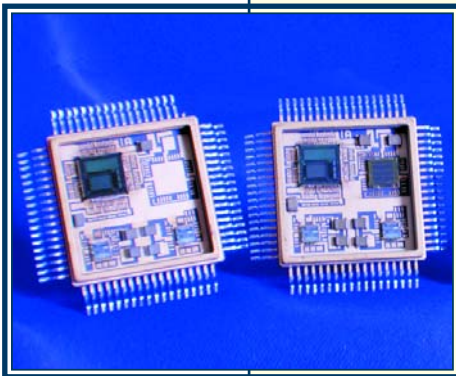


# PCI Enhanced Mini-ACE®

ODEL: BU-62743/62843/62864



1.0 Inch Square

## FEATURES

- 32-bit/33 MHz, 3.3 Volt PCI Target Interface
- Fully Integrated 1553A/B Notice 2, 1760, McAir, STANAG 3838 Interface Terminal
- 3.3V Logic
- Enhanced BC Architecture
  - Built-in Message Sequence Control Engine
  - Instructions for Message Processing, Timing Control, Branches, and Subroutines
  - User-Defined Interrupts, Flags, and General Purpose Queue
- Advanced RT Functions
  - Single, and Circular Subaddress Buffering
  - Global Circular Buffering
  - Interrupt Status Queue
  - 50% Circular Buffer Rollover Interrupts
- Selective Message Monitor with Address/T-R bit/Subaddress Filtering, Interrupt Status Queue, and 50% Rollover Interrupts
- Available with MIL-STD-1760 or McAir Compatible Transceiver Options
- Configuration Choices:
  - RT only with 4K RAM
  - BC/RT/Monitor with 4K RAM
  - BC/RT/Monitor with 64K RAM, and RAM Parity

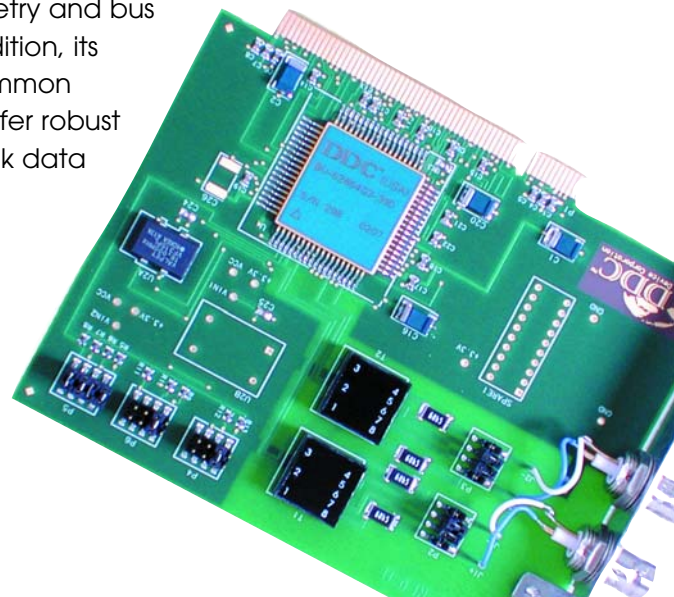
## DESCRIPTION

The PCI Enhanced Mini-ACE MIL-STD-1553 series is a fully integrated solution for interfacing a 32-bit, 33-MHz PCI bus with a MIL-STD-1553 bus. A distinct improvement over multi-component implementations, the PCI Enhanced Mini-ACE reduces real estate and power requirements while eliminating the need for custom FPGA logic by providing a direct interface to embedded PCI buses. To accelerate host write operations, the interface incorporates a built-in FIFO that enables a PCI master to transfer a 32-word 1553 message in approximately 1.5  $\mu$ s.

Advanced architecture is the key to the series' high performance. Advanced bus controller architecture gives the PCI Enhanced Mini-ACE a high degree of flexibility and autonomy. This creates advantages in a number of areas: improving message scheduling control; minimizing host overhead for asynchronous message insertion; and facilitating bulk data transfers, message retry and bus switching strategies, and data logging and fault reporting. In addition, its remote terminal architecture provides flexibility in meeting all common MIL-STD-1553 protocols. RT data buffering and interrupt options offer robust support for ensuring data sample consistency, and support at bulk data transfers.

## APPLICATIONS

A robust COTS solution for avionics, ground vehicles, and other military/aerospace applications, the PCI Enhanced Mini-ACE MIL-STD-1553 series is compatible with DDC's earlier generations of ACE terminals.



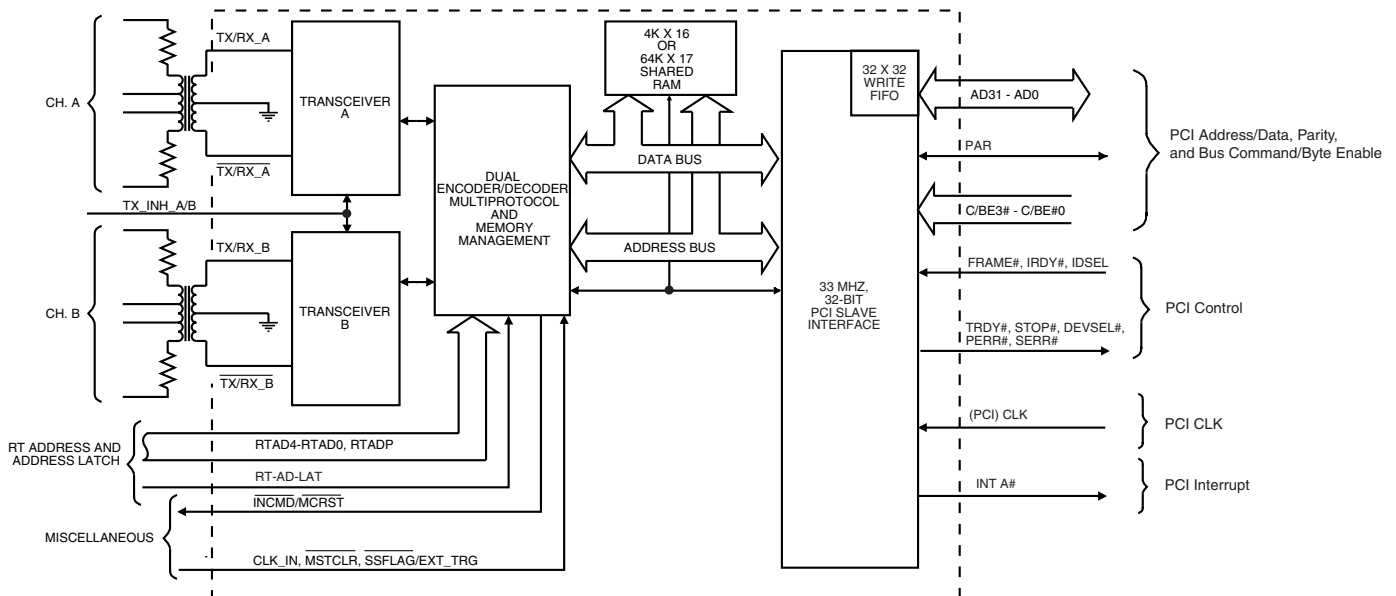
# Specifications

PARAMETER	MIN	TYP	MAX	UNITS	PARAMETER	MIN	TYP	MAX	UNITS
<b>POWER SUPPLY REQUIREMENTS</b>					BU-62743XX-XX0, BU-62843XX-XX0				
Voltages/Tolerance					0% Transmit/Monitor	0.41	0.63		W
+3.3V (Logic)	3.0	3.3	3.6	V	25% Duty Transmitter Cycle	0.70	0.85		W
+5V Transceiver (Ch. A, Ch. B)	4.75	5.0	5.5	V	50% Duty Transmitter Cycle	0.94	1.07		W
+5V (RAM for BU-62864)	4.5	5.0	5.5	V	75% Duty Transmitter Cycle	1.17	1.29		W
<b>Current Drain (Total Hybrid)</b>					<b>CLOCK INPUTS</b>				
BU-62864XX-XX0					<b>PCI Clock Input: Frequency</b>				
+5 V (RAM, CH A, CH B)					Nominal Value				
0% Transmit/Monitor					33				
25% Duty Transmitter Cycle					MHz				
50% Duty Transmitter Cycle					<b>1553 Clock Input: Frequency</b>				
75% Duty Transmitter Cycle					Nominal Value				
+3.3 V (Logic)					Default Mode				
					Option				
					Option				
					Option				
BU-62743XX-XX0, BU-62843XX-XX0					<b>THERMAL</b>				
+5 V (CH A, CH B)					Thermal Resistance, Junction-to-Case, Hottest Die (0 <sub>jc</sub> )				
0% Transmit/Monitor					Operating Case Temperature				
25% Duty Transmitter Cycle					-1XX Versions				
50% Duty Transmitter Cycle					-2XX Versions				
75% Duty Transmitter Cycle					-3XX Versions				
+3.3 V (Logic)					Operating Junction Temperature				
					Storage Temperature				
					Lead Temperature				
					(soldering, 10 sec.)				
<b>POWER DISSIPATION (See Note)</b>					<b>PHYSICAL CHARACTERISTICS</b>				
<b>Total Hybrid</b>					Size				
BU-62864XX-XX0					1.0 X 1.0 X 0.155				
0% Transmit/Monitor					25.4 x 25.4 x 3.94				
25% Duty Transmitter Cycle					0.6				
50% Duty Transmitter Cycle					oz				
75% Duty Transmitter Cycle					17				
					g				

Note: Power dissipation specifications assume a transformer coupled configuration with external dissipation (while transmitting) of 0.14 watts for the active isolation transformer, 0.80 watts for the active bus coupling transformer, 0.45 watts for each of the two bus isolation resistors and 0.15 watts for each of the two bus termination resistors.

## PCI Enhanced Mini-ACE

Figure 1



## Most Autonomous BC Architecture

- Built-in Message Sequence Control Engine
- Defined Set of 20 Instructions
- Control/Status Blocks for Individual Messages
- Minor and Major Frame Scheduling
- Asynchronous Message Insertion
- Conditional Branching and Subroutines
- General Purpose Queue: Message Status, Time Tag, Immediate Data, Indirect Data
- Fully User-Definable Interrupts
- Legacy Mode for Compatibility with ACE and Mini-Ace Applications

## Remote Terminal Flexibility

- Multiprotocol: MIL-STD-1553A/B, STANAG-3838
- Choice of Subaddress Single Message, Circular Buffering, or Global Circular Buffering
- 50% and 100% Circular Buffer Rollover Interrupts
- Hardware or Software-Programmable RT Address
- Programmable Command Illegalization
- Programmable Busy by Subaddress
- Interrupts on All Messages, or Individual Subaddresses and/or Mode Codes
- 32-Entry Interrupt Status Queue
- Available with Option for RT AUTO-BOOT with BUSY Bit Set 0 for MIL-STD-1760 Applications
- Option for RT AUTO-BOOT: Initialize to RT Mode with Busy Bit Set Following Power-Up

## True Message Monitor

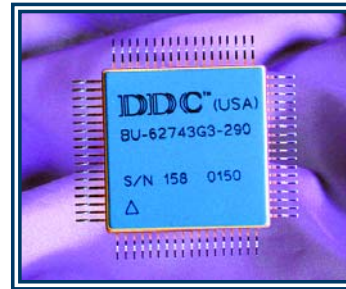
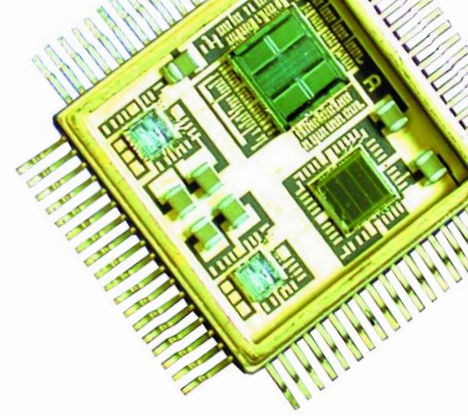
- Selective Message Monitor
- Filter Based on RT Address, T/R bit, Subaddress
- True Message Monitor
- Command and Data Stacks
- 50% and 100% Rollover Interrupts
- 32-Entry Interrupt Status Queue
- Simultaneous RT/Message Monitor Option

## Autonomous Built-In Self-Test

- RAM Self-Test
- Online Loopback Test
- Capability to Test Transmitter Timeout Function

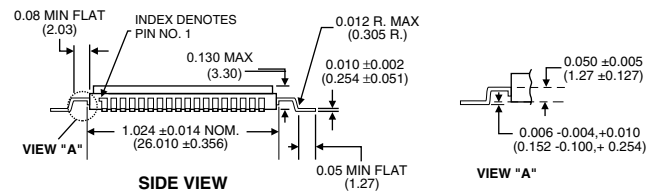
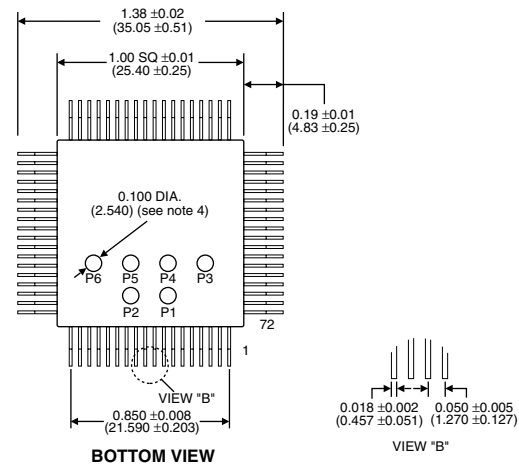
## PCI Interface Flexibility

- PCI Enhanced Mini-ACE includes 33 MHz, 32-bit PCI target interface
- Supports 3.3 Volt Logic Interface
- +5 Volt-Tolerant Logic Signals (PCI signals are NOT 5V tolerant)
- Software programmable divider to enable master 1553 clock of 10,12,16 or 20 MHz



72-lead  
Gull Wing  
Package

Figure 2



- Notes:
- 1) Dimensions are in inches (mm).
  - 2) Package Material: Alumina (AL<sub>2</sub>O<sub>3</sub>)
  - 3) Lead Material: Kovar, Plated by 50μ in. minimum nickel under 60μ in. minimum gold.
  - 4) There are 6 test pads located on the bottom of the package. These pads are recessed so as not to interfere when mounting the hybrid. There are no user connections to these pads.



## Ordering Information

**BU-62743F3-120X**

**Supplemental Process Requirements:**

- S = Pre-Cap Source Inspection
- L = 100% Pull Test
- Q = 100% Pull Test and Pre-Cap Source Inspection
- K = One Lot Date Code
- W = One Lot Date Code and Pre-Cap Source Inspection
- Y = One Lot Date Code and 100% Pull Test
- Z = One Lot Date Code, Pre-Cap Source Inspection, and 100% Pull test
- Blank = None of the Above

**Test Criteria:**

- 0 = Standard Testing
- 2 = MIL-STD-1760 Amplitude Compliant (Note: Not available with McAir Compatible Outputs)

**Process Requirements:**

- 0 = Standard DDC Processing, no Burn-In (see table below)
- 1 = MIL-PRF-38534 Compliant (note 2)
- 2 = B (note 1)
- 3 = MIL-PRF-38534 Compliant (note 2) with PIND Testing
- 4 = MIL-PRF-38534 Compliant (note 2) with Solder Dip
- 5 = MIL-PRF-38534 Compliant (note 2) with PIND Testing and Solder Dip
- 6 = B(note 1) with PIND Testing
- 7 = B(note 1) with Solder Dip
- 8 = B(note 1) with PIND Testing and Solder Dip
- 9 = Standard DDC Processing with Solder Dip, no Burn-In

**Temperature Grade/Data Requirements:**

- 1 = -55°C to +125°C
- 2 = -40°C to +85°C
- 3 = 0°C to +70°C
- 4 = -55°C to +125°C with Variables Test Data
- 5 = -40°C to +85°C with Variables Test Data
- 6 = Custom Part (Reserved)
- 7 = Custom Part (Reserved)
- 8 = 0°C to +70°C with Variables Test Data

**Voltage/Transceiver Option:**

- 3 = +5 volt, rise/fall times = 100 to 300 ns (-1553B)
- 4 = +5 volt, rise/fall times = 200 to 300 ns

Note: Not available with Test Criteria option "2" MIL-STD-1760 Amplitude Compliant

**Package Type:**

- F = Flat Pack
- G = "Gull Wing" (Formed Lead)

**Logic/RAM Voltage:**

- 3 = 3.3 Volt (Applicable only for BU-62743 and BU-62843)
- 4 = 3.3 V and 5.0 V (Applicable only for BU-62864)

**Product Type:**

- BU-6274 = RT-only with 4K X 16 RAM
- BU-6284 = BC/RT/MT with 4K X 16 RAM
- BU-6286 = BC/RT/MT with 64K X 17 RAM

**Notes:**

1. Standard DDC processing with burn-in and full temperature test. See table on right.
2. MIL-PRF-38534 product grading is designated with the following dash numbers:  
 Class H is a -11X, 13X, 14X, 15X, 41X, 43X, 44X, 45X  
 Class G is a -21X, 23X, 24X, 25X, 51X, 53X, 54X, 55X  
 Class D is a -31X, 33X, 34X, 35X, 81X, 83X, 84X, 85X

The information in this data sheet is believed to be accurate; however, no responsibility is assumed by Data Device Corporation for its use, and no license or rights are granted by implication or otherwise in connection therewith. Specifications are subject to change without notice.



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STANDARD DDC PROCESSING FOR HYBRID AND MONOLITHIC HERMETIC PRODUCTS		
TEST	MIL-STD-883	
	METHOD(S)	CONDITION(S)
INSPECTION	2009,2020,2017, AND 2032	_
SEAL	1014	A AND C
TEMPERATURE CYCLE	1010	C
CONSTANT ACCELERATION	2001	3000g
BURN-IN	1015 (note 1), 1030 (note 2)	TABLE 1

**Notes:**

1. For Process Requirement "B" (refer to ordering information), devices may be non-compliant with MIL-STD-883, Test Method 1015, Paragraph 3.2. Contact factory for details.
2. When applicable.



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