



J0414

MUSIC RAIL™ APP NOTE: High Power Resistors

2 Pages

For additional information, please visit the Bybee web site at www.BybeeLabs.com

For all installations above 300V we normally advise using two power resistors in series. If your available space does not allow this, you can turn to 25W or 50W high-power resistors. Whichever you choose, resistors should be conservatively derated* for several reasons:

1. Heat radiation to adjacent parts is minimized.
2. Power resistors can generate prodigious heat into solder joints. Thermal cycling causes solder joints to alternately heat and cool over time. This cycle can soften the solder joint and make it friable if heat is excessive.
3. PC boards can discolor due to excessive heat.
4. Resistors themselves require derating due to ambient heat.

25W Power Resistors



25W power resistors have flat mounting tabs that are designed to transfer heat more efficiently than a wire lead. These tabs can transfer prodigious heat, and precautions must be taken when mounting on terminal strips.

We recommend that you tack solder the tabs onto the terminal strip with minimal solder. Then wrap the tab/terminal combination using 24AWG buswire. Finish up with several layers of solder. This will provide a strong mechanical infrastructure, similar to concrete and steel construction.



50W Power Resistors

50W power resistors are either very large or very compact. There is no in-between. Most applications will not have room for the very large variety, so we will limit our discussion to the very small variety.



We are talking here about chassis-mount resistors with built-in heatsinks. These are by far the most efficient means of dissipating power, provided that the heatsink (or fan) is adequate. Heatsink compound should be used, and fasteners should include lockwashers or kepnuts.

We recommend the following websites for advice on thermal design:

www.signaltransfer.freeuk.com/termegn.htm

www.sound.westhost.com/heatsinks.htm

If you need additional help, please e-mail techsupport@bybeelabs.com

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MUSIC RAILS are manufactured in the United States.

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8390 East Via de Ventura F-110

Scottsdale, Arizona 85258, USA

1-480-998-2880 / techsupport@bybeelabs.com