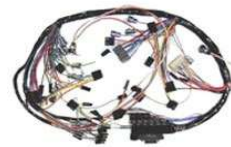




MULTI-LAYER LAMINATED BUS BAR

LAMINATED BUS BAR

reduce inductance by alternating the positive and negative bus bar conductor layers between layers of thin dielectric insulation. Components and connectors of all makes and sizes, including IGBTs and capacitors, are connected to the structure. Inductance is reduced, electromagnetic interference variability is mitigated, and systems switch faster and cleaner, with less energy loss.



STORM POWER's engineers transform complex spaghetti harnesses into integrated multi-layer bus systems - just plug in and forget.



INDUCTANCE, CAPACITANCE, and IMPEDANCE in LAMINATED BUS ASSEMBLIES

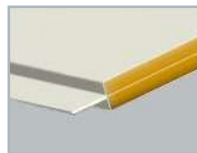
Advantages of laminated bus products include the ability to shape and route conductors and locate contact points for ease of installation. This eliminates the intricacy and variability of wires and ensures the assemblies have dependable electrical properties from one to the next. Multi-layered busbars can be designed to balance current flow in opposite directions between different polarities, enabling the opposing magnetic fields to cancel each other out. This can greatly reduce inductance.

EDGE FILL OFFERED BY STORM POWER COMPONENTS:



OPEN EDGE - Lamination extends beyond conductor farther than pinched or epoxy filled edges, and uses less tooling, which:

- lowers costs
- maintains minimal creepage
- has less robust edges



PINCH SEAL EDGE - Lamination extends past conductor with sealed edges that:

- are good for harsh environments
- are limited by thickness and geometry



EPoxy FILLED EDGE - Lamination extends less than other options to reduce footprint and:

- edges are epoxy sealed by hand
- are good for harsh environments

Laminated bus bars can have a combination of all 3 edge types!



STORM POWER COMPONENTS
www.stormpowercomponents.com

Phone: 1-800-394-4804

Responsive Manufacturing™



MULTI-LAYER LAMINATED BUS...(CON'T)

INDUSTRIES AND APPLICATIONS

INDUSTRIAL

Motor drives
Motor controls
Welding
Elevator systems
Switch gear
HVAC

COMPUTERS

MainframesServers
Cabinet power
Data Centers

MEDICAL

CAT scan
MRI

POWER CONVERSION

Power supplies
UPS systems
Alternative energy
Inverters

TRANSPORTATION

Hybrid vehicles
Electric vehicles
Rail
Shipboard
Heavy equipment

TELECOMMUNICATIONS

Routers
Backplanes
Switches
Cellular base stations
Battery back-up

DESIGN CONSIDERATIONS

With the guidance from our Lamination Design Team, engineers can be confident that they will make the right choice of insulating material and conductor (raw or plated) thickness. You will be able to explore design considerations from materials to edge seals.

TESTING CRITERIA



A hi-pot test is performed to make sure the finished coating has no defects, such as pin holes, voids, or thin areas near sharp corners or edges.



All parts are tested at twice the operating voltage plus 1,000 volts as standard procedure, unless otherwise specified.



Storm Power Components also offers insulation resistance testing (leakage current) and partial discharge testing at our facility.

LAMINATED BUS BAR - Insulation Materials Table

Selection of the proper internal dielectric insulations can depend on geometry, capacitance, inductance, voltage potentials, and operating environment. The following table lists the most common insulating materials. *

Insulation Materials	Continuous Use Temperature	Dielectric Strength Volts/mil ASTM D149	Flammability Rating
Epoxy Glass Laminate Board (FR4/G10) Superior mechanical and dimensional stability properties	130°C	600-1250	UL 94 V-0
Mylar (PET) Cost effective; tear, chemical, and moisture resistant	105°C	2700-5000	UL 94 VTM-0
Teonex (PEN) Higher dielectric strength and continuous use temperature	125°C	2700-5000	UL 94 VTM-0
Nomex Flame resistant; durable	180°C-220°C	400-900	UL 94 V-0
Kapton High temperature rating and range stability	200°C-240°C	3000-5000	UL 94 VTM-0
Epoxy Powder Coating Flame, moisture resistant; ideal for multiple shapes	130°C-180°C	800-1200	UL 94 V-0

* Note: Values for reference only, verify values on material datasheets



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