

# **90-MILLIMETER SWIPE READER WITH SHIFT-OUT ASIC TECHNICAL REFERENCE MANUAL**

**Part Number 99875286-4**

**OCTOBER 2008**

**MAGTEK<sup>®</sup>**

REGISTERED TO ISO 9001:2000

1710 Apollo Court

Seal Beach, CA 90740

Phone: (562) 546-6400

Fax: (562) 546-6301

Technical Support: (651) 415-6800

*[www.magtek.com](http://www.magtek.com)*

Information in this document is subject to change without notice. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of MagTek, Inc.

MagTek is a registered trademark of MagTek, Inc.

## REVISIONS

Rev Number	Date	Notes
1	20 Nov 03	Initial Release
2	9 Mar 04	Sec 1: Added more description in first four paragraphs; Specifications, Power Requirements: added idle and sleep modes; Sec 2: Added connector IO pinouts and -2 and -3 Trk Head pinouts. Appendix A, updated drawings 21045082 and 21045083.
3	11 May 04	Section 1, Configurations: Editorial corrections; Section 2: Updated Specs; Appendix A: Added drawings 21045082 and 21045083.
4	1 Oct 08	Updated address; Replaced PN 99875259 with PN 99875337

## **LIMITED WARRANTY**

MagTek warrants that the products sold to Reseller pursuant to this Agreement will perform in accordance with MagTek's published specifications. This warranty shall be provided only for a period of one year from the date of the shipment of the product from MagTek (the "Warranty Period"). This warranty shall apply only to the original purchaser unless the buyer is authorized by MagTek to resell the products, in which event, this warranty shall apply only to the first repurchase.

During the Warranty Period, should this product fail to conform to MagTek's specifications, MagTek will, at its option, repair or replace this product at no additional charge except as set forth below. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of MagTek. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, unreasonable use, misuse, abuse, customer's negligence, Reseller's negligence, or non-MagTek modification of the product. MagTek reserves the right to examine the alleged defective goods to determine whether the warranty is applicable.

Without limiting the generality of the foregoing, MagTek specifically disclaims any liability or warranty for goods resold in other than MagTek's original packages, and for goods modified, altered, or treated by customers.

Service may be obtained by delivering the product during the warranty period to MagTek (1710 Apollo Court, Seal Beach, CA 90740). If this product is delivered by mail or by an equivalent shipping carrier, the customer agrees to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent. MagTek will return the product, prepaid, via a three (3) day shipping service. A Return Material Authorization (RMA) number must accompany all returns.

**MAGTEK MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND MAGTEK DISCLAIMS ANY WARRANTY OF ANY OTHER KIND, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

**EACH PURCHASER UNDERSTANDS THAT THE MAGTEK PRODUCT IS OFFERED AS IS. IF THIS PRODUCT DOES NOT CONFORM TO MAGTEK'S SPECIFICATIONS, THE SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. MAGTEK'S LIABILITY, IF ANY, TO RESELLER OR TO RESELLER'S CUSTOMERS, SHALL IN NO EVENT EXCEED THE TOTAL AMOUNT PAID TO MAGTEK BY RESELLER UNDER THIS AGREEMENT. IN NO EVENT WILL MAGTEK BE LIABLE TO THE RESELLER OR THE RESELLER'S CUSTOMER FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH PRODUCT, EVEN IF MAGTEK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.**

### **LIMITATION ON LIABILITY**

**EXCEPT AS PROVIDED IN THE SECTIONS RELATING TO MAGTEK'S LIMITED WARRANTY, MAGTEK'S LIABILITY UNDER THIS AGREEMENT IS LIMITED TO THE CONTRACT PRICE OF THE PRODUCTS.**

**MAGTEK MAKES NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS, EXPRESSED OR IMPLIED, EXCEPT AS MAY BE STATED IN THIS AGREEMENT, AND MAGTEK DISCLAIMS ANY IMPLIED WARRANTY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

**MAGTEK SHALL NOT BE LIABLE FOR CONTINGENT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES TO PERSONS OR PROPERTY. MAGTEK FURTHER LIMITS ITS LIABILITY OF ANY KIND WITH RESPECT TO THE PRODUCTS, INCLUDING ANY NEGLIGENCE ON ITS PART, TO THE CONTRACT PRICE FOR THE GOODS.**

**MAGTEK'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDIES ARE STATED IN THIS SECTION AND IN THE SECTION RELATING TO MAGTEK'S LIMITED WARRANTY.**

## **FCC WARNING STATEMENT**

This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

## **FCC COMPLIANCE STATEMENT**

This device complies with Part 15 Of The FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference. And (2) This device must accept any interference received, including interference that may cause undesired operation.

## **CANADIAN DOC STATEMENT**

This digital apparatus does not exceed the Class B limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.


## **CE STANDARDS**

Testing for compliance to CE and FCC requirements was performed by an independent laboratory. The unit under test was found compliant to Class B.

## **UL/CSA**

This product is recognized per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

## **RoHS STATEMENT**

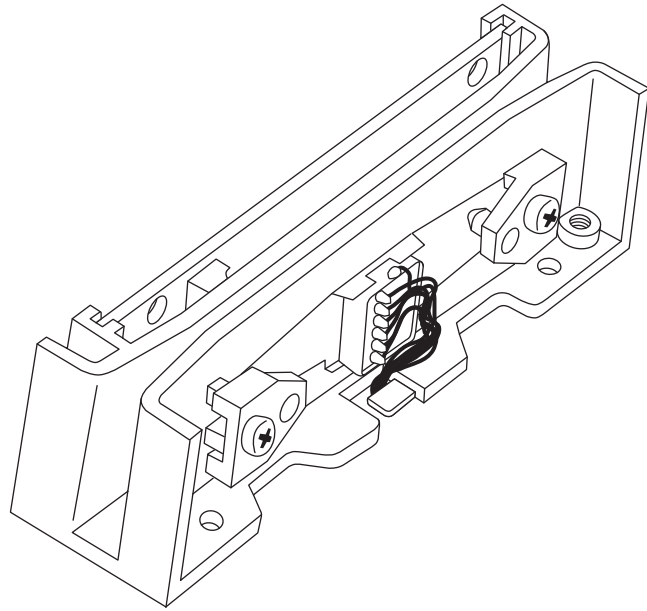
When ordered as RoHS compliant, this product meets the Electrical and Electronic Equipment (EEE) Reduction of Hazardous Substances (RoHS) European Directive 2002/95/EC. The marking is clearly recognizable, either as written words like "Pb-free" or "lead-free", or as another clear symbol (  ).

## TABLE OF CONTENTS

<b>SECTION 1. FEATURES AND SPECIFICATIONS</b> .....	<b>1</b>
CONFIGURATIONS .....	1
SPECIFICATIONS .....	2
REFERENCE DOCUMENTS.....	2
<b>SECTION 2. INSTALLATION</b> .....	<b>3</b>
MOUNTING.....	3
CONNECTORS.....	3
INTERFACE.....	3
<b>APPENDIX A. ENGINEERING DRAWINGS</b> .....	<b>5</b>

## TABLES and FIGURES

Figure 1-1. 90mm Swipe Reader With Shift-Out ASIC .....	vi
Table 2-1. 2-Track and 3-Track I/O Signals .....	3
Figure A-1. 90 mm Swipe Reader, Tk 1 and 2 with 3-Track Shift-Out ASIC .....	6
Figure A-2. 90 mm Swipe Reader, 3-Tk with 3-Track Shift-Out ASIC .....	7



**Figure 1-1. 90mm Swipe Reader With Shift-Out ASIC**

## SECTION 1. FEATURES AND SPECIFICATIONS

The 90-millimeter Magstripe Swipe Reader with Shift-Out ASIC is designed for providing magstripe read capabilities for use in the retail, access control, and time and attendance environments.

The reader chassis provides an industry standard mechanical footprint, along with magstripe read capabilities, which comply with the ISO 7810/7811 and AAMVA standards.

The Shift-Out interface provides a "next generation" electronics interface which simplifies the process of collecting data bits as the card is swiped.

With Shift-Out technology, the reader's electronics take complete responsibility for recognizing when a card is being swiped, and for collecting all data bits during the card swipe process. Subsequently, the reader's electronics then send a "data ready" signal to the host interface, and allows the host to shift-out the data bits as required.

Key advantages of this product are as follows:

- Low power and "sleep mode" capabilities, which make this product ideal for use in hand-held battery powered devices. (75uA maximum current draw during sleep mode)
- Low voltage operation. (2.8VDC - 5.5VDC)
- Automatic detection of card swipe and real-time data collection.
- Shift Out data interface. (See Triple Track ASIC with Shift-Out, Specification, P/N 99875337 for details.)

### CONFIGURATIONS

	Part Number	Read	Color
MT-211 90-Millimeter Swipe Reader with 3-Track, Shift-Out ASIC	21045083	Tracks 1 & 2	Black
MT-211 90-Millimeter Swipe Reader with 3-Track, Shift-Out ASIC	21045082	Tracks 1,2, & 3	Black

## 90-Millimeter Swipe Reader With Shift-Out ASIC

---

### SPECIFICATIONS

<b>STANDARDS</b>	
Flammability	Meets UL94V-0
Speed	Card speed through the unit may vary from: 3 to 60 in/s (7.6 to 152.4 cm/s)
<b>ELECTRICAL</b>	
For electrical specifications, see reference document 99875337	
<b>MECHANICAL</b>	
Dimensions	See Appendix A
Connectors	See Appendix A
Life	1,000,000 passes
<b>ENVIRONMENTAL</b>	
Temperature Operating: Storage:	-30 °C to +70 °C (-22 °F to +158 °F) -30 °C to +70 °C (-22 °F to +158 °F)
Humidity** Operating: Storage:	10% to 90% 100% noncondensing
Altitude Operating: Storage:	0-10,000 ft. (0-3048m) 0-50,000 ft. (0-15,240m)

### REFERENCE DOCUMENTS

*Triple Track ASIC With Shift-Out 3V, Specifications, P/N 99875337*

## SECTION 2. INSTALLATION

This section consists of installation and connection of the Reader.

### MOUNTING

The dimensions for mounting are shown in Appendix A.

### CONNECTORS

The connector pin lists are shown below. Connector J2 is provided for easy access without removing the PC board. If additional strain relief is required, J3 may be used, and a tie wrap can be routed through the holes adjacent to J3 to secure the cable.

The mating connector is:

Housing Molex PN# 51021-0400

Terminal Molex PN# 50058-8000, 4 required.

I/O signal pin list is shown in Table 2-1.

**Table 2-1. 2-Track and 3-Track I/O Signals**

PCB J2 and J3	Signal
1	V <sub>DD</sub>
2	GND
3	SO Data
4	SO Strobe

### INTERFACE

For interface requirements refer to *Triple Track ASIC with Shift-Out 3V, Specifications*, P/N 99875337.



## **APPENDIX A. ENGINEERING DRAWINGS**

The following Drawings are provided in this section:

Part Number	Title
21045083	MT-211 90mm Tk 1, 2 w/3Tk ASIC
21045082	MT-211 90mm 3Tk w/3Tk ASIC

90-Millimeter Swipe Reader With Shift-Out ASIC

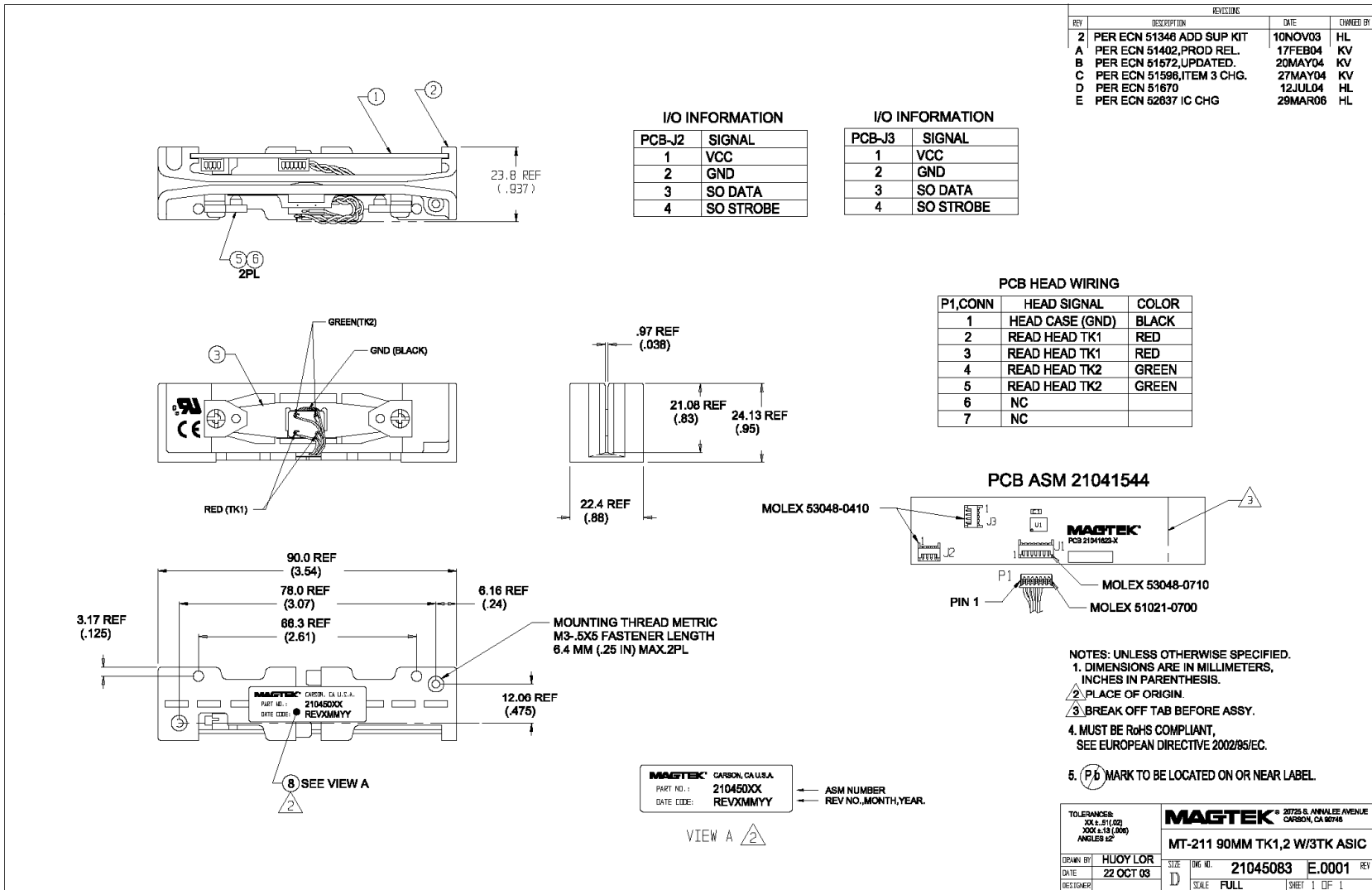


Figure A-1. 90 mm Swipe Reader, Tk 1 and 2 with 3-Track Shift-Out ASIC

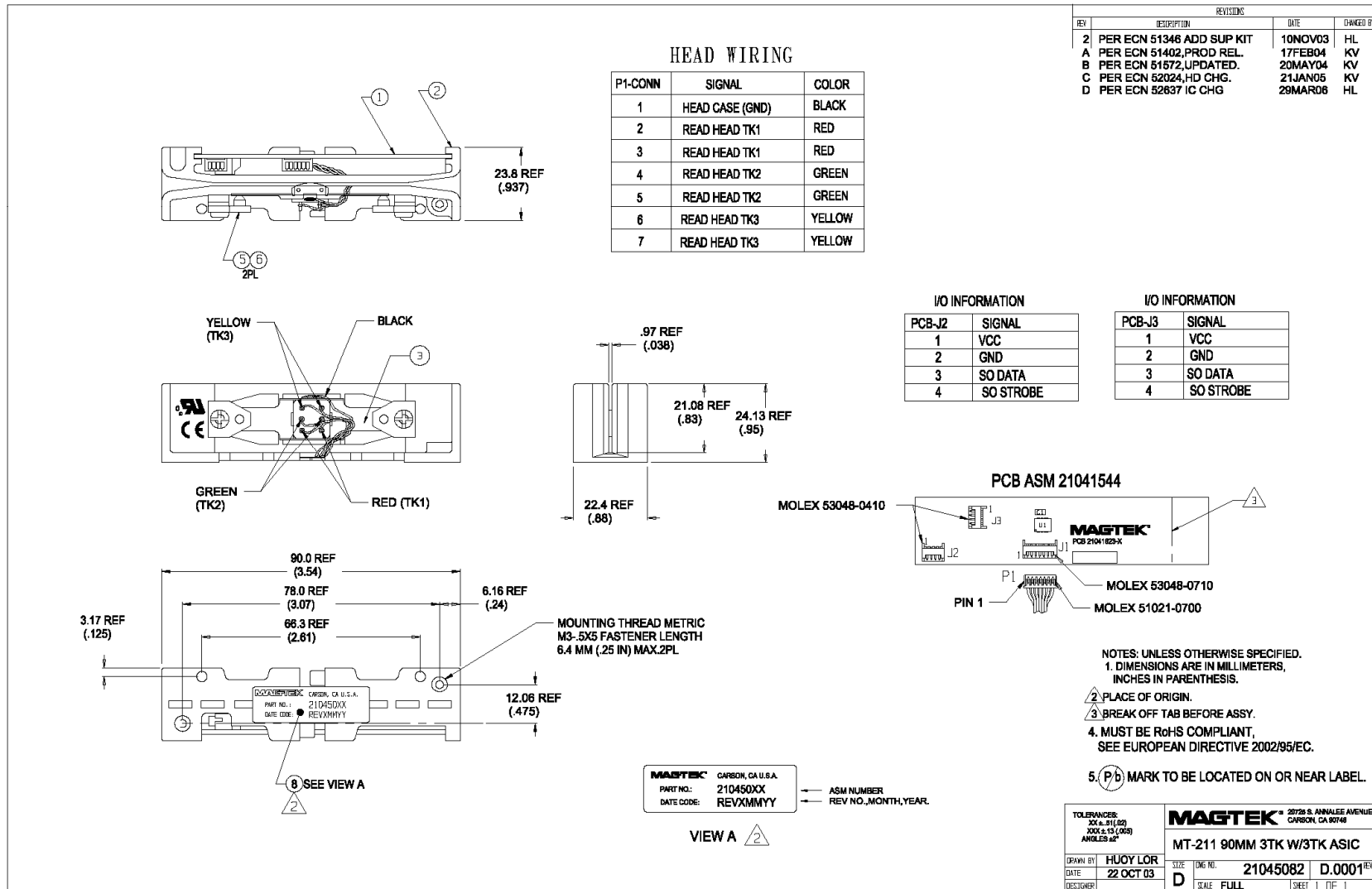


Figure A-2. 90 mm Swipe Reader, 3-Tk with 3-Track Shift-Out ASIC

