

Integrated IrDA Controller EGFIR

 P/N: LC16MI-0201A (TFBGA)
 LC16MI-0110A (LQFP)

■ Outline

EGFIR is an LSI for IrDA-based Infrared Ray communication that is easy to use in the built-in system, where the four kinds of communication speeds including the IrDA standards of SIR (2,400bps to 115,200bps), MIR (1Mbps), FIR (4.0Mbps) and VFIR (16.0Mbps) are available, and where all the hardware including the buffer memory and DMA that are required for implementing IrDA are integrated in one chip.

■ Characteristics

- RAM block
 - In-houses the buffer memory of 8,320 byte × 2 Bank configuration
 - Bank0: For external access × 8 bit width
 - Bank1: For internal access × 8 bit width
- Infrared interface block
 - IrDA send/receive functions (IRTX0, IRRX0), Remote controlled send function (IRTXD1)
- DMA block
 - In-houses DMA Bank1 (For internal DMA access) DMA transfer function between the buffer memory and SIR, FIR, VFIR block
- Remote controlled block
 - Generates a burst signal
- Timer block
 - Generic 16bit Timer 2ch and Mediabusy timer 1ch
- SIR block
 - IrDA 1.0 SIR transfer speed (2.4 to 115.2.kbps)
- FIR block
 - IrDA 1.1 MIR transfer speed (1.152Mbps)
 - IrDA 1.1 FIR transfer speed (4Mbps)
- VFIR block
 - IrDA 1.1 VFIR transfer speed (16Mbps)
- VDDK=1.8V
- VDDC=3.3V
- V_{IO}=1.8V, 2.5V, 3.3V
- input clock 48MHz
- 48 pin FBGA package (4mmX4mmX1.2mm)
- 64 pin LQFP package (10mmX10mmX1.4mm)

■ Use

Mobile Phone, Printer, TV

■ Absolute Maximum Rating

Item	Abbreviation	Rating	Unit
Core power supply voltage	VDDK	-0.3 to 2.16	V
Clock power supply voltage	VDDC	-0.3 to 3.99	V
IO power supply voltage	VIO	-0.3 to 3.99	V
Input output voltage	VI/VO	-0.3 to 3.99	V
Operating environment temperature	T _A	-40 to 85	°C
Storage temperature	T _{stg}	-40 to 150	°C

■ DC Features

(V_{IO}=3.3±0.33V, T_A= -40~+85°C)

Item	Abbreviation	Conditions	Min	Typ	Max	Unit
Core Power Supply	V _{DDK}		1.62	1.8	1.98	V
Clock Power Supply	V _{DDC}	with Crystal	2.97	3.3	3.63	V
Clock Power Supply	V _{DDC}	without Crystal	1.62		3.63	V
IO Power Supply	V _{IO}		2.97	3.3	3.63	V
Input Low voltage	V _{IL}	LVTTTL			0.8	V
Input High voltage	V _{IH}	LVTTTL	2.0			V
Output Low voltage	V _{OL}	I _{OL} =2~16mA			0.4	V
Output High voltage	V _{OH}	I _{OH} =2~16mA	2.4			V
Shutdown Current(VDDK=1.8V)	I _{DDS}	SD:Low		0.4		μA
Idle State Current(VDDK=1.8V)	I _{OZ1k}	SD:High	18.6	20.5	22.5	mA

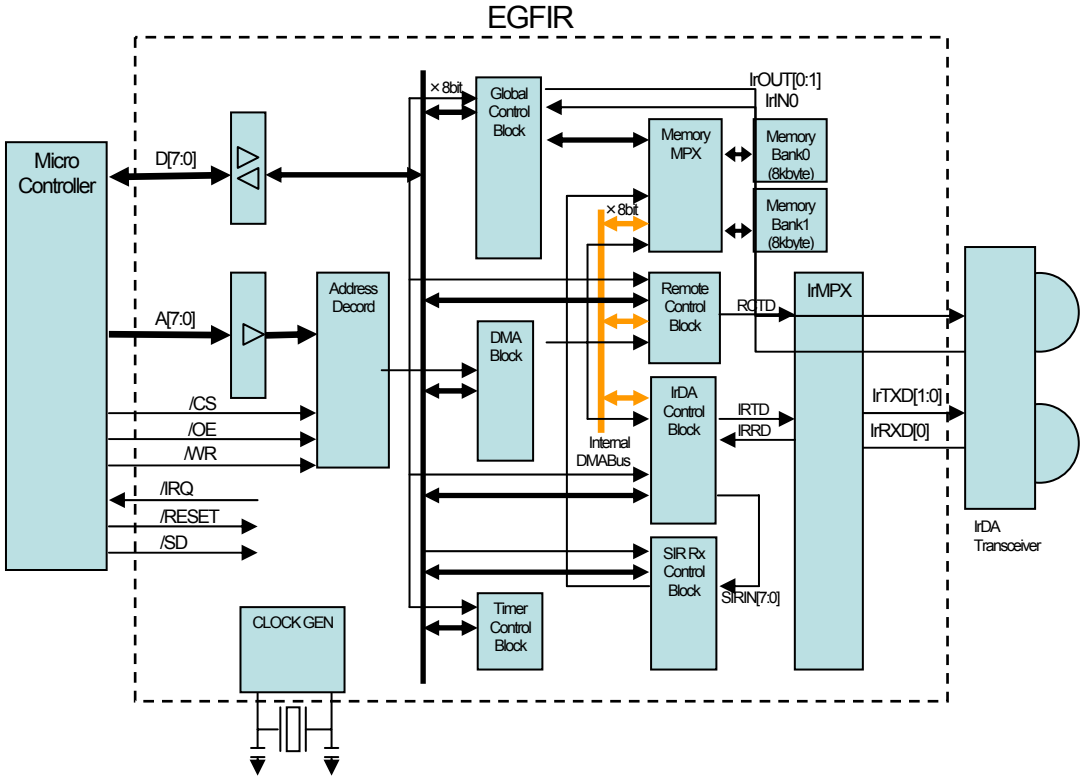
(V_{IO}=2.5±0.25V, T_A= -40~+85°C)

Item	Abbreviation	Conditions	Min	Typ	Max	Unit
IO Power Supply	V _{IO}		2.25	2.5	2.75	V
Input Low voltage	V _{IL}	CMOS			0.25* V _{IO}	V
Input High voltage	V _{IH}	CMOS	0.625* V _{IO}			V
Output Low voltage	V _{OL}	I _{OL} =1.1~8.8mA			0.4	V
Output High voltage	V _{OH}	I _{OH} =1.1~8.8mA	1.85			V

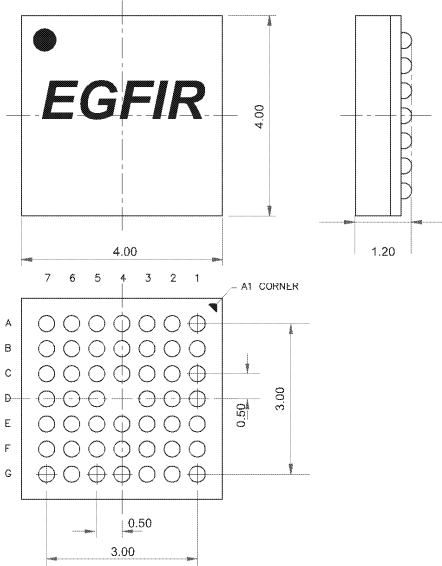
($V_{IO}=1.8\pm 0.18V, T_A = -40\sim +125^{\circ}C$)

Item	Abbreviation	Condition	Min	Typ	Max	Unit
IO Power Supply	V_{IO}		1.62	1.8	1.98	V
Input Low voltage	V_{IL}	CMOS			$0.3 * V_{IO}$	V
Input High voltage	V_{IH}	CMOS	$0.7 * V_{IO}$			V
Input Leakage current	I_{IN}	$V_I = V_{IO}$ or GND	-10	± 1	10	μA
Tri-State Output Leakage current	I_{OZ}	$V_I = V_{IO}$ or GND	-10	± 1	10	μA
Output Low voltage	V_{OL}	$I_{OL} = 0.7\sim 5.6mA$			0.4	V
Output High voltage	V_{OH}	$I_{OH} = 0.7\sim 5.6mA$	$0.75 * V_{IO}$			V

■ Block Diagram



■ Package Dimension (48-ball TFBGA)
4.0mm × 4.0mm × 1.2mm (Pin pitch 0.5mm)



Package Dimension (64 pin LQFP)
10.0mm × 10.0mm × 1.4mm (Pin pitch 0.5mm)

