

Cooling Critical Components

Introduction

Design engineers are routinely faced with applications that require special thermal management attention. A CTS customer recently solved its thermal concern by selecting a CTS/IERC extruded aluminum “Peel and Stick” product to cool a BCM8320 fabric interface chip.

Applications for Peel and Stick Heat Sinks

Heat is a by-product driven by higher performance and faster speeds of data processing. CTS/IERC extruded aluminum heat sinks are available with a pre-applied, double-sided thermally conductive adhesive tape. This adhesive provides a convenient and cost-saving solution for many thermal management challenges.

Figure 1 shows a half-slot module, with a CTS/IERC BDN18-6CB/A01 heat sink attached to a BCM8320 fabric interface chip, integrated into a service router. The customer selected the easy-to-apply BDN18-6CB/A01, which can dissipate 2.8°C/Watt in forced convection, for its Ethernet service switch and service router. To maximize cooling, the customer chose a larger heat sink (1.81” x 1.81”) to fit over the smaller device package (1.38” x 1.38”). Figure 2 illustrates the Peel and Stick product, which has a footprint range from 0.91” x 0.91” to 2.11” x 2.11” and fin heights of .355”, .555” and .605”.



Figure 1: Service Router with Ethernet Service Switch Half-Slot Module with CTS/IERC BDN18-6CB/A01 Heat Sink

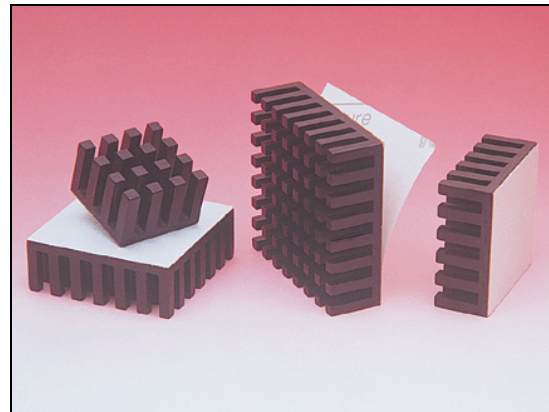


Figure 2: Extruded Aluminum Adhesive Peel and Stick Heat Sinks

Characteristics of Peel and Stick Heat Sinks

- Applicable for BGA, PDA, PLCC, and QFP packages with consistent and repeatable performance
- Omnidirectional
- Thermally optimized pin fin
- Excellent mechanical bond (adhesive shear strength at 100°C is 36psi)
- Apply by peeling off the release liner and pressing onto the component
- Reduces assembly costs and time:
 - No stencil, no dispenser, no curing equipment/agent, no ventilation equipment/workstation, no requirement for tight process control, and no chemical-waste disposal control required
 - Minimal set-up time, no cure time, and no clean-up time

Extruded Aluminum – Peel and Stick Heat Sink Specifications

Standard Peel and Stick Heat Sink part numbers are shown in Table 1. Customers with a different mechanical footprint or special thermal requirements are encouraged to contact CTS/IERC for a custom solution.

Table 1: Extruded Aluminum Peel and Stick Heat Sinks

Heat Sink Part Number***	Width	Length	Height	Fin Matrix	Thermal Resistance Case To Ambient* °C/Watt	
					Natural Convection**	Forced Convection @ 400 LFPM
BDN09-3CB/A01	0.91	0.91	0.355	7x7	26.9	9.6
BDN09-6CB/A01			0.605	4x4	24.5	7.7
BDN10-3CB/A01	1.01	1.01	0.355	7x7	26.4	8.0
BDN10-5CB/A01			0.555	5x5	20.8	6.3
BDN11-3CB/A01	1.11	1.11	0.355	8x8	20.9	7.2
BDN11-6CB/A01			0.605	5x5	18.5	5.7
BDN12-3CB/A01	1.21	1.21	0.355	9x9	19.6	6.8
BDN12-5CB/A01			0.555	6x6	16.5	5.2
BDN13-3CB/A01	1.31	1.31	0.355	9x9	16.1	6.0
BDN13-5CB/A01			0.555	6x6	14.9	4.7
BDN14-3CB/A01	1.41	1.41	0.355	10x10	16.2	5.6
BDN14-6CB/A01			0.605	6x6	13.1	4.2
BDN15-3CB/A01	1.51	1.51	0.355	11x11	15.1	4.5
BDN15-5CB/A01			0.555	7x7	11.9	3.8
BDN16-3CB/A01	1.61	1.61	0.355	11x11	13.5	4.5
BDN16-6CB/A01			0.605	7x7	10.6	3.5
BDN17-3CB/A01	1.71	1.71	0.355	13x13	11.5	3.8
BDN17-5CB/A01			0.555	8x8	9.5	3.2
BDN18-3CB/A01	1.81	1.81	0.355	13x13	10.8	3.5
BDN18-6CB/A01			0.605	8x8	8.1	2.8
BDN19-3CB/A01	1.91	1.91	0.355	14x14	9.9	2.9
BDN19-5CB/A01			0.555	9x9	7.8	2.7
BDN20-3CB/A01	2.01	2.01	0.355	15x15	9.1	2.8
BDN20-5CB/A01			0.555	9x9	7.2	2.5
BDN21-3CB/A01	2.11	2.11	0.355	16x16	8.5	2.6
BDN21-6CB/A01			0.605	9x9	6.5	2.2

* Thermal resistance of adhesive tape is included.

** Thermal resistance values based on power density of 3 watts/in.²

*** Part numbers listed for standard black anodized heat sinks with IERC adhesive tapes.

Conclusion

Critical components running at maximum speeds will generate heat and create thermal management challenges that must be addressed. One solution may be the easy-to-use CTS/IERC Peel and Stick heat sinks. For more information on CTS/IERC's full line of heat sink products, including copper and aluminum forgings, visit the following site: <http://www.ierc.net>

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