Voltage Regulation Module (VRM) Connectors

Product Facts

- **Available in latch versions for VRMs up to 3 oz.**
- **Available with metal clip for VRMs over 3 oz.**
- **VRM connectors to support a wide variety of power supply standards**
- **Solder tail, press-fit and right-angle versions to support specific customer needs**
- **Up to 5.5 Amps per contact in typical VRM applications**
- **New materials are 94 V-0 rated with max. operating temperature of 125°C — VRM 10.x Series**
- **Keying prevents plugging the wrong VRM into the connector**

Materials

Housing — PBT thermoplastic
Contact — High conductivity copper alloy

Technical Documents

Product Specification
108-9039-1 & -2
Qualification Test Report
501-227-1 & -2





The new Voltage Regulation Module (VRM) family of connectors is designed to meet the needs of many existing and new power supply standards being developed. They are dual row card edge style connectors that are well known in the computer market. Currently the connectors are designed to carry up to 150 amps of DC power — that's 300 amps total running through the connector. The connector is PCB mounted and there are versions available in press-fit or right-angle. The connectors have card retention either in the form of a latch or a metal retention clip which is added after the VRM is in place.

Industry Applications

The VRM connector is controlled by various power supply standards. Current ones are EPS-1U, AD2D-VID, AD2D, VRM 8.5, VRM 9.0, VRM 9.1, VRM 10.0 and VRM 10.1. Many applications with a need to transmit high power from board to board can benefit from this connector and additional customer specific applications are developing.

VRM Selection Chart

	Part Numbers						
	VRM 9.1	VRM 10.0	VRM 10.1	VRM 10.2 - 11.X	VRM 12.X	VR 372	TW
Solder	6489165-1	6489930-2	6489930-2	1651826-1	—	—	—
Press-Fit	6489651-1	—	—	1766436-1	—	—	—
Surface-Mount	—	—	—	1766336-1	1766735-2	1761347-2	1761122-1

Note: All part numbers are RoHS compliant.

Catalog 1773096
Revised 2-10

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
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Voltage Regulation Module (VRM) Connectors (Continued)



VR 372 Power POD Connector for Intel MONTECITO VRMs

- Industry favored design for MONTECITO VR372 voltage regulator modules
- 130 Amps DC Output Power (260A Total)
- 350 compressive contacts carry a total of 200 Amps — resulting in less than 0.75 Amps per contact
- 22 additional signal contacts
- Rated to carry 120 Amps DC output power
- Maximum continuous operating temperature 125° C



Mini CROWN EDGE Connectors for 1U/2U Pluggable VRMs

- Lowest profile available on the market (7 mm tall)
- High-performance CROWN BAND contacts that deliver 25A each
- High-density power designed for VRM 10.2 and beyond
- Multiple power and signal contacts allow flexible power PCB trace layouts
- SMT, pc tail and press-fit terminations
- Mating blade for board-stacking interconnection also available



SEC-II with Latch for VRMs

- High Conductivity Contacts & High Strength Plastic Latches
- Vertical or Right-Angle
- Solder or Press-Fit (vertical only)
- Meets Intel VRM 8.5, 9.0, 9.1, 10.0 and 10.1 Standards
- 4.3 Amps/contact

MONTECITO is a trademark of Intel Corporation.

Other VRM Connectors such as "TW Power" and others are available.
Please contact your local Tyco Electronics Sales Engineer for more information.

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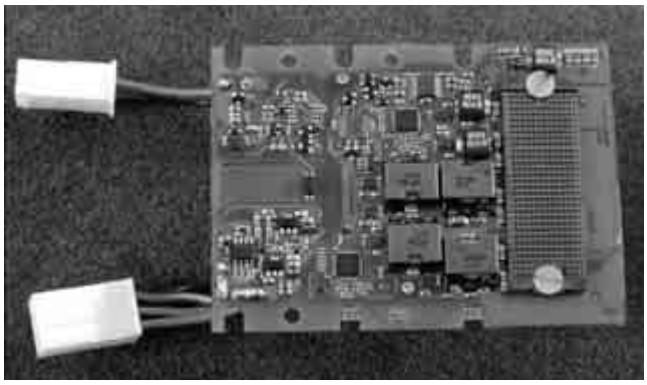
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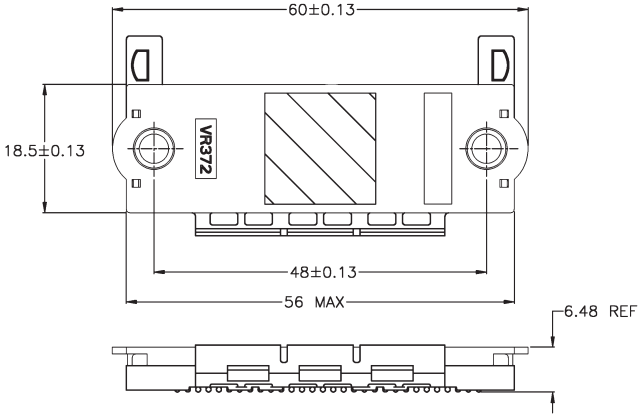
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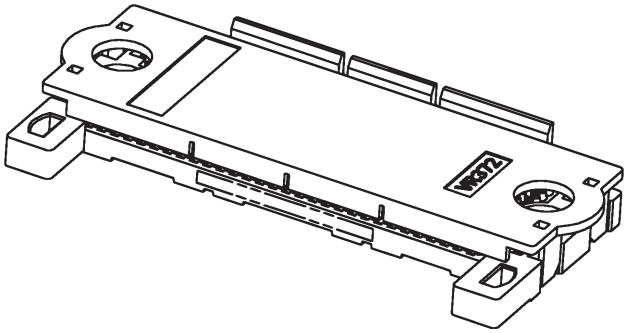
VR 372 Power POD Connector — for Intel MONTECITO VRMs



MONTECITO Voltage Regulator Module



Socket Assembly with Cover Reference Dimensions



Socket Assembly with Cover

Material

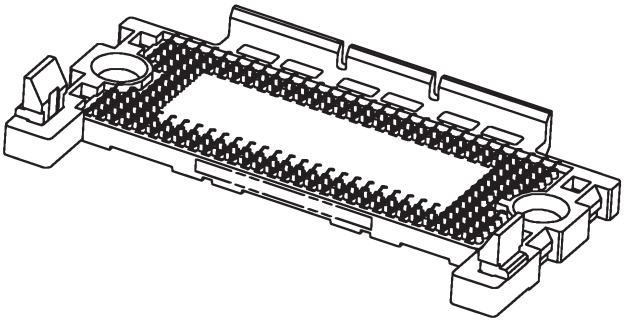
Housing — Liquid Crystal Polymer (LCP), 94V-0

Colors —
Plugs and Receptacles — Black
Positive Locks — White

Technical Documents

Product Specification
108-2170

Application Specification
114-13117



Socket Assembly with Alignment Plugs
Alignment Plug Snap-On: Part Number 1761259-1

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Note: All part numbers are RoHS compliant.

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Mini CROWN EDGE Connector Configurations

General Dimensions

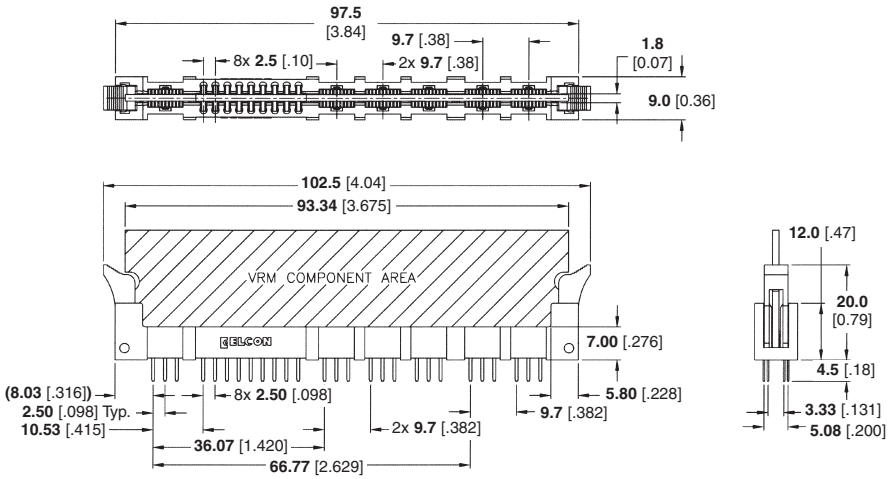
Mini CROWN EDGE connectors are available in several form factors designed to meet diverse application requirements. For other available Mini CROWN EDGE Connector configurations, please check our website at http://www.tycoelectronics.com or consult Tyco Electronics.

Configuration: P2/S18/P10

Meets Intel VRM 10.2 specifications
Power contacts x 12
Signal contacts x 18
Mating board thickness — 0.062″

Reference Part Numbers:

Solder tail, 4.5 mm (0.18″)
Part Number 1651826-1
Solder tail, 3.0 mm (0.12″)
Part Number 1651929-1
Surface-Mount
Part Number 1766336-1
Compliant Press-fit 3.8 mm (0.15″)
Part Number 1766436-1

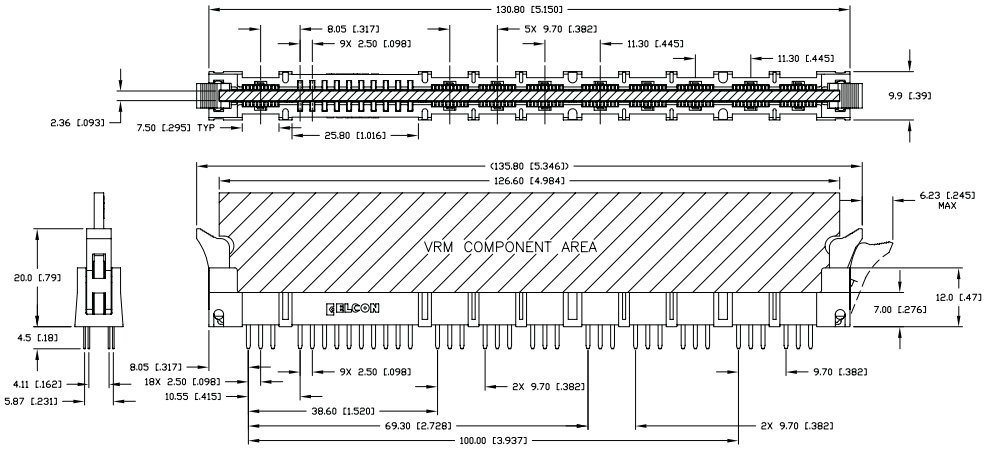


Configuration: P2/S20/P16

Meets AMD K8 specifications
Power contacts x 18
Signal contacts x 20
Mating board thickness — 0.093″

Reference Part Numbers:

Solder tail, 4.5 mm (0.18″)
Part Number 1766442-1
Solder tail, 3.0 mm (0.12″)
Part Number 1651864-1
Compliant Press-fit 3.8 mm (0.15″)
Part Number 1766443-1



Note: All part numbers are RoHS compliant.

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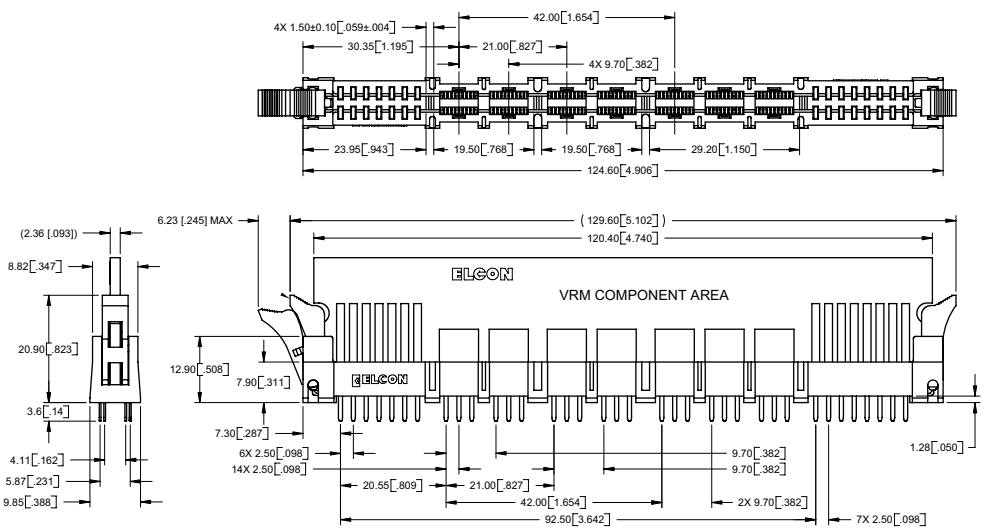
Mini CROWN EDGE Connector Configurations (Continued)

Configuration: S14/P14/S16

Meets AMD K9 specifications
Power contacts x 14
Signal contacts x 30
Mating board thickness — 0.093″

Reference Part Numbers:

Solder tail, 4.5 mm (0.18″)
Part Number 1766308-1

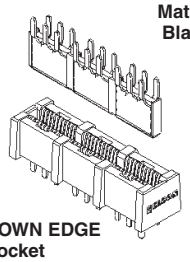


Configuration	Part Number	Overall Length	Mating Board Thickness	Tail Length	Type
P2/S24/P4	1926155-2	63.74 mm [2.509"]	1.57 mm [0.06"]	N/A	Surface-Mount
P2/S24/P8	1926024-2	83.14 mm [3.273"]	1.57 mm [0.06"]	N/A	Surface-Mount
P2/S18/P10	1651826-1	102.50 mm [4.040"]	1.57 mm [0.06"]	4.5 mm [0.18"]	Solder Tail
	1651929-1			3.0 mm [0.12"]	Solder Tail
	1766336-1			N/A	Surface-Mount
	1766436-1			3.8 mm [0.15"]	Compliant Press-Fit
P2/S24/P12	1766735-2	102.54 mm [4.037"]	1.57 mm [0.06"]	N/A	Surface-Mount
S14/P14/S16	1766308-1	129.60 mm [5.102"]	2.36 mm [0.09"]	4.5 mm [0.18"]	Solder Tail
P2/S20/P16	1766442-1	135.80 mm [5.346"]	2.36 mm [0.09"]	4.5 mm [0.18"]	Solder Tail
	1651864-1			3.0 mm [0.12"]	Solder Tail
	1766443-1			3.8 mm [0.15"]	Surface-Mount

Application without latches and custom layouts are available. Please contact Tyco Electronics Customer Service or your local sales engineer.

OTHER Applications

A mating blade that allows certain Mini CROWN EDGE Connector configurations to be used as a stacked board power interconnection device is also available.



Shown: P6
Socket Part Number 1766685-1 (Solder Tail)
6651712-1 (SMT)
Blade Part Number 6651711-1 (Solder Tail)
1926785-1 (SMT)

Sample of Stacked Board Application

In this application, a Mini CROWN EDGE connector is used in close proximity to the MPU for delivery of high-current from a power board stacked over the processor board.



Custom Layouts:

Shown above are some of the currently tooled Mini CROWN EDGE connector layouts. If none of them meets your application requirements, Tyco Electronics can design a custom layout based on your specifications.

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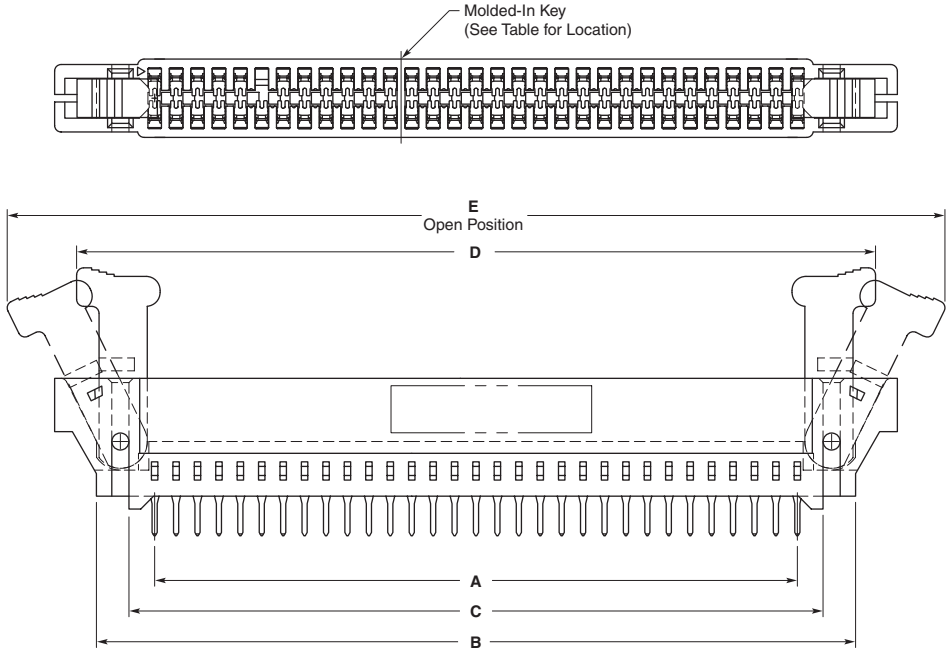
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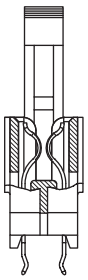
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SEC-II Connectors with Latches for VRMs





Board Retention Feature
(See Table for Location)

Material

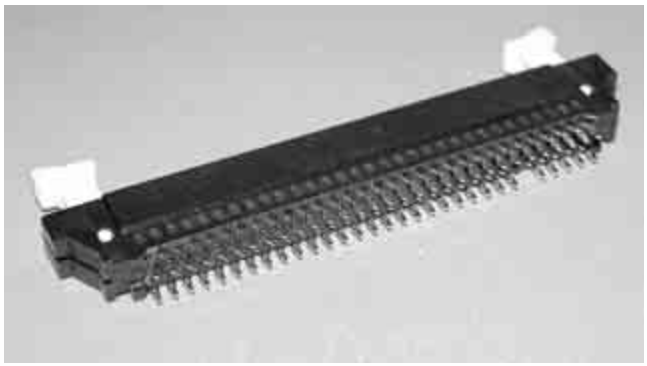
Housing — Black glass-filled polyester

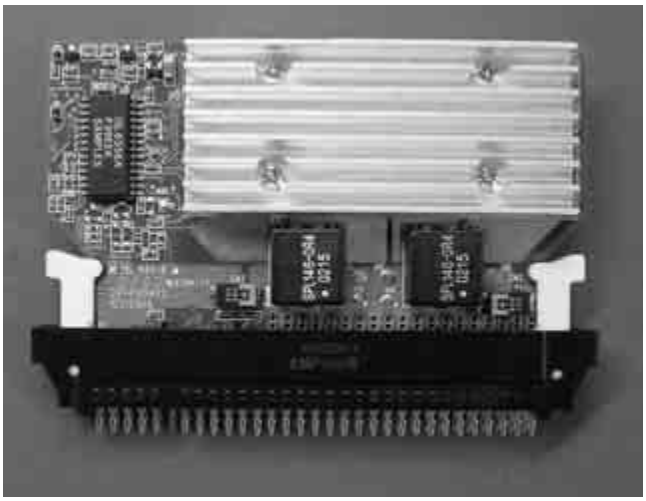
Latch — Black glass-filled polyester

Contact — Phosphor bronze, plated .000030 [0.00076] min. gold plating in contact area, .000100 [0.00254] min. tin on solder posts, all over .000050 [0.00127] min. nickel

Dimensions					No. of Dual Positions	Mount Type	Board Retention Feature	Molded Key Locations	Part Number
A	B	C	D	E					
2.000 60.96	**2.944** 74.78	**2.649** 67.28	**3.223** 81.86	**3.849** 97.76	25	Press-Fit	No	17 & 18	6489649-1
3.249 82.52	**3.544** 90.02	**3.249** 82.52	**3.823** 97.10	**4.449** 113.00	31	Solder	Yes	12 & 13	6489165-6
3.400 86.36	**3.944** 100.18	**3.649** 92.68	**4.130** 104.90	**4.850** 123.17	35	Solder	No	23 & 24	5145459-5

Note: See customer drawing for board retention locations.





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