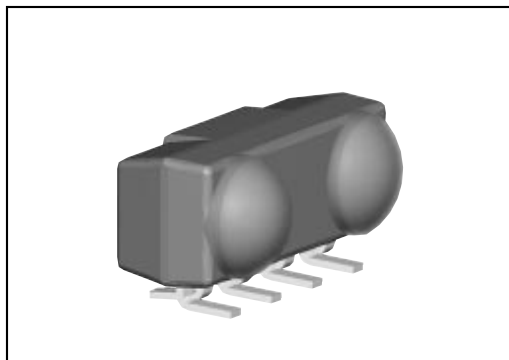


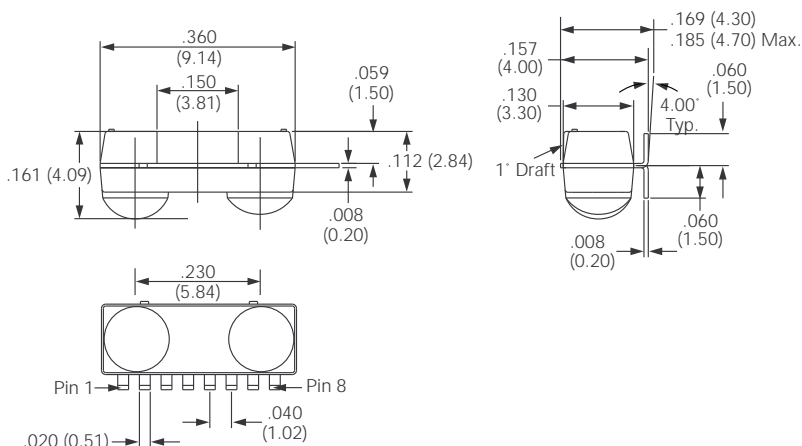
**SIEMENS****IRM 6000**  
**INFRARED DATA TRANSCIVER****Preliminary****FEATURES**

- **Small Package Size:**  
4.3 mm x 4.1 mm x 9.4 mm
- **Compatible with IrDA Specifications**
- **IrDA Data Rates up to 115.2 Kbps**
- **Wide Dynamic Range**
- **Slim Package for Telephonic Applications**
- **Shutdown Feature Reduces Quiescent Current in Standby Mode**
- **Surface Mounted Package Ideal for Automated Assembly**

**APPLICATIONS**

- **Portable Computers**
- **Printers**
- **Telephony**
- **Industrial Hand-Held Devices**
- **Personal Data Assistants (PDA)**
- **Pagers**
- **Consumer Electronics**

Package Dimensions in inches (mm)

**DESCRIPTION**

The IRM 6000 is a slim package, fully contained Infrared transceiver that is compatible with the IrDA 115.2 Kb/s Physical Layer Link Specification. Housed in a single molded epoxy surface mount package this unique product lends itself easily to automated pick and place assembly.

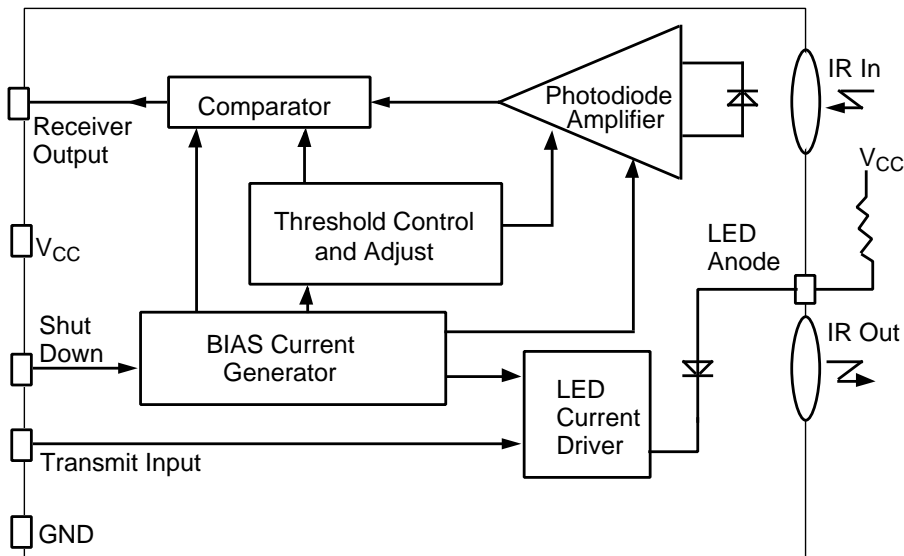
The state of the art BiCMOS circuitry coupled with the optoelectronic expertise of Siemens makes for a product that outperforms its closest rival. Also incorporated in the module is a unique shutdown feature which allows for a power down mode. This will greatly aid in lowering the quiescent current when the module is not being used. In normal operation the shutdown pin should be held low.

The slim package makes this device ideal for cellular telephone and PDA applications.

**Pin Functions**

Pin no.	Function	Pin no.	Function
1	NC	5	GND
2	NC	6	RHX
3	V <sub>CC</sub>	7	THX
4	SD	8	LED Anode

Figure 1. Block diagram



**Absolute Maximum Ratings (at 25°C)**

Parameter	Test Condition	Symbol	Value	Unit
Supply voltage range		$V_{CC}$	-0.5 to +6	V
Input currents	All pins		10	mA
Output sinking current			25	mA
Storage temperature		$T_S$	-25 to +85	°C
Lead solder temperature	230°C		<10	sec.
Ambient temperature	Operating	$T_A$	0 to 70	°C
Junction temperature	Maximum	$T_J$	125	°C
Power dissipation		$P_{tot}$	200	mW
Average IR LED current	DC	$I_{LED}$	100	mA
Repulsed IR LED current	<90 $\mu$ s, $t_{on}$ , <25%	$I_{LED (RP)}$	500	mA
IR LED anode voltage		$V_{LEDA}$	-0.5 to $V_{CC}+0.5$ V	V
IR LED cathode voltage		$V_{LEDK}$	-0.5 to $V_{CC}+0.5$ V	V
Transmit data input voltage		$V_{TXD}$	-0.5 to $V_{CC}+0.5$ V	V
Receive data output voltage		$V_{RXD}$	-0.5 to $V_{CC}+0.5$ V	V

**IR Convection Reflow Soldering**

As with all optoelectronic devices, the IRM 6000 is sensitive to temperature rates of change and peak temperatures during the solder process. It is not designed for any application in which the component would be directly immersed in molten solder. Optimum performance will be achieved with convection IR reflow soldering.

A preheat of up to 120°C for 2.5 minutes is recommended with a ramp up to soldering heat of a maximum of 4°C/second.

The maximum peak temperature is 240°C and should not exceed 10 seconds at that temperature.

Cool down rate should not exceed 3°C/second.

## Basic Module Parameters

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Supported data rates		$D_{TR}$	9.6		115.2	Kbit/s
Supply voltage range		$V_{CC}$	3.0		5.5	V
Supply current receive	SD=low or NC receive mode	$I_{SR}$		1.0	1.5	mA
Supply current	SD high, standby mode	$I_{SSB}$			10	$\mu$ A

## Receive Parameters

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Output voltage low		$V_{OL}$		0.5	0.8	V
Output voltage high		$V_{OH}$	$V_{CC}-.5$			V
Output current					4	mA
Logic high input irradiance	Bit error rate= $10^{-8}$	$E_{IHmin}$	4			$\mu$ W/cm <sup>2</sup>
Logic high input irradiance	In band irradiance maximum	$E_{IHmax}$			500	mW/cm <sup>2</sup>
Maximum DC irradiance	Ambient interference DC	$E_{ADC}$	490			$\mu$ W/cm <sup>2</sup>
Minimum detection threshold irradiance		$E_{Emin}$		3.0		$\mu$ W/cm <sup>2</sup>
Logic low input irradiance	Ambient interference pulsed	$E_{IL}$			0.4	$\mu$ W/cm <sup>2</sup>
Rise time, fall time	C=15 pF	$t_R$	20		200	ns
Output pulse width	115.2 Kb/sec.		1	1.6	6	$\mu$ s
Output delay leading edge	Output level= $0.5 \times V_{CC}$ , $E_{IH}=4 \mu$ W/cm <sup>2</sup>				2	$\mu$ s
Contributed systematic jitter		CSJ			0.2	$\mu$ s
Output delay trailing edge	Output level= $0.5 \times V_{CC}$			1	5	$\mu$ s
Latency		IL		100	600	$\mu$ s

## Transmit Parameters

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Driver current IR LED	Current limiting resistor in series with LED	$I_{LED}$	350		500	mA
Logic low input voltage		$V_{IL}$	0		0.3	V
Logic high input voltage		$V_{IH}$	2.5		$V_{CC}$	V
Output radiant intensity	5 V, $\alpha=15^\circ$ , current limiting resistor in series with LED	$R_i$	40	60	<500	mW/Sr
Half angle		$\alpha$		22		Deg.
Peak wavelength, emission		$\lambda_p$		880		nm
Spectral bandwidth	$I_F=100$ mA	$\Delta\lambda$		80		nm
Optical rise/fall time	10% to 90%, 90% to 10%	$t_R, t_F$		200	600	nsec
Optical overshoot					25	%
Contributed systematic jitter					0.2	$\mu$ s