

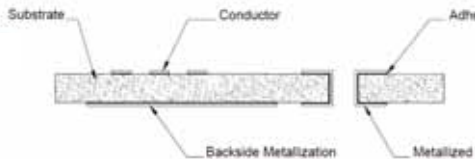


## Thin Film Products

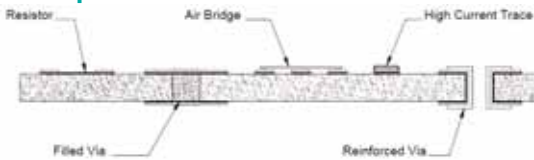
Thin film products have been evolving from simple to more complex designs by integrating discrete components onto a single assembly with inherent complex functionality. DLI is an experienced leader in designing and implementing custom ceramic circuits utilizing thin film technology. DLI offers a comprehensive set of materials and process capabilities to serve as your one-stop thin film foundry. DLI offers a build-to-print service and can supply thin film product design support.

DLI is ISO-9001: 1994 and ISO-14001: 1996 certified and utilizes documented procedures, process controls, and calibrated instrumentation throughout all manufacturing and test processes. All sensitive lithography processes are performed in state-of-the-art cleanrooms of class 1000 or better. DLI's experienced engineering staff is ready to answer your design, implementation, and process questions. DLI offers technical support for your design effort and can support seamless manufacture and test of the final product. Using its large selection of standard and custom ceramic substrates, thin film capability including wet plating and sputtering, and photolithography processing including wet and dry film, DLI can reduce circuit size and reduce part count over traditional circuit designs. Utilizing high volume manufacturing techniques, DLI can supply cost effective production quantities. DLI offers two basic levels of thin film circuit integration. In its simplest form DLI offers integration of conductors and plated vias. The second level includes integration of passive components into a thin film structure. These components could include capacitors, air-bridges, inductors, resistors, high current traces, and filled vias. This level of integration reduces surface mount component count, eliminates wire bonds, reduces circuit complexity, and provides for improved thermal management.

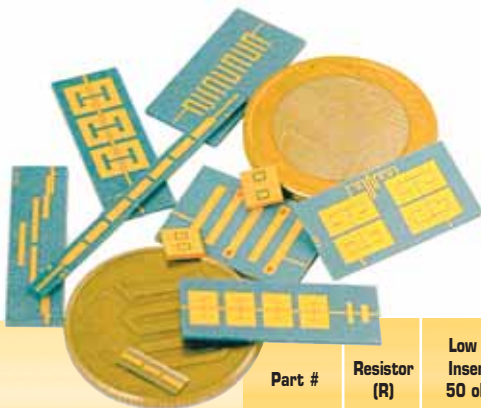
### Basic Circuit



### Complex Circuit

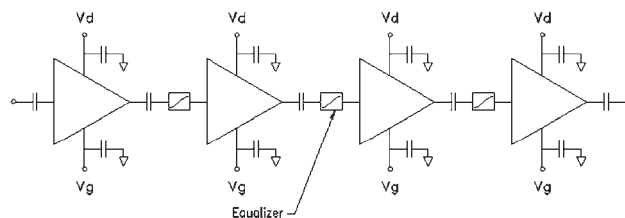


## Resonators, Filters and Custom Ceramic Components



### Gain Equalizer

Typical Application Typical Broadband Module for Fiber Optic SONET



Part #	Resistor (R)	Low Frequency Insertion Loss, 50 ohm system (dB)	Equivalent Capacitance (pF)	F <sub>0</sub> (GHz)	Mounting Attachment material: s=solder E=epoxy	L	W	T
AEQ 2199	43Ω	-3.0	1.15	16	E	0.028" ± .002" (.711 ± .051mm)	0.016" ± .002" (.406 ± .051mm)	0.007" ± .001" (.178 ± .025mm)
AEQ 2050	30Ω	-2.2	0.33	34	E	0.030" ± .002" (.762 ± .051mm)	0.016" ± .002" (.406 ± .051mm)	0.005" ± .001" (.127 ± .025mm)
AEQ 2234	50Ω	-3.5	0.31	32	E	0.032" ± .002" (.813 ± .051mm)	0.018" ± .002" (.457 ± .051mm)	0.005" ± .001" (.127 ± .025mm)
AEQ 3042	9Ω	-0.8	12.5	7	S	0.040" ± .002" (1.02 ± .051mm)	0.020" ± .002" (.508 ± .051mm)	0.006" ± .001" (.152 ± .025mm)
AEQ 2234	20Ω	1.6	9.0	7	S	0.040" ± .002" (1.02 ± .051mm)	0.020" ± .002" (.508 ± .051mm)	0.006" ± .001" (.152 ± .025mm)