

EQCO850SC.3-HS/EQCO875SC.3-HS Single-Coax Transceiver for LVDS and Gigabit Ethernet Applications

Features

- Combined Transmitter and Receiver with an Integrated Equalizer to Form a Full-Duplex Bidirectional Connection over a Single 50Ω Coax Cable (EQCO850SC-HS) or 75Ω Coax Cable (EQCO875SC-HS)
- Internal LVDS Termination Resistors for Low External Discrete Count
- Allows Power Distribution Over the Coax, on top of the Data Signals
- Single 3.3 V Supply
- 16-Pin, 0.65 mm Pin Pitch, 4 mm QFN Package
- Pb-Free and RoHS Compliant

Applications

This solution is useful and economical for many markets and applications, including the following:

- Camera networks
 - Home Security, Surveillance, Industrial/Inspection, Medical Cameras
- Coax Cable-Distribution Infrastructure

Introduction

The EQCO850SC-HS single-coax transceiver is designed to simultaneously transmit and receive signals on a single 50Ω coax cable. A sister product, the EQCO875SC-HS, can achieve similar performance when used in 75Ω coaxial systems.

The EQCO850SC.3-HS works for 50Ω coax applications and the EQCO875SC.3-HS works for 75Ω coax applications. Everything is the same between both parts except the part number, the coax resistance and the characteristic impedance of transmission lines and connectors between the chip and the edge of the boards. Refer to [Section 3.0 “Application Information”](#) for information about the typical application circuit.

TABLE 1: TYPICAL EQUALIZATION PERFORMANCE FOR EQCO850SC.3-HS

Bit Rate	EQCO850SC.3-HS range using		
	RG174 (Ø 2.8 mm)	RTK (Ø 2.8 mm)	RG58 (Ø5 mm)
500 Mbps	25m	40m	50m
1 Gbps	15m	25m	30m

Note: For other cable types, the length that can be reached in full-duplex may have maximally -12 dB insertion loss at 625 Mhz, for a bit rate of 1.25 Gbps. Equalizer performance works up to much higher levels in half-duplex. For lower bit-rates, slightly longer cable lengths can be achieved.

TABLE 2: TYPICAL EQUALIZATION PERFORMANCE FOR EQCO875SC.3-HS

Bit Rate	EQCO875SC.3-HS range using		
	RG179	RG59	RG6
1.25 Gbps	20m	40m	80m

Table of Contents

1.0	Device Overview	3
2.0	Application Information	7
3.0	Electrical Characteristics	11
4.0	Packaging	13

TO OUR VALUED CUSTOMERS

It is our intention to provide our valued customers with the best documentation possible to ensure successful use of your Microchip products. To this end, we will continue to improve our publications to better suit your needs. Our publications will be refined and enhanced as new volumes and updates are introduced.

If you have any questions or comments regarding this publication, please contact the Marketing Communications Department via E-mail at docerrors@microchip.com or fax the **Reader Response Form** in the back of this data sheet to (480) 792-4150. We welcome your feedback.

Most Current Data Sheet

To obtain the most up-to-date version of this data sheet, please register at our Worldwide Web site at:

<http://www.microchip.com>

You can determine the version of a data sheet by examining its literature number found on the bottom outside corner of any page. The last character of the literature number is the version number, (e.g., DS30000A is version A of document DS30000).

Errata

An errata sheet, describing minor operational differences from the data sheet and recommended workarounds, may exist for current devices. As device/documentation issues become known to us, we will publish an errata sheet. The errata will specify the revision of silicon and revision of document to which it applies.

To determine if an errata sheet exists for a particular device, please check with one of the following:

- Microchip's Worldwide Web site; <http://www.microchip.com>
- Your local Microchip sales office (see last page)

When contacting a sales office, please specify which device, revision of silicon and data sheet (include literature number) you are using.

Customer Notification System

Register on our web site at www.microchip.com to receive the most current information on all of our products.

EQCO850SC.3-HS/EQCO875SC.3-HS

1.0 DEVICE OVERVIEW

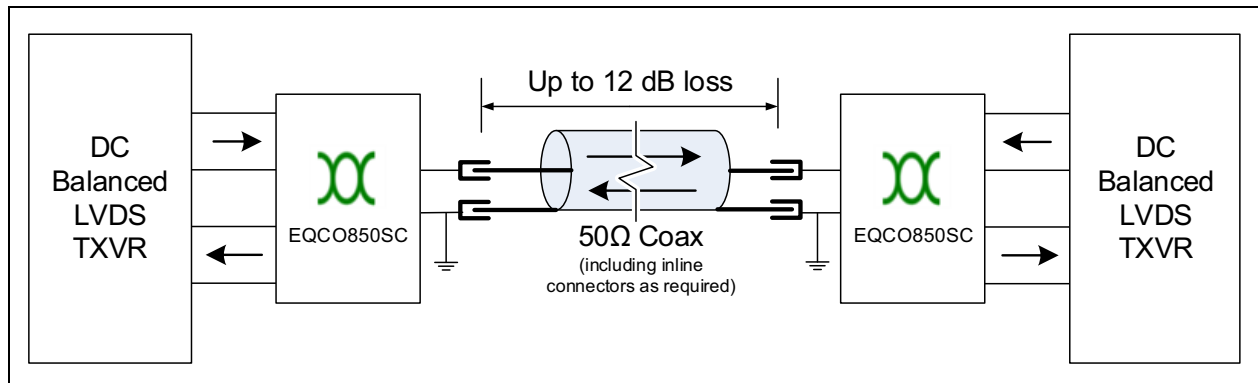
The EQCO850SC-HS (EQCO875SC-HS) is ideally suited for simplex and duplex LVDS connections over 50 Ω (75 Ω) coax cables between 500 Mbps and 1.25 Gbps. For correct operation, the signals must be NRZ (Non-Return-to-Zero) encoded and DC balanced with a maximum run length of ten bits. Excellent EMI/RFI coax cable shielding allows for good EMI properties.

The EQCO850SC-HS operates with a variety of 50 Ω coax cables, including the cost-effective 2.8 mm diameter RTK cable (e.g. Leoni Dakar 302) commonly used for radio and navigation antennas in automotive applications. This cable fits well with the standardized (DIN and USCAR), high-performance, cost-effective RF connectors: SAE/USCAR-18 "FAKRA/SMB RF Connector".

The EQCO875SC-HS is typically useful in situations where legacy 75 Ω cables are present.

Figure 1-1 illustrates a typical LVDS coaxial connection. It can be used for Gigabit Ethernet connections over a single coax cable.

FIGURE 1-1: TYPICAL LVDS LINK USING EQCO850SC-HS



EQCO850SC.3-HS/EQCO875SC.3-HS

FIGURE 1-2: EQCO850SC.3-HS PIN DIAGRAM (VIEWED FROM TOP)

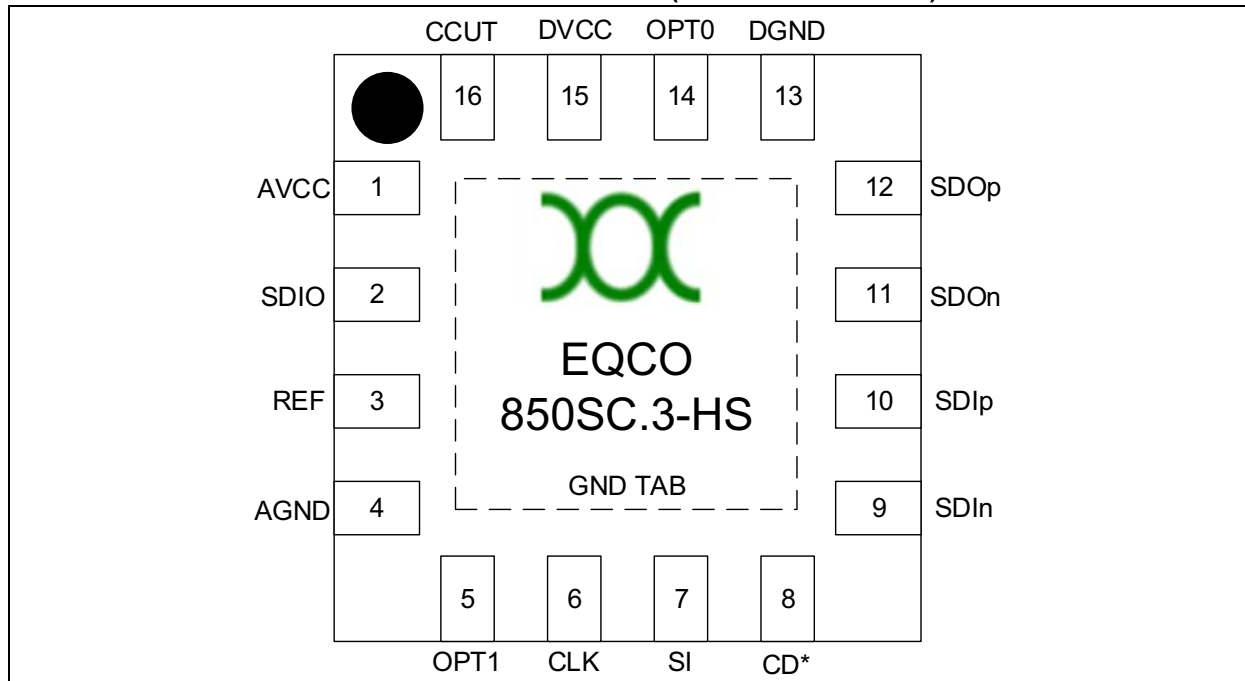
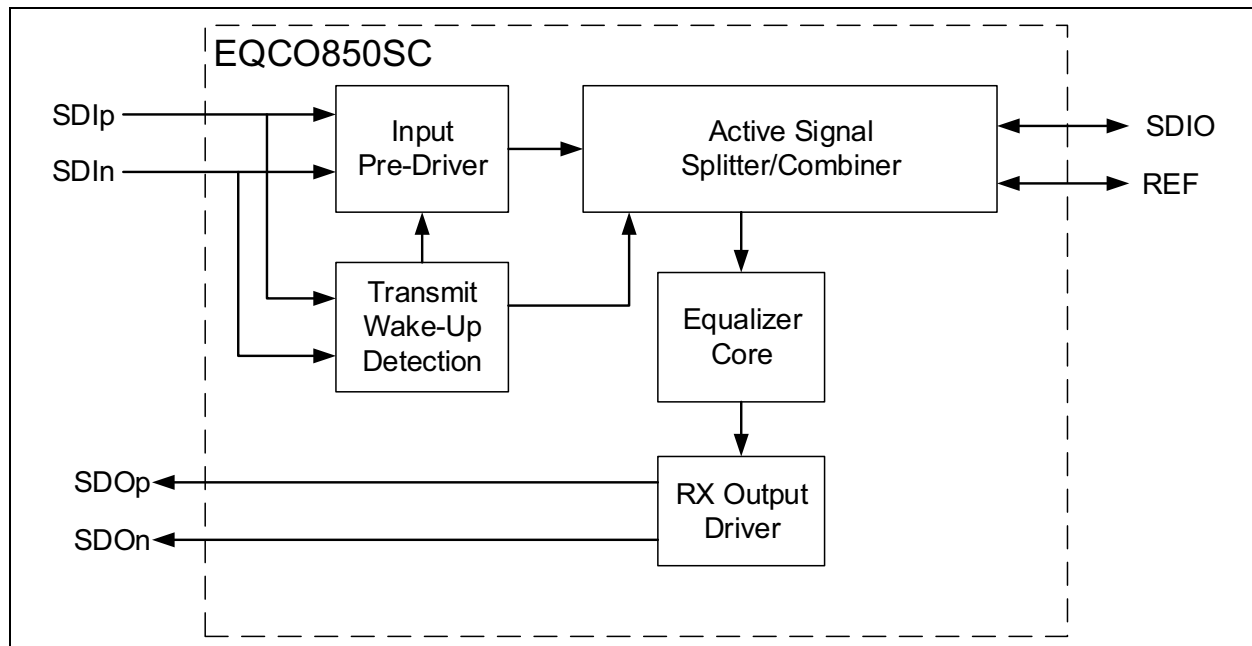


TABLE 1-1: EQCO850SC.3-HS PIN DESCRIPTIONS

Pin Number	Pin Name	Signal Type	Description
(TAB)	GND	Power	Connect to ground of power supply.
15	DVCC	Power	Connect to +3.3V of power supply.
13	DGND	Power	Connect to ground of power supply.
1	AVCC	Power	Analog VCC. Connect to +3.3V of power supply via RF choke and capacitor to cable outer screen.
4	AGND	Power	Analog GND. Connect to cable outer screen.
2	SDIO	Bidirectional	Serial Input/Output. Connect to center conductor of 50Ω coax cable.
3	REF	Bidirectional	Reference. Connect through 50Ω resistor (or impedance matched to cable) to cable outer screen.
8	CD	Output (open drain)	Leave unconnected. Use of this pin is not advised in practice.
10, 9	SDIp/SDIn	Input	Positive/negative differential serial input. Connect to the LVDS output.
12, 11	SDOp/SDOn	Output	Positive/negative differential serial input. Connect to the LVDS input.
14, 5	OPT0, OPT1	Input	Connect Opt0 and Opt1 both to DVCC (3.3V) for correct mode selection.
6, 7	CLK, SI	Input	Used for Production test. Connect to DGND.
16	CCUT	Analog	Not used in LVDS applications. Connect to Pin 15 DVCC.

EQCO850SC.3-HS/EQCO875SC.3-HS

FIGURE 1-3: EQCO850SC-HS BLOCK DIAGRAM SHOWING ELECTRICAL CONNECTIONS



1.1 SDIp/SDIn

SDIp/SDIn together form a differential input pair. The serial data received on these pins will be transmitted on SDIO. The Input Pre-Driver automatically corrects for variations in signal levels and different edge slew rates at these inputs before they go into the Active Splitter/Combiner for transmission over the coax.

SDIp and SDIn inputs are differentially terminated by 100Ω on-chip. The center of the 100Ω is connected to DGND with a 10 kΩ resistor for DC biasing. The inputs also have protection diodes to ground for ESD purposes. Always AC-couple these inputs to the outputs of the LVDS driver.

A Transmit Wake-Up detection circuit puts both the Input Pre-Driver and the Active Signal Splitter/Combiner into a low-power mode when no signal is detected on the SDIp/SDIn signal pair (except in Mode B, where transmit circuit is permanently on).

1.2 SDIO/REF

The signal on the SDIO pin is the sum of the incoming signal (i.e. the signal transmitted by the EQCO850SC-HS on the far-end side of the coax) and the outgoing signal (i.e. the signal based on SDIp/SDIn). The far-end signal is extracted by subtraction of the near-end signal, and it is this voltage that the equalizer analyzes and adaptively equalizes for level and frequency response based on the knowledge that the originating signal is DC-balanced and run-length encoded before transmission.

The REF signal carries a precise anti-phase current to the transmit current on SDIO. REF must be connected directly to AGND at the connector (see [Figure 3-1](#)) via a resistor precisely matched to the impedance of the coaxial cable used.

1.3 SDOp/SDOn

SDOp/SDOn together form a differential pair outputting the reconstructed far-end transmit signal. The EQCO850SC-HS uses LVDS drivers with source matching for a 100Ω transmission line. This LVDS signal can normally be connected (subject to input common-mode requirements) directly to the RX signal pair of a standard LVDS receiver.

1.4 CLK, SI

These pins are used for production test and/or reserved for future options. For normal operation, connect them to DGND as indicated in [Table 1-1](#).

EQCO850SC.3-HS/EQCO875SC.3-HS

2.0 CIRCUIT OPERATION

2.1 Pre-Driver

The pre-driver removes any dependency on the LVDS transmitter for the amplitude and rise time of the outgoing signal on SDIO.

2.2 Active Signal Splitter/Combiner

The active splitter/combiner controls the amplitude and rise time of the outgoing coax signal and transmits it via a precise 50Ω output termination resistor. The output resistor when balanced with the coax characteristic impedance also forms part of a hybrid splitter circuit which subtracts the TX output from the signal on the SDIO output to give yield the far end TX signal. The return loss of the coax termination is a key factor in the performance of the line hybrid.

2.3 Equalizer Core

The EQCO4850SC-HS has an embedded high-speed equalizer in the receive path with unique characteristics:

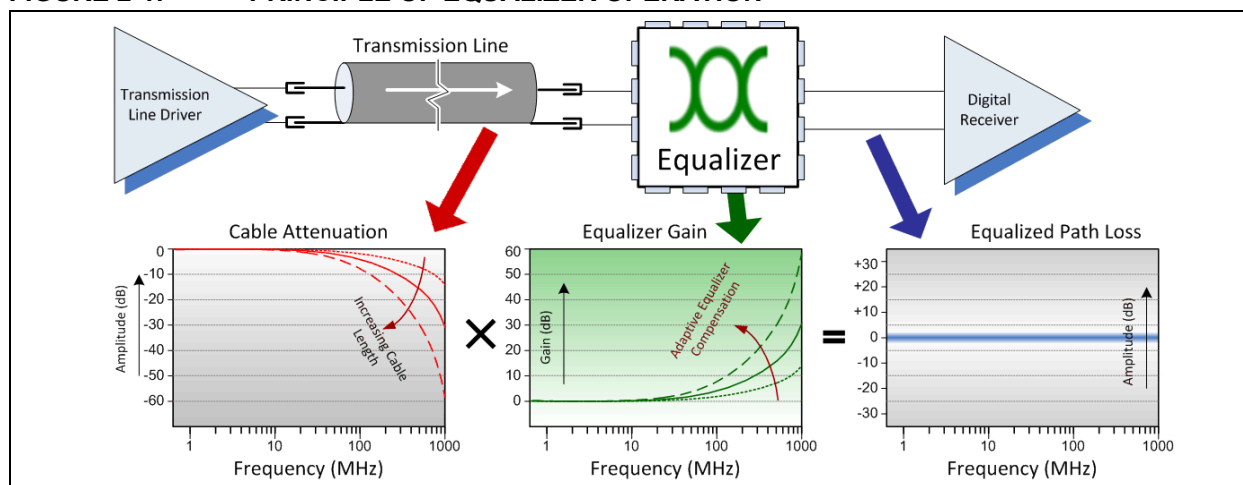
- Auto-adaptive

The equalizer controls a multiple-pole analog filter which compensates for attenuation of the cable, as illustrated in [Figure 2-1](#). The filter frequency response needed to restore the signal is automatically determined by the device using a time-continuous feedback loop that measures the frequency components in the signal. Upon the detection of a valid signal, the control loop converges within a few microseconds.

- Variable gain

EQCO850SC-HSs are used in pairs; one at each end of the coax. The EQCO850SC-HS can be used with any LVDS driver with a differential transmit amplitude in the range of 300 mV to 800 mV; the transmit amplitude on the coax is regulated by the input pre-driver. The receiver equalizer has variable gain to compensate for attenuation through the coax. Example equalizer performance measurements can be found in [Appendix B:Typical Operating Characteristics](#).

FIGURE 2-1: PRINCIPLE OF EQUALIZER OPERATION

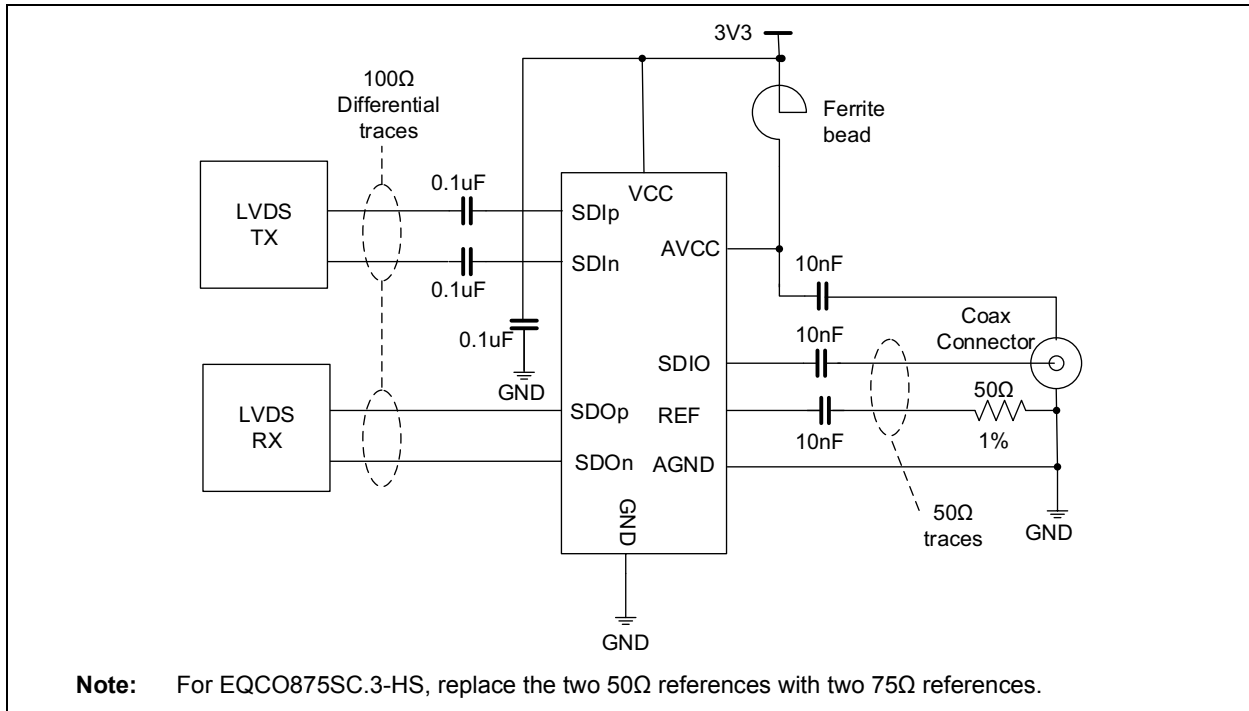


EQCO850SC.3-HS/EQCO875SC.3-HS

3.0 APPLICATION INFORMATION

Figure 3-1 illustrates a typical schematic implementation.

FIGURE 3-1: EQCO850SC.3-HS TYPICAL APPLICATION CIRCUIT



To improve isolation from noise on the board power plane and improve EMC immunity and emissions, it is recommended to power the transmit side of the equalizer (AVCC) through a ferrite bead. A 0.1 μ F decoupling capacitor should be placed as close as possible to the chip between the VCC pin and the GND pin. Ground vias should be placed as close as possible to the device GND pins to minimize inductance.

In full duplex, the maximum-length performance depends on the level of near-end crosstalk and far-end return-loss. For full-duplex operation, position the chip close to the used connector.

All the elements need to have impedances according to the choice between a 50Ω system or a 75Ω system: the chips used on both sides, the impedances between the chip and the connector, the PCB connector itself, the connectors on the coax cable and the coax itself. If one impedance is wrong (e.g. a 75Ω BNC connector in a 50Ω system), this impedance discontinuity will cause a reflection, limiting the performance of the full-duplex maximum cable length.

EQCO850SC.3-HS/EQCO875SC.3-HS

3.1 Guidelines for PCB Layout

Because signals are strongly attenuated by long cables, special attention should be paid to the PCB layout between the coaxial connector and the EQCO850SC-HS. The EQCO850SC-HS should be as close as is practical to the coaxial connector. The trace between the coaxial connector and the EQCO850SC-HS (EQCO875SC-HS) must be a 50Ω (75Ω) trace referenced to GND. To avoid noise pickup, other traces carrying digital signals or fast-switching signals should be placed as far away as possible from this trace.

The following diagram shows the layout of the critical section of the PCB, from the coax connector to the twin differential input pairs:

FIGURE 3-2: CIRCUIT DIAGRAM (PART)

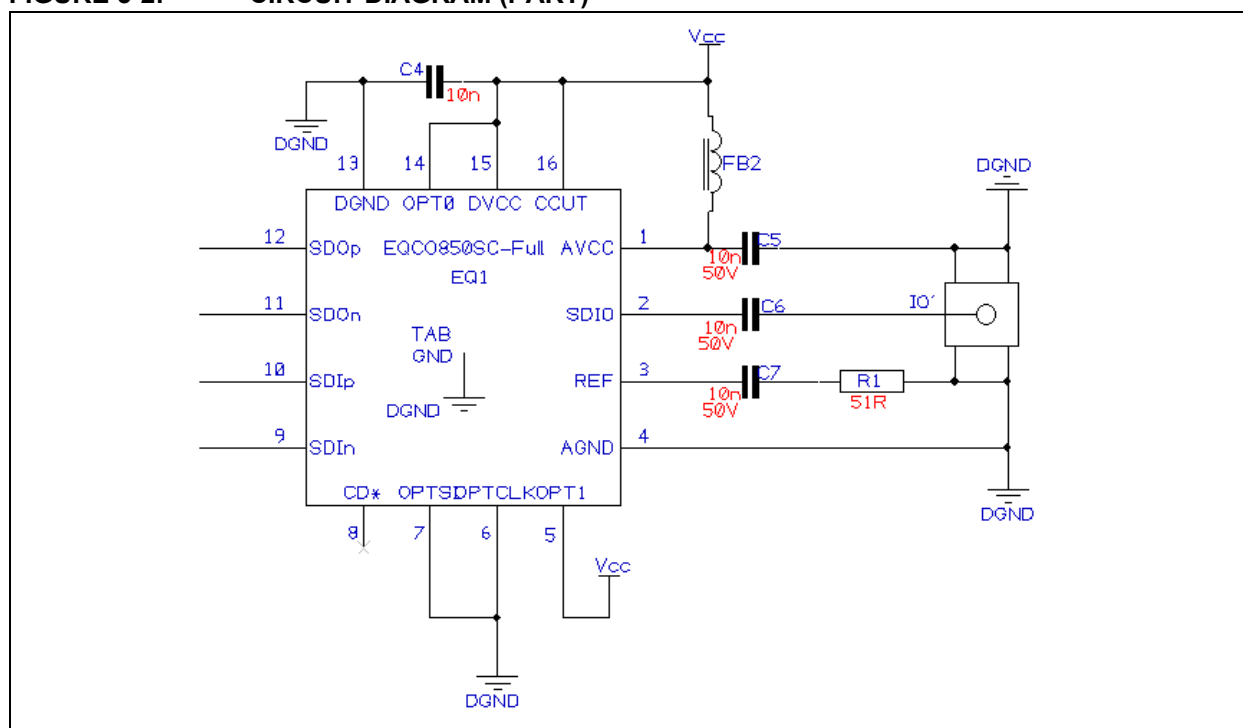
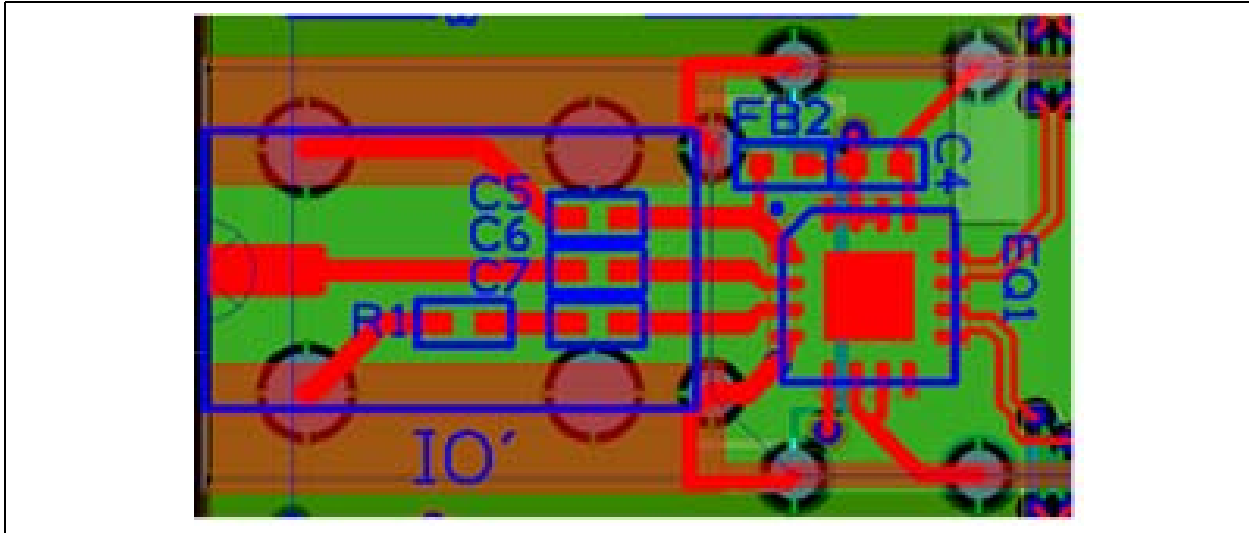


FIGURE 3-3: RECOMMENDED LAYOUT



The ground layout of the EQCO850SC.3-HS is critical to the EMC and EMI performance of the circuit. The AGND connection should be made directly to the body of the connector as shown in [Figure 3-2](#). It should not be connected directly to the GND tab of the chip. Similarly, AVCC should be decoupled directly to the connector body (see position of C5). The termination resistor (R1 in [Figure 3-2](#) and [Figure 3-3](#)) must have its ground connection at the connector body and C7, and the connection between R1 and the connector must be kept as short as possible. The impedance of all the traces must be well-controlled, including on the connector itself.

The SDIp/SDIn and SDOp/SDOn differential traces should be matched in length to minimize time of arrival skew. For traces longer than a few millimeters, the impedance of the differential transmit and receive signals should be laid out as 100Ω differential traces and the termination to the PHY should be placed close to the PHY, not to the EQCO850SC.3-HS.

Microchip can design a PCB layout capable of maximum cable length for any combination of impedance system (50Ω or 75Ω) and coax connector (SMA, BNC, DIN, SMB, etc.) on request.

EQCO850SC.3-HS/EQCO875SC.3-HS

NOTES:

EQCO850SC.3-HS/EQCO875SC.3-HS

4.0 ELECTRICAL CHARACTERISTICS

4.1 Absolute Maximum Ratings

Stresses beyond those listed under this section may cause permanent damage to the device. These are stress ratings only and are not tested. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TABLE 4-1: ABSOLUTE MAXIMUM RATINGS

Parameter	Min.	Typ.	Max.	Units	Conditions
Storage Temperature	-65	—	+150	°C	
Ambient Temperature	-55	—	+125	°C	Power Applied
Operating Temperature	-40	—	+85	°C	Normal Operation (VCC = 3.3V ±5%)
Supply Voltage to Ground	-0.5	—	+4.0	V	
DC Input Voltage	-0.5	—	+4.0	V	
DC Voltage to Outputs	-0.5	—	+4.0	V	
Current into Outputs	—	—	90	mA	Outputs Low
Electrostatic Discharge (ESD) HBM	>3.3	—	—	kV	JEDEC EIA/JESD-A114A
Electrostatic Discharge (ESD) Contact	>8	—	—	kV	IEC 61000-4-2
Latch-Up Current	>200	—	—	mA (DC)	

TABLE 4-2: ELECTRICAL CHARACTERISTICS (OVER THE OPERATING VCC AND -40 TO +85°C RANGE)

Parameter	Min.	Typ.	Max.	Unit	Description
Power Supply					
V _{CC}	3.135	3.3	3.465	V	Supply voltage.
I _S	47.5	62.5	75.5	mA	Supply current, both transmitting and receiving.
I _{SR}	25	35	43	mA	Supply current when only receiving.
SDIp/SDIn Input (LVDS-like)					
ΔV _i	250	—	800	mV	Input amplitude V _{SDIp,n} .
V _{turnon}	80	140	200	mV	Minimal ΔV _i to turn on transmit function.
V _{cmin}	Note 4	0	Note 4	V	Common-mode input voltage (terminated to DGND via 10 kΩ and with protection diodes).
R _{input}	93	104	117	Ω	Differential input termination.
SDIO Connection to Coax					
Z _{coax}	48 (72)	50 (75)	52 (78)	Ω	Coax cable characteristic impedance.
R _{SDIO}	46 (69)	51 (76)	55 (82)	Ω	Input impedance between SDIO and AGND.
R _{loss}	15	—	—	dB	Coax return-loss as seen on SDIO pin. Frequency range = 10 MHz-625 MHz.
ΔV _{TX}	270	325	380	mV	Transmit amplitude.
t _{rise_tx}	350	450	550	ps	Rise/fall time 20% to 80% of ΔV _{TX} .

EQCO850SC.3-HS/EQCO875SC.3-HS

TABLE 4-2: ELECTRICAL CHARACTERISTICS (OVER THE OPERATING VCC AND -40 TO +85°C RANGE) (CONTINUED)

Parameter	Min.	Typ.	Max.	Unit	Description
Att_{max}	—	12	—	dB	Cable attenuation budget @ 625 MHz.
ΔV_{RXmin}	—	40	—	mV	Minimum input for fully reconstructed output.
SDOp/SDOn Outputs (LVDS-compatible)					
ΔV_o	300	350	400	mV	Output amplitude $V_{SDOp,n}$.
V_{cmout}	1.1	1.2	1.3	V	Common-mode output voltage.
ΔV_{o_off}	-20	0	20	mV	Output amplitude $V_{SDOp,n}$ with equalizer off.
R_{output}	92	102	115	Ω	Differential termination between SDOp and SDOn.
t_{rise_o}	150	240	350	ps	Rise/fall time 20% to 80% of $V_{SDOp,n}$.

TABLE 4-3: JITTER PERFORMANCE

Parameter	Min.	Typ.	Max.	Units	Conditions
Jitter peak-to-peak on SDO	—	70	230	ps	1m RG174 coax; over full V_{CC} , ΔV_{TX} , and temp range; 125-1250 Mbps; pattern PRBS7
Jitter peak-to-peak on SDO	—	170	300	ps	16m RG174 coax; over full V_{CC} , ΔV_{TX} , and temp range; 125-1250 Mbps; pattern PRBS7

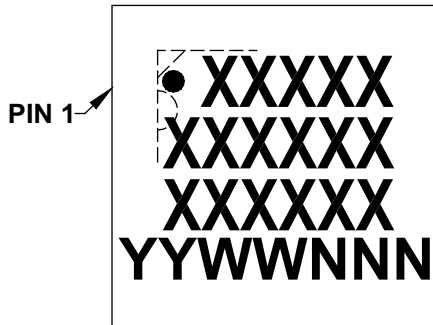
EQCO850SC.3-HS/EQCO875SC.3-HS

5.0 PACKAGING INFORMATION

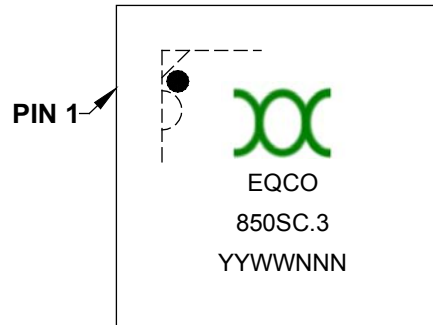
5.1 Package Marking Information

16-Lead Plastic Quad Flat, No Lead Package – 4x4x0.9 mm Body [QFN]

16-Lead QFN (4x4x0.9 mm)



Example



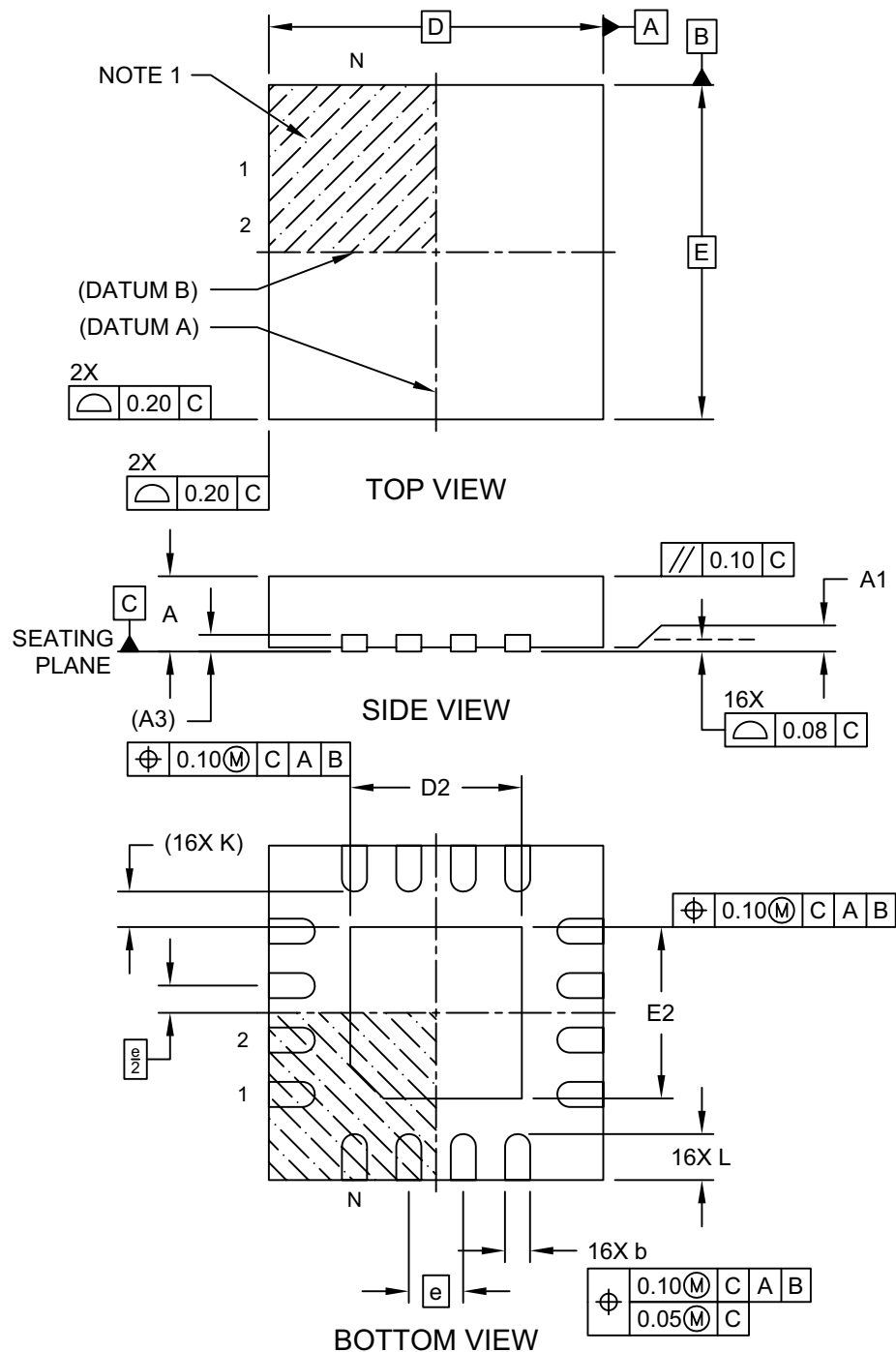
Legend:	XX...X	Customer-specific information
	Y	Year code (last digit of calendar year)
	YY	Year code (last 2 digits of calendar year)
	WW	Week code (week of January 1 is week '01')
	NNN	Alphanumeric traceability code
	(e3)	Pb-free JEDEC® designator for Matte Tin (Sn)
	*	This package is Pb-free. The Pb-free JEDEC designator (e3) can be found on the outer packaging for this package.

Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information.

EQCO850SC.3-HS/EQCO875SC.3-HS

16-Lead Plastic Quad Flat, No Lead Package (8E) - 4x4x0.9 mm Body [QFN]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>

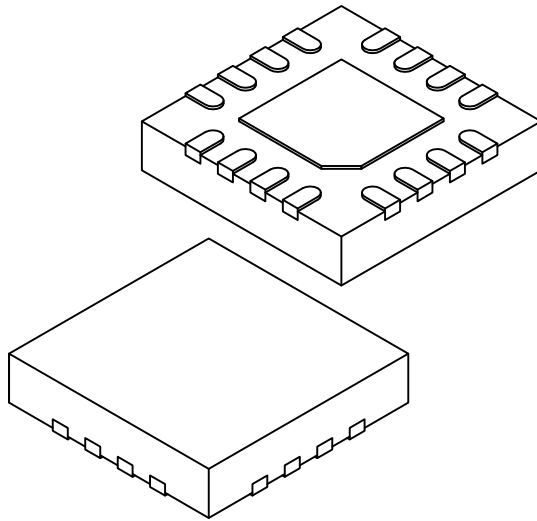


Microchip Technology Drawing C04-259B Sheet 1 of 2

EQCO850SC.3-HS/EQCO875SC.3-HS

16-Lead Plastic Quad Flat, No Lead Package (8E) - 4x4x0.9 mm Body [QFN]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Pins	N	16		
Pitch	e	0.65 BSC		
Overall Height	A	0.80	0.87	0.95
Standoff	A1	0.00	0.02	0.05
Terminal Thickness	A3	0.20 REF		
Overall Width	E	4.00 BSC		
Exposed Pad Width	E2	1.95	2.05	2.15
Overall Length	D	4.00 BSC		
Exposed Pad Length	D2	1.95	2.05	2.15
Terminal Width	b	0.25	0.30	0.35
Terminal Length	L	0.45	0.55	0.65
Terminal-to-Exposed-Pad	K	0.425 REF		

Notes:

1. Pin 1 visual index feature may vary, but must be located within the hatched area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

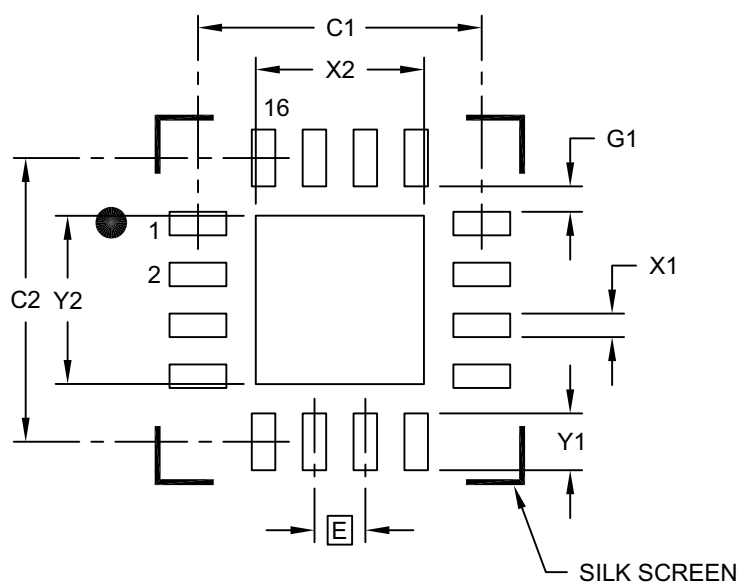
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-259B Sheet 2 of 2

EQCO850SC.3-HS/EQCO875SC.3-HS

16-Lead Plastic Quad Flat, No Lead Package (8E) - 4x4x0.9 mm Body [QFN]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E	0.65 BSC		
Optional Center Pad Width	X2			2.15
Optional Center Pad Length	Y2			2.15
Contact Pad Spacing	C1		3.625	
Contact Pad Spacing	C2		3.625	
Contact Pad Width (X16)	X1			0.30
Contact Pad Length (X16)	Y1			0.725
Contact Pad to Center Pad (X16)	G1	0.20		

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing C04-2259A

EQCO850SC.3-HS/EQCO875SC.3-HS

APPENDIX A: REVISION HISTORY

Revision A (July 2015)

- This is the initial release of the document in the Microchip format. This replaces EqcoLogic document version 2.0.

TABLE A-1: REVISION HISTORY

Revision Level	Date	Correction
2v0	1/28/14	Targeting data sheet for LVDS and Gigabit Ethernet applications. Merging 50 Ω and 75 Ω systems into one data sheet. Temperature limits set to -45°C to +85°C.
1v0	4/30/10	Based on the EQCO800SC generic data sheet, adapted for LVDS

EQCO850SC.3-HS/EQCO875SC.3-HS

APPENDIX B: TYPICAL OPERATING CHARACTERISTICS

All measurements at VCC = 3.3V, temp = +25°C, data pattern = PRBS9, 630 mV PHY transmit amplitude.

FIGURE B-1: TYPICAL EYE AT SDO_p WITH A 1M COAX TYPE RG174

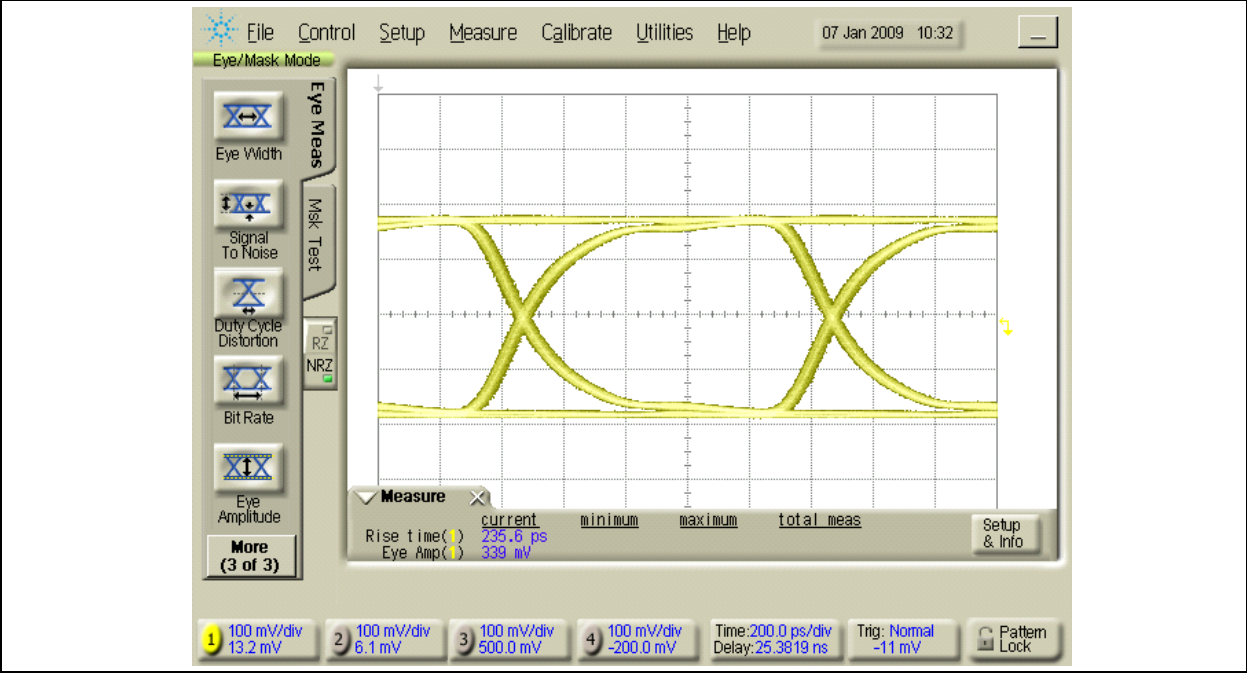
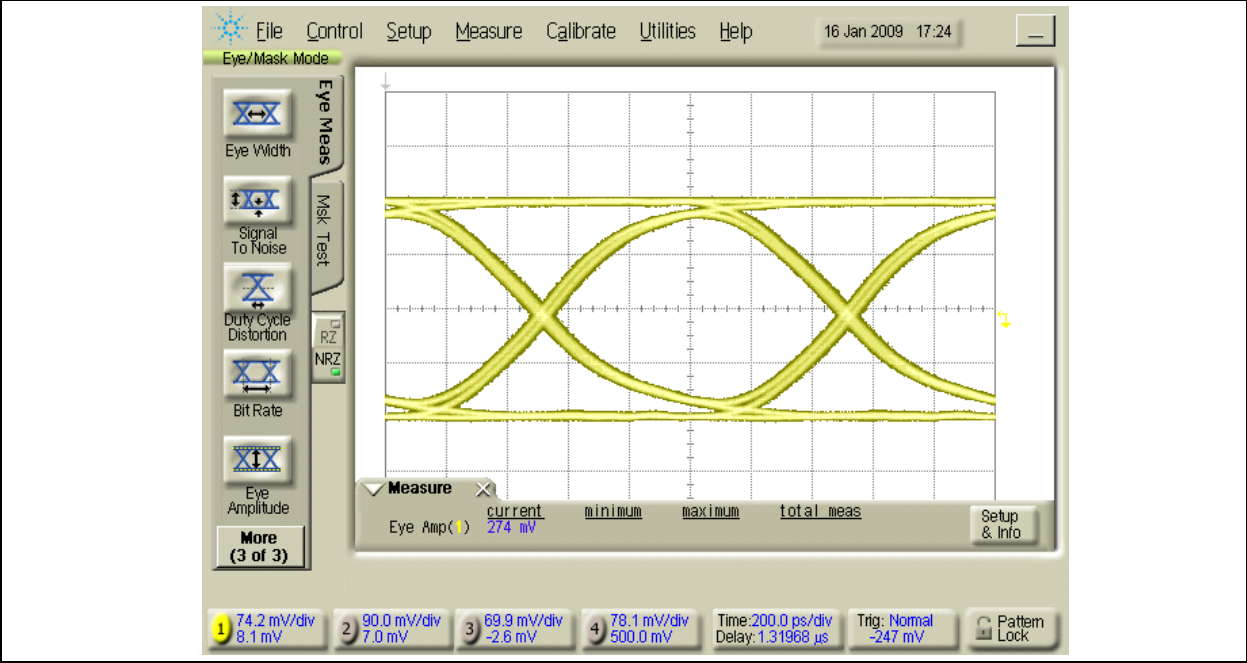


FIGURE B-2: TYPICAL EYE AT SDIO OUTPUT THROUGH 1M COAX CABLE



EQCO850SC.3-HS/EQCO875SC.3-HS

The following figures show a typical system link EYE-diagram at room temperature through a variable cable length full and half duplex. The differential output $V_{SDOP}-V_{SDON}$ is shown. The duty cycle distortion is due to the use of a shielded twisted pair cable/connector. Duty cycle distortion is normally very small.

FIGURE B-3: 1M RG174, HALF-DUPLEX

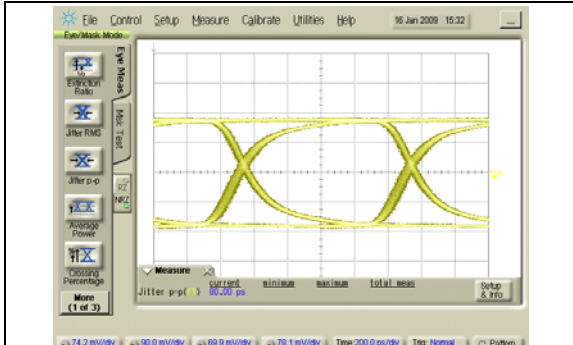


FIGURE B-7: 1M RG174, HALF-DUPLEX

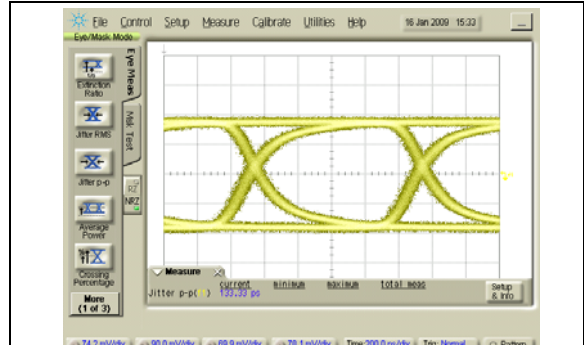


FIGURE B-4: 5M RG174, HALF-DUPLEX

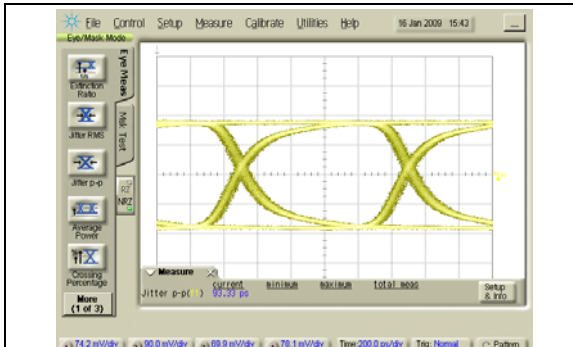


FIGURE B-8: 5M RG174, HALF-DUPLEX

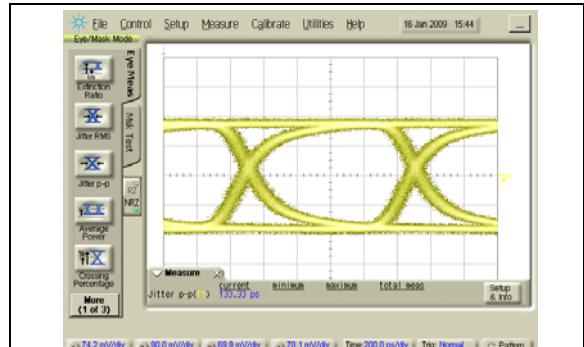


FIGURE B-5: 10M RG174, HALF-DUPLEX

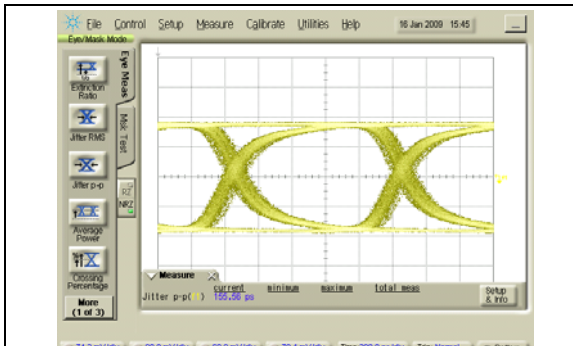


FIGURE B-9: 10M RG174, HALF-DUPLEX

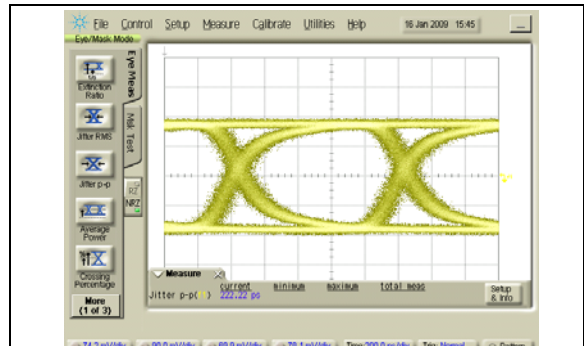


FIGURE B-6: 20M RG174, HALF-DUPLEX

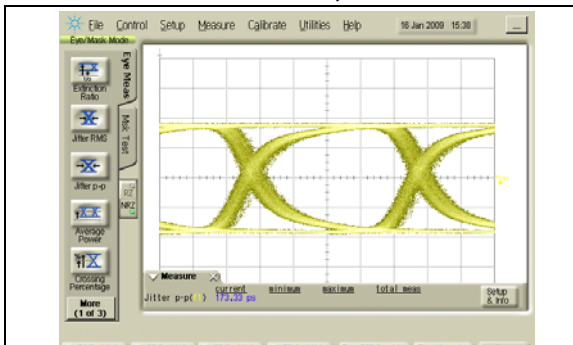
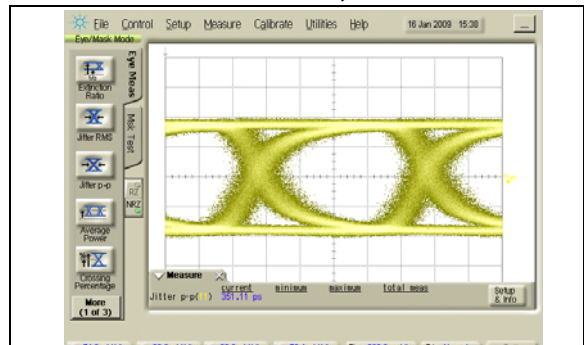


FIGURE B-10: 20M RG174, HALF-DUPLEX



EQCO850SC.3-HS/EQCO875SC.3-HS

NOTES:

THE MICROCHIP WEB SITE

Microchip provides online support via our web site at www.microchip.com. This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

CUSTOMER CHANGE NOTIFICATION SERVICE

Microchip's customer notification service helps keep customers current on Microchip products. Subscribers will receive e-mail notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, access the Microchip web site at www.microchip.com. Under "Support", click on "Customer Change Notification" and follow the registration instructions.

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: <http://microchip.com/support>

EQCO850SC.3-HS/EQCO875SC.3-HS

PRODUCT IDENTIFICATION SYSTEM

To order parts, including industrial, or obtain information, for e.g., on pricing or delivery, refer to the factory or the listed sales office.

<div><div>PART NO.</div><div>Device</div></div> <div><div>XXXX</div><div>Package</div></div>	<div><div>Device</div><div>EQCO850SC.3-HS EQCO875SC.3-HS</div></div> <div><div>Package</div><div>TRAY = Tray "blank" = Tube</div></div>	<div>Examples:</div> <div>a) EQCO850SC.3-HS-TRAY = 50Ω Coax Industrial temperature 16-Lead QFN package Tray packaging</div> <div>b) EQCO875SC.3-HS = 75Ω Coax Industrial temperature 16-Lead QFN package Tube packaging</div>
--	---	---

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Trademarks

The Microchip name and logo, the Microchip logo, dsPIC, FlashFlex, flexPWR, JukeBlox, KEELOQ, KEELOQ logo, Klear, LANCheck, MediaLB, MOST, MOST logo, MPLAB, OptoLyzer, PIC, PICSTART, PIC³² logo, RightTouch, SpyNIC, SST, SST Logo, SuperFlash and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

The Embedded Control Solutions Company and mTouch are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, BodyCom, chipKIT, chipKIT logo, CodeGuard, dsPICDEM, dsPICDEM.net, ECAN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, KlearNet, KlearNet logo, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, RightTouch logo, REAL ICE, SQI, Serial Quad I/O, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

Silicon Storage Technology is a registered trademark of Microchip Technology Inc. in other countries.

GestIC is a registered trademarks of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2010-2015, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN: 978-1-63277-109-4

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949 ==

Microchip received ISO/TS-16949:2009 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC® MCUs and dsPIC® DSCs, KEELOQ® code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

Worldwide Sales and Service

AMERICAS

Corporate Office
 2355 West Chandler Blvd.
 Chandler, AZ 85224-6199
 Tel: 480-792-7200
 Fax: 480-792-7277
 Technical Support:
<http://www.microchip.com/support>
 Web Address:
www.microchip.com

Atlanta
 Duluth, GA
 Tel: 678-957-9614
 Fax: 678-957-1455

Austin, TX
 Tel: 512-257-3370

Boston
 Westborough, MA
 Tel: 774-760-0087
 Fax: 774-760-0088

Chicago
 Itasca, IL
 Tel: 630-285-0071
 Fax: 630-285-0075

Cleveland
 Independence, OH
 Tel: 216-447-0464
 Fax: 216-447-0643

Dallas
 Addison, TX
 Tel: 972-818-7423
 Fax: 972-818-2924

Detroit
 Novi, MI
 Tel: 248-848-4000

Houston, TX
 Tel: 281-894-5983
 Indianapolis

Noblesville, IN
 Tel: 317-773-8323
 Fax: 317-773-5453

Los Angeles
 Mission Viejo, CA
 Tel: 949-462-9523
 Fax: 949-462-9608

New York, NY
 Tel: 631-435-6000

San Jose, CA
 Tel: 408-735-9110

Canada - Toronto
 Tel: 905-673-0699
 Fax: 905-673-6509

ASIA/PACIFIC

Asia Pacific Office
 Suites 3707-14, 37th Floor
 Tower 6, The Gateway
 Harbour City, Kowloon

Hong Kong
 Tel: 852-2943-5100
 Fax: 852-2401-3431

Australia - Sydney
 Tel: 61-2-9868-6733
 Fax: 61-2-9868-6755

China - Beijing
 Tel: 86-10-8569-7000
 Fax: 86-10-8528-2104

China - Chengdu
 Tel: 86-28-8665-5511
 Fax: 86-28-8665-7889

China - Chongqing
 Tel: 86-23-8980-9588
 Fax: 86-23-8980-9500

China - Dongguan
 Tel: 86-769-8702-9880

China - Hangzhou
 Tel: 86-571-8792-8115
 Fax: 86-571-8792-8116

China - Hong Kong SAR
 Tel: 852-2943-5100
 Fax: 852-2401-3431

China - Nanjing
 Tel: 86-25-8473-2460
 Fax: 86-25-8473-2470

China - Qingdao
 Tel: 86-532-8502-7355
 Fax: 86-532-8502-7205

China - Shanghai
 Tel: 86-21-5407-5533
 Fax: 86-21-5407-5066

China - Shenyang
 Tel: 86-24-2334-2829
 Fax: 86-24-2334-2393

China - Shenzhen
 Tel: 86-755-8864-2200
 Fax: 86-755-8203-1760

China - Wuhan
 Tel: 86-27-5980-5300
 Fax: 86-27-5980-5118

China - Xian
 Tel: 86-29-8833-7252
 Fax: 86-29-8833-7256

ASIA/PACIFIC

China - Xiamen
 Tel: 86-592-2388138
 Fax: 86-592-2388130

China - Zhuhai
 Tel: 86-756-3210040
 Fax: 86-756-3210049

India - Bangalore
 Tel: 91-80-3090-4444
 Fax: 91-80-3090-4123

India - New Delhi
 Tel: 91-11-4160-8631
 Fax: 91-11-4160-8632

India - Pune
 Tel: 91-20-3019-1500

Japan - Osaka
 Tel: 81-6-6152-7160
 Fax: 81-6-6152-9310

Japan - Tokyo
 Tel: 81-3-6880-3770
 Fax: 81-3-6880-3771

Korea - Daegu
 Tel: 82-53-744-4301
 Fax: 82-53-744-4302

Korea - Seoul
 Tel: 82-2-554-7200
 Fax: 82-2-558-5932 or
 82-2-558-5934

Malaysia - Kuala Lumpur
 Tel: 60-3-6201-9857
 Fax: 60-3-6201-9859

Malaysia - Penang
 Tel: 60-4-227-8870
 Fax: 60-4-227-4068

Philippines - Manila
 Tel: 63-2-634-9065
 Fax: 63-2-634-9069

Singapore
 Tel: 65-6334-8870
 Fax: 65-6334-8850

Taiwan - Hsin Chu
 Tel: 886-3-5778-366
 Fax: 886-3-5770-955

Taiwan - Kaohsiung
 Tel: 886-7-213-7828

Taiwan - Taipei
 Tel: 886-2-2508-8600
 Fax: 886-2-2508-0102

Thailand - Bangkok
 Tel: 66-2-694-1351
 Fax: 66-2-694-1350

EUROPE

Austria - Wels
 Tel: 43-7242-2244-39
 Fax: 43-7242-2244-393

Denmark - Copenhagen
 Tel: 45-4450-2828
 Fax: 45-4485-2829

France - Paris
 Tel: 33-1-69-53-63-20
 Fax: 33-1-69-30-90-79

Germany - Dusseldorf
 Tel: 49-2129-3766400

Germany - Munich
 Tel: 49-89-627-144-0
 Fax: 49-89-627-144-44

Germany - Pforzheim
 Tel: 49-7231-424750

Italy - Milan
 Tel: 39-0331-742611
 Fax: 39-0331-466781

Italy - Venice
 Tel: 39-049-7625286

Netherlands - Drunen
 Tel: 31-416-690399
 Fax: 31-416-690340

Poland - Warsaw
 Tel: 48-22-3325737

Spain - Madrid
 Tel: 34-91-708-08-90
 Fax: 34-91-708-08-91

Sweden - Stockholm
 Tel: 46-8-5090-4654

UK - Wokingham
 Tel: 44-118-921-5800
 Fax: 44-118-921-5820