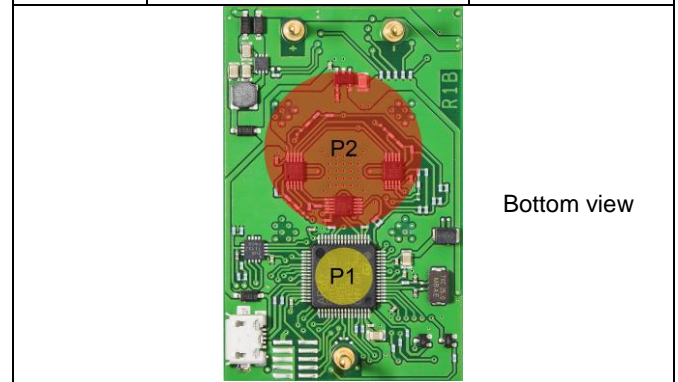
The electronic load is designed to operate in different thermal environments and sufficient cooling must be provided to ensure reliable operation.

Cooling is achieved by conduction, from the pins to the host board, and convection, which is dependant on the airflow across the product. Increased airflow enhances the cooling of the electronic load.

### Operating Temperature

The heat sink and printed circuit board temperatures are used to monitor the temperatures of the electronic load, and proper thermal conditions can be verified by measuring the temperature at positions P1 and P2. The temperature at these positions ( $T_{P1}$  and  $T_{P2}$ ) should not exceed the maximum temperatures in the table below. Temperatures above maximum  $T_{P1}$ , measured at the reference point P1 are not allowed and may cause permanent damage.

Position	Description	Max Temp.
P1	CPU reference point	$T_{P1}=100^{\circ}\text{C}$
P2	Printed circuit board	$T_{P2}=125^{\circ}\text{C}$



$T_{P1}$  is also used to define the temperature range for normal operating conditions.  $T_{P1}$  is defined by the design and used to guarantee safety margins, proper operation and high reliability of the product.

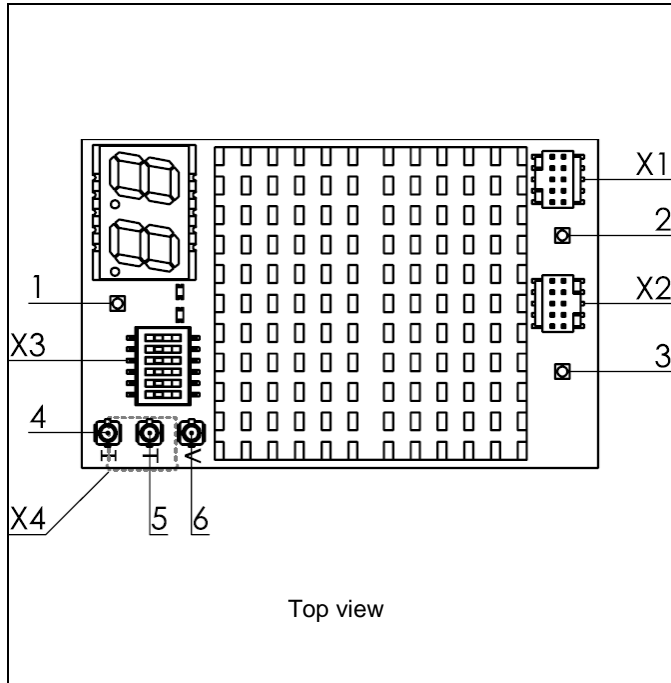
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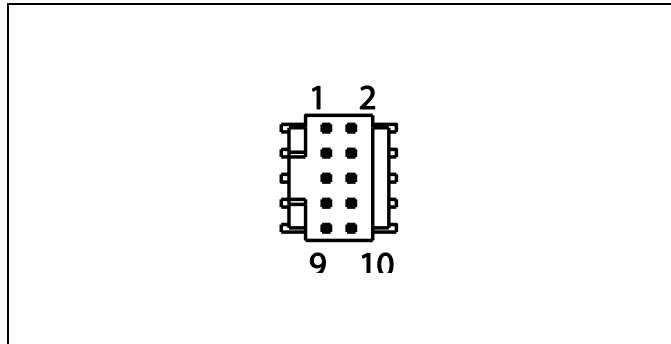
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**Connections**



**IDC pins (X1 & X2)**



**Input and Output connections**

Pin	Designation	Function
1	V <sub>cc</sub>	Supply voltage to control block
2	GND	Negative load connection
3	+LOAD	Positive load connection
4	I <sub>Analog</sub>	Analog monitor of load current
5	OUT <sub>trigg</sub>	Digital Trigger output
6	V <sub>Analog</sub>	Analog monitor of load voltage

**PMBus connections (X1 & X2)**

Pin	Designation	Function
1	V <sub>cc</sub>	Supply voltage to control block
2	LOAD SYNC	Load trigger synchronization
3	V <sub>cc</sub>	Supply voltage to control block
4	GND	Signal ground
5	NC	
6	GND	Signal ground
7	Ctrl	PMBus control signal
8	Alert	PMBus alert signal
9	SCK	PMBus serial clock
10	SDA	PMBus serial data

**Address & Control (X3)**

Switch	Function
1	PMBus address bit #4
2	PMBus address bit #3
3	PMBus address bit #2
4	PMBus address bit #1
5	PMBus address bit #0
6	Software update via USB

**Micro USB connector (X4)**

Standard micro USB for connection to a lab PC for configuration.









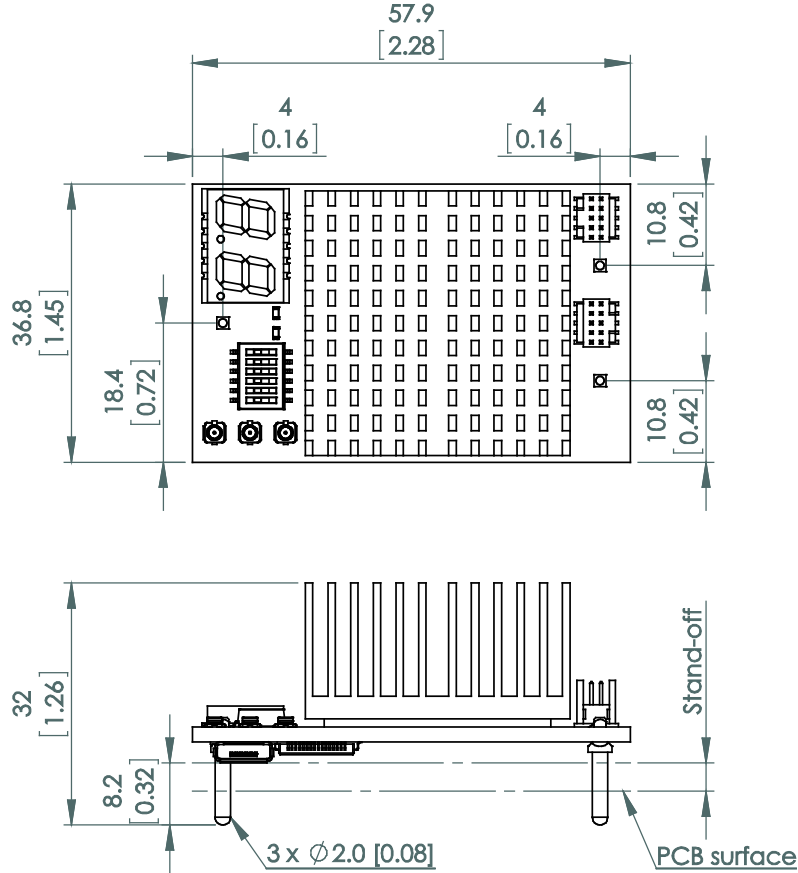
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**Mechanical Information**



Weight: Typical 54g  
 All dimensions in mm [inch]  
 Tolerances unless specified ±0.25 [0.01]

Recommended pin receptacles		
Mill-Max part no.	PCB mounting type	PCB stand-off mm [in]
0350	Pressfit	3.7 [0.15]
0387	Solder	9.7 [0.38]
0391	Solder	1.8 [0.07]
0393	Solder	1.5 [0.06]
0493	Pressfit	3.7 [0.15]
8837	Solder	3.4 [0.13]
9214	Solder	18.9 [0.74]

All component placements – whether shown as physical components or symbolical outline – are for reference only and are subject to change throughout the product's life cycle, unless explicitly described and dimensioned in this drawing.

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**Mounting Information**

The electronic load is intended to be manually mounted to the host board using a fast-on connection socket or soldering iron. When soldering by hand, care should be taken to avoid direct contact between the hot soldering iron tip and the pins for more than a few seconds in order to prevent overheating.

See Ordering Information for further information.

**Delivery Package Information**

The electronic load is delivered in a corrugated cardboard box.

**Product Qualification Specification**

Characteristics			
External visual inspection	IPC-A-610		
Change of temperature (Temperature cycling)	IEC 60068-2-14 Na	Temperature range Number of cycles Dwell/transfer time	-40 to 100°C 1000 15 min/0-1 min
Damp heat	IEC 60068-2-67 Cy	Temperature Humidity Duration	85°C 85 % RH 1000 hours
Dry heat	IEC 60068-2-2 Bd	Temperature Duration	125°C 1000 h
Operational life test	MIL-STD-202G, method 108A	Duration	1000 h