Agilent Infrared, Sensing Products and Services

Agilent Technologies

Agilent offers Infrared and Sensing Solutions

Over the years, Agilent Technologies has evolved from supplying traditional Infrared Data Association (IrDA) transceivers to state of the art transceivers and sensor solutions with fully integrated hardware and software. With this advanced technology, Agilent is able to significantly improve user experience in office, home, financial, and entertainment-based applications. Agilent is transforming the modern lifestyle.

Greater connectivity, remote control and the need to sense proximity or light are key requirements for many current and emerging applications. Agilent's infrared and sensing products provide an optimal means of dealing with these requirements through lower cost, ease of use and ready availability. Also they avoid the interference concerns that often arise from the use of other radio frequency (RF) techniques.

The diversity of Agilent's infrared and sensing product offerings allow them to be utilized in a variety of familiar environments and gadgets, such as for the household or small home office.

Our latest products breakthrough include:

- The world's first integrated IrDA solution incorporating both hardware and software. Agilent offers a broad range of transceivers that combine with our latest IrDA Protocol Stack software combine to create a complete solution that helps designers speed time-to-market.
- The industry's first infrared transceiver (HSDL-300X) integrated with Universal Remote control capability that enables mobile phones and PDAs to function as universal IR remote control devices for consumer electronics equipment such as TVs, DVDs, air-conditioners, etc.
- Agilent's Ambient Light Photo sensor (HSDL-9000/HSDL-9001) is an innovative solution that detects ambient light to determine whether or not backlighting is needed, thereby saving battery life.
- One of the world smallest transceivers, the HSDL-3208 is housed in a 1.6mm package. This product was developed at the request of customers and Agilent delivered the product within 4 months. The device is now being used in multiple mobile handsets.
- The Agilent HSDL-7002 is a cost-effective SIR Endec chipset with the industry's smallest form-factor package.
- The HSDL-9100 Proximity Sensor allows phone manufacturers to turn on/off speakerphone capability based on how close the phone is to the user's ear

Products & Services

As the leader in IrDA transceivers, Agilent offers a wide range of products, including innovative new solutions such as IrFM (Infrared Financial messaging), integrated remote control, and unique packaging options for a variety of mobile applications.

IrDA Transceiver Features

- Smallest Form Factor
- Speed ranging from 115kbps(SIR) to 1.15Mbps(MIR) to 4mbps(FIR)
- Low Power consumption
- Adjustable optical power
- Low idle and shutdown current
- Integrated long range (up to 8 meters) remote control function for consumer electronic devices such as TVs and VCRs

Agilent's new IR+remote control module is an industry first, combining both IrDA compliant and remote control functions.

Agilent's Infrared transceivers are ideal for new IrFM (Infrared Financial Messaging) applications.

Software

Agilent has leveraged its technology leadership to introduce new software products. Now Agilent provides integrated IrDA transceivers, protocol stacks, and remote control software solutions to our customers to help them speed time to market, reduce system cost, and provide maximum performance.

Protocol Stack

Agilent's HSDL-S100 IrDA basic protocol stack, together with multiple application profiles, provides a very fast and efficient way to implement an IrDA compliant interface in an embedded device. The basic protocol consists of 3 layers; TinyTP, LM-MUX, and IrLAP. Different application profiles can be implemented on the IrDA basic protocol stack, such as IrObex, IrComm, IrTranP etc.

Remote Control Software

Agilent Universal IR Remote control software HSDL-S300 is an application software that uses your mobile and handheld devices as a universal remote control for TV, VCR, DVD and other equipment. It runs on devices with Intel Strong ARM CPU, 206MHz or Intel Xscale to enable a wireless link between handheld devices and consumer electronics systems. The software is a Universal Remote Control Program with a pre-defined RC database and self-teach/learn mode consisting of 8 profiles : TV, DVD, VCR, Air Conditioner, CD, Audio, LD/VCD and others.

Each profile can have up to 10 controls, thus 80 devices can be stored (8 profiles x 10 devices) and each device can have up to 32 button/functions which can be controlled via touch-screen or by using PDA hardware buttons to navigate and control the software features.

Dongle

Agilent's IrDA Smart Dongle solution offers "plug and play" connectivity, offering easy installation with minimal development resource. It can be customized to implement wireless communication in a wide range of devices, including point-of-sale terminals to enable IrFM applications.

Sensing Products

Ambient Light Photo Sensors

Agilent offers two Ambient Light Photo Sensors, the HSDL-9000 and the new miniature HSDL-9001. Both devices detect the amount of light available and signal as to whether or not backlighting is necessary and also control the turning on and off of the lighting system.. These devices outperform other light detection solutions because their spectral response peaks as the same frequency 550nm as the human eye. Other solutions using a silicon photodiode provide varying degrees of performance, especially in different light source such as Fluorescent and halogen. Agilent HSDL-9000/1 performs equally well with all light source.

Benefits

High level of integration that brings faster and more accurate response with ambient lightings conditions

- Design to response closely with human eyes spectral wavelength
- Conserve battery power to many portable devices
- Market Segment
  - Street Lighting
  - ESS
  - Automotive
  - Industrial
  - Handheld devices
  - Mobile Phone

Proximity Sensor

Agilent continues to revolutionize the consumer & industrial sensor market through the recent introduction of a miniature surface-mount optical Proximity Sensor. The HSDL-9100 is a complete opto-module that houses both an LED and a photodiode in a specially designed metal-shield to ensure excellent optical isolation. The result is a low-cost analog-output reflective sensor with low optical cross-talk, and excellent power efficiency.

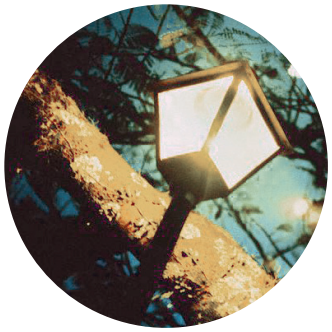
The HSDL-9100 is an analog output reflective sensor in a small form factor SMT package and offers a detection range from near zero to 60mm. It can be used in mobile application such as open-phone detection in clamshell phones, auto-volume adjustment in speaker-phones and can be easily designed into industrial control systems, as well as printers, facsimile machines and photocopiers. The HSDL-9100 proximity sensor complements and adds to Agilent's robust offerings for the mobile market, including infrared transceivers, an innovative ambient light sensor, camera modules, RF components and LEDs.

Features

- Detects objects from near zero to 60 mm distance
- Lead-free miniature surface-mount package
- Near zero optical cross-talk
- Low dark current < 2nA typically

Typical Applications

- Motion and Proximity Sensing
- Detection and validation applications
- Retail automation
- Mobile Phones
- Notebooks
- Industrial Control
- Home appliances
- Printers, photocopiers and facsimile machines to perform paper edge detection



Infrared Product Selection

Device Type	Part Number	Size (HxWxD) (mm)	Link Distance (m)	Supply Volatage (V)	Operating Temp. (°C)	Idle Current (mA)	Shutdown Current (nA)	Receiver Latency (us)	IO Vcc Interface (V)	Packaging Options			
										Front	Front	Top	Top
Base Products													
115kbit/s InfraRed Transceiver													
Low Power Parts													
SIR	HSDL-3200	2.5 x 8.0 x 3.0	0 to 0.3	2.7 to 3.6	-25 to +85	2.5	10	25	No	#021			
SIR	HSDL-3201	2.5 x 8.0 x 3.0	0 to 0.3	2.7 to 3.6	-25 to +85	0.1	20	25	No	#001	#021	#008	#008
SIR	HSDL-3202	2.5 x 8.0 x 3.0	0 to 0.3	2.7 to 3.6	-25 to +85	0.1	10	20	1.8	#021			
SIR	HSDL-3203	1.95 x 8.0 x 3.1	0 to 0.3	2.7 to 3.6	-20 to +70	2.5	10	25	No	-021			
SIR	HSDL-3208	1.6 x 7.0 x 2.8	0 to 0.3	2.4 to 3.6	-25 to +70	0.1	1	70	No	-021			
SIR	HSDL-3209	1.6 x 7.0 x 2.8	0 to 0.3	2.4 to 3.6	-25 to +70	0.1	1	50	1.8	-021			
Standard Power Parts													
SIR	HSDL-3000	2.7 x 9.1 x 3.65	0 to 1.0	2.7 to 5.5	-20 to +70	0.29	10	25	No	#007			
SIR	HSDL-3612	4.0 x 12.2 x 5.1	0 to 1.0	2.7 to 5.25	-20 to +70	2.5	10	20	No	-007	-037	-008	-038
IR + Remote Control Transceiver													
SIR + RC	HSDL-3002	2.7 x 9.1 x 3.65	0 to 0.5 m (SIR)	2.7 to 5.5	-20 to +70	0.29	10	25 (typ)	No	-007			
			6 m (RC)										
SIR + RC	HSDL-3003	2.7 x 8 x 2.95	0 to 0.5 m (SIR)	2.4 to 3.6	-20 to +70	0.50	10	25 (typ)	No	-021			
			8 m (RC)										
SIR + RC	HSDL-3005	2.5 x 8.0 x 3.0 (Front View)	0 to 0.5 m (SIR)	2.4 to 3.6	-25 to +85	0.50	20	25 (typ)	No	-021			
		2.8 x 7.5 x 3.35 (Top view)	7 m (RC)										
SIR + RC	HSDL-3007	1.6 x 7.0 x 2.8	0 to 0.5 m (SIR)	2.4 to 3.6	-25 to +85	1.0	10	200 (max)	Yes	-021			
			7 m (RC)										
1.15Mbit/s InfraRed Transceiver													
MIR	HSDL-3210	2.5 x 8.0 x 3.0	0 to 0.3	2.7 to 3.6	-25 to +85	0.3	10	25	1.8	-021			
MIR	HSDL-3211	2.5 x 8.0 x 3.0	0 to 0.3	2.4 to 3.6	-25 to +85	0.4	1	25	1.8	-021			
4Mbit/s InfraRed Transceiver													
FIR	HSDL-3220	2.5 x 8.0 x 3.0	0 to 0.3	2.7 to 3.6	-25 to +70	1.8	100	25	No	-021			
FIR	HSDL-3602	4.0 x 12.2 x 4.9	0 to 1.0	2.7 to 3.6	-20 to +70	2.5	10	40	No	-007	-037	-008	-038
FIR	HSDL-3603	3.9 x 9.8 x 4.65	0 to 1.0	2.7 to 5.25	-25 to +70	1.8	10	10	No	-007			

SIR Interface ICs - Endec

Device Type	Part Number	Supply Voltage (V)	Output Current (mA)	Operating Temp. (°C)	Power Dissipation (W)	Internal Clock (V)	Max Clock Frequency (Mhz)	Min Pulse Width (ns)	Packaging Options
CMOS IC	HSDL-7000	2.7 to 5.5	10	-40 to +85	0.22	No	2	250	8 pin SOIC
CMOS IC	HSDL-7001	2.7 to 5.5	-100 to +100	-40 to +85	0.46	Yes	2	1630	16 pin SOIC
CMOS IC	HSDL-7002	2.7 to 5.5	-20 to + 15	-40 to +85	0.46	Yes	18	1628	16 pin QFN

Infrared Product Selection

Infrared Detectors

Device Type	Part Number	Wavelength Typical (nm)	Viewing Angle (°)	Photocurrent @ 875 (µA)	Optical Rise/ Fall Time (ns)	Forward voltage @ IFDC - 50mA (v)	Operating Temp. (°C)	Packaging Options
2x2 mm SMT	HSDL-5400	875	110	1.6	7.5	0.8	-40 to +85	Note (1)
2x2 mm SMT	HSDL-5420	875	28	6	7.5	0.8	-40 to +85	Note (1)

Infrared Emitters

Device Type	Part Number	Wavelength Typical (nm)	Viewing Angle (°)	On-Axis Intensity (mW/sr)	Optical Rise/ Fall Time (ns)	Forward Voltage @ IFDC - 50mA (v)	Operating Temp. (°C)	Packaging Options
T-13/4 Lamp	HSDL-4220	875	30	38	40	1.5	0 to 70	Thru-Hole
T-13/4 Lamp	HSDL-4230	875	17	75	40	1.5	0 to 70	Thru-Hole
T-13/4 Lamp	HSDL-4261	870	26	36	15	1.4	-40 to +70	Thru-Hole
2x2 mm SMT	HSDL-4400	875	110	3	40	1.5	-40 to +85	Note (1)
2x2 mm SMT	HSDL-4420	875	24	17	40	1.5	-40 to +85	Note (1)

Sensing Products

Part Number	Size (HxWxD) (mm)	Supply Voltage (V)	Operating Temp. (°C)	Idle Current (uA)	Shutdown Current(nA)		Features
HSDL-9000	1.1 x 4 x 3.2	2.7 to 3.6	-40 to +85	30	10		Human luminosity Curve at 550nm
HSDL-9001	0.60 x 2.0 x 1.5	2.7 to 3.6	-40 to +85	–	5 (Dark)	125 (Light)	Human luminosity Curve at 550nm

Part Number	Size (HxWxD) (mm)	Emitter Continuous Forward Current (mA)	Operating Temp. (°C)	Coupled Total Power Dissipation(mW)	Dark Current (nA)	Features
HSDL-9100	2.70 x 2.75 x 7.10	50	-40 to +85	165 mW (max)	2 (typ)	Excellent optical isolation resutling in near zero optical cross-talk

IRDA Smart Dongle

Part Number	Description	Hardware	Internal Flash Memory	Internal RAM Size	CPU Operating Speed	Software Embedded	PCB board size	Host Interface	Remarks
HSDL-D100-001	Low-End Smart Dongle - 2nd level PCB	8 bit CISC MCU	32 KB/64KB (Max - Optional)	2KB/4KB (Max - Optional)	18.432MHz	Basic protocol and IrObex	20mm x 20mm	3 wire asynchronous, Serial interface, Std 2x3 1.27mm pitch, 90° Bend Header	Other software customisation is possible
HSDL-D100-002	Mid-End Smart Dongle - 2nd level PCB	32 bit ARM7TDMI MCU	256KB/ 512KB(Max)	32KB	29.4912MHz	Basic protocol and IrObex	46mm x 65mm (app)	3-wire RS-232 compliance with DB9 Male Connetor or Std 2.54mm pitch, 90°Bend Header	Other software customisation is possible
HSDL-D110-002	Mid-End Smart Dongle with Casing	32 bit ARM7TDMI MCU	256KB/ 512KB(Max)	32KB	29.4912MHz	Basic protocol and IrObex	46mm x 65mm(app)	3-wire RS-232 compliance with DB9 Male Connetor or Std 2.54mm pitch, 90°Bend Header	Other software customisation is possible

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Software Solutions

Part Number	Description
HSDL-S100	IrDA Protocol Stack
HSDL-S101	IrOBEX
HSDL-S102	IrComm
HSDL-S103	IrTranP
HSDL-S300	Remote control application software
HSDL-S500	Infrared Financial Messaging software

Agilent Technologies is a leading provider of innovative technologies for communications and life sciences. Agilent delivers a wide range of solutions and services, including semiconductors, test and measurement, and chemical analysis, for the leading corporations around the world.

Agilent's communications solutions include leading-edge semiconductor products, test, monitoring, management, and sub-systems for optical and wireless systems and networks. Agilent has an extremely broad range of technology and system expertise to help customers stay ahead in the fast-moving communications industry.

Agilent's semiconductor solutions for the connected world include fiber optic and IC products for networking, radio frequency and infrared devices for mobile communications, image sensors and processors for cameras and optical computer mice, storage area network devices and subsystems, and application specific ICs for select networking and imaging applications.

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