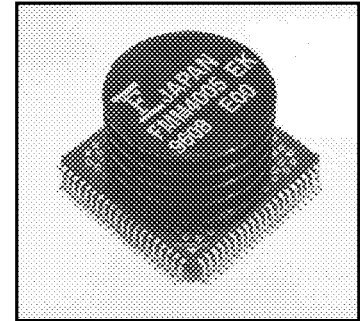


FEATURES

- 622Mbit/s High Speed Operation
- 4:16, 2:16, 1:16 Mode Selection
- +3.3V Single Power Supply
- Built-in Synchronous Circuit and Master/Slave Operation
- PCB(Printed Circuit Board) based 80-pin Plastic Package
- Differential LVPECL Interface for 622Mb/s Data Input
- T-LVTTL Interface for 156Mb/s Data Output



EK PACKAGE

DESCRIPTION

The FMM4005EK is a high speed/low power demultiplexer. Offers 0.5 μ m GaAs MESFET technology, which is very useful for optical transmission systems, instrumentation, etc. The 2-bit serial input data up to 622Mb/s can be converted into 16-bit or 8-bit parallel output data when using the selected mode. Additionally, this device can perform synchronous master/slave operation with other FMM4005EK's.

ELECTRICAL CHARACTERISTICS

LVPECL DC CHARACTERISTICS (Condition: $V_{DD} = +3.3V$, $V_{REF} (LVPECL)^* = +2.0V$, $V_{T1} = +1.3V$, $R_T = 50\Omega$)

Parameter	Symbol	Condition	Value		Unit
			Min.	Max.	
Output HIGH Voltage	V_{OH}	$V_{IN} = V_{IH}(\max)$ or $V_{IL}(\min)$	2280	2600	mV
Output LOW Voltage	V_{OL}	$V_{IN} = V_{IH}(\max)$ or $V_{IL}(\min)$	1300	1680	mV
Input HIGH Voltage	V_{IH}	-	2250	2650	mV
Input LOW Voltage	V_{IL}	-	1250	1750	mV
Input HIGH Current	I_{IH}	$V_{IN} = V_{IH}(\max)$	-	200	μA
Input LOW Current	I_{IL}	$V_{IN} = V_{IL}(\min)$	-50	-	μA

(*) In synchronous master/slave operation, this device needs external LVPECL voltage reference $V_{REF} (LVPECL)$. (SYNCIN pin needs reference voltage)

T-LVTTL DC CHARACTERISTICS (Condition: $V_{REF} (T-LVTTL)^* = +1.65V$, $V_{T2} = +1.65V$, $R_D = 30\Omega$, $R_T = 50\Omega$)

Parameter	Symbol	Conditions	Value		Unit
			Min.	Max.	
Output HIGH Voltage	V_{OH1}	Terminated	$V_{T2} + 400$	-	mV
	V_{OH2}	Unterminated $I_{OH} = -0.5mA$	$V_{TTL} - 500$	-	mV
Output LOW Voltage	V_{OL1}	Terminated	-	$V_{T2} - 400$	mV
	V_{OL2}	Unterminated	-	500	mV
Input HIGH Voltage	V_{IH}	-	$V_{REF} + 200$	V_{TTL}	mV
Input LOW Voltage	V_{IL}	-	0	$V_{REF} - 200$	mV
Input HIGH Current	I_{IH}	$V_{IN} = V_{IH}(\max)$	-	200	μA
Input LOW Current	I_{IL}	$V_{IN} = V_{IL}(\min)$	-50	-	μA
Input Reference Voltage	$V_{REF} (T-LVTTL)$		1500	1800	mV

(*) This device needs external T-LVTTL reference voltage $V_{REF} (T-LVTTL)$.

FMM4005EK

GaAs 622Mb/s Demultiplexer

ABSOLUTE MAXIMUM RATINGS (Ambient Temperature Ta = 25°C)

Parameter	Symbol	Values	Unit
Supply Voltage	V _{TTL}	-0.5 ~ +4.0	V
Output Current	I _{OUT}	-50 ~ +50	mA
Input Voltage	V _{IN}	-0.5 ~ V _{TTL}	V
Storage Temperature	T _{STG}	-65 ~ +150	°C
Case Temperature	T _C	-55 ~ +125	°C

RECOMMENDED OPERATING CONDITION

Parameter	Symbol	Values	Unit
Power Supply Voltage	V _{TTL}	+3.3 ± 5%	V
LVPECL Termination Voltage	V _{T1}	+1.3	V
T-LVTTL Termination Voltage	V _{T2}	+1.65	V
Termination Resistance	R _T	50	Ω
T-LVTTL Damping Resistance	R _D	30	Ω
Ambient Temperature	T _A	0 ~ +58 0 ~ +70 (Air Flow) 0 m/s 1 m/s~	°C

POWER DISSIPATION (DC)

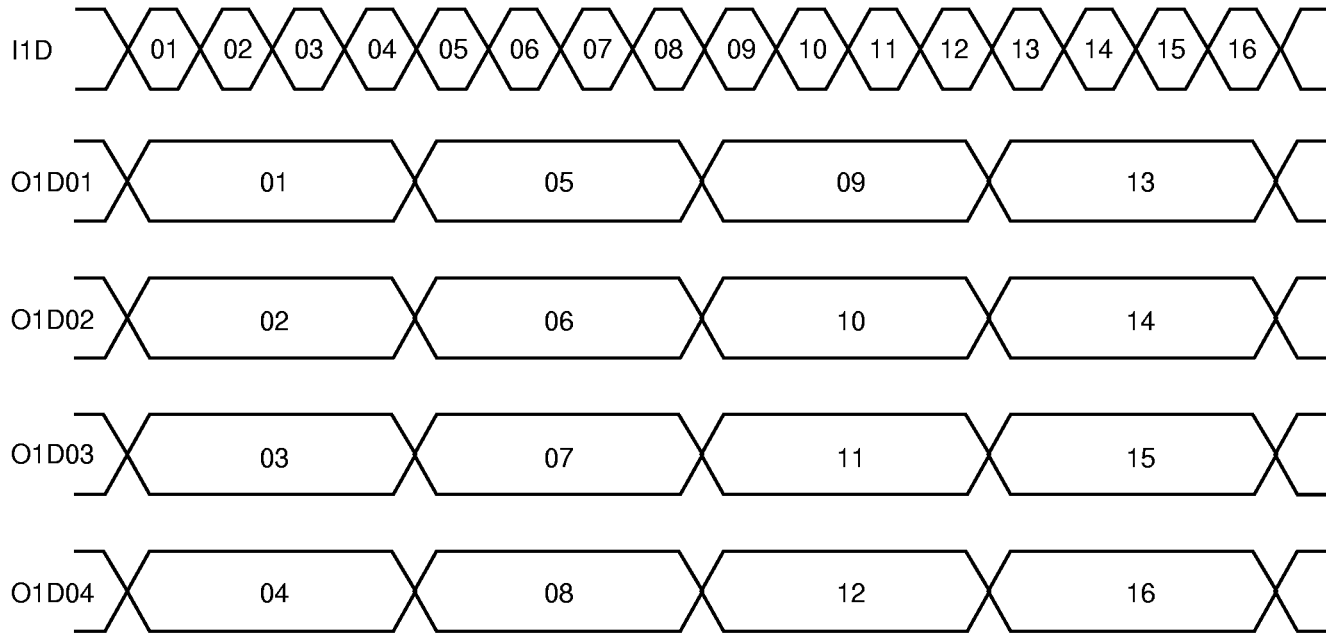
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Power	P _{dis}	Recommended Condition	-	1.00	1.50	W

(*) Average for Output HIGH/LOW

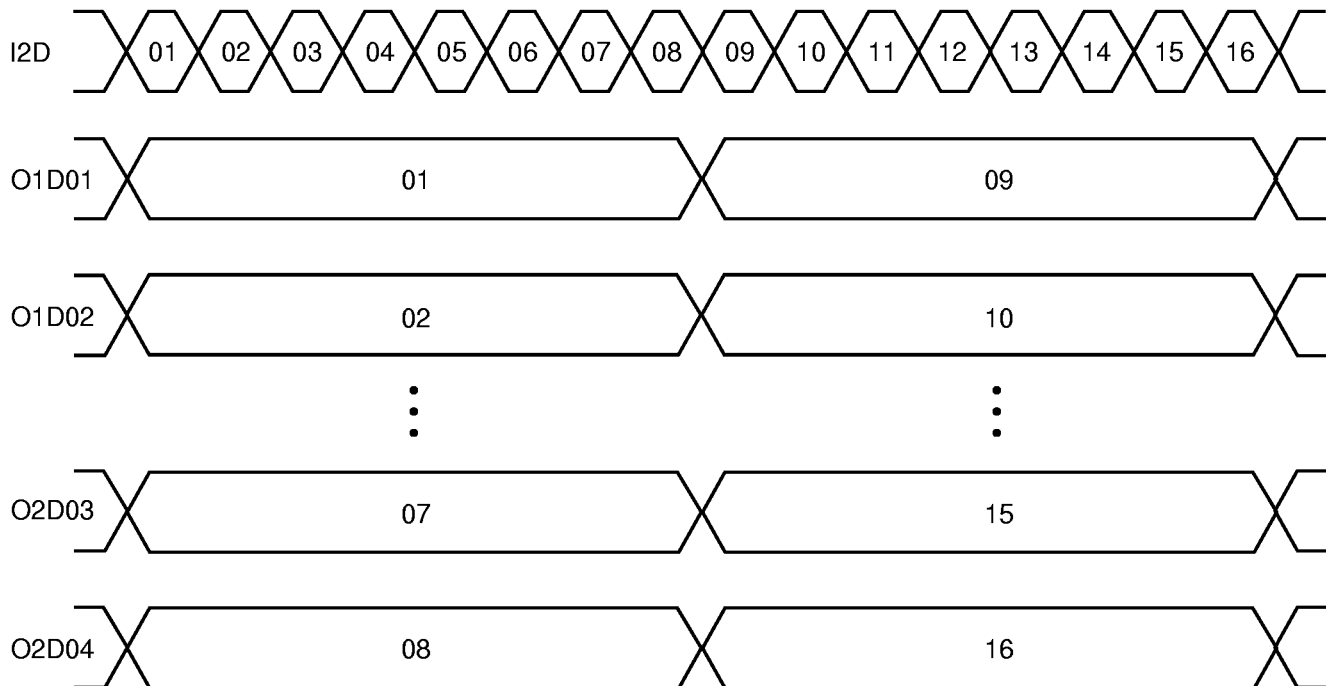
AC CHARACTERISTICS

Parameter	Symbol	Condition	Value			Unit
			Min.	Typ.	Max.	
Maximum Clock Frequency	f _{clk}	Recommended Condition	622	-	-	MHz

**4:16 Serial-Parallel Conversion (Condition: MODE1=1, MODE2=0)
for I1D Serial Data and O1Dxx Parallel Data (identical to I2D ~ I4D & O2Dxx ~ O4Dxx)**



**2:16 Serial-Parallel Conversion (Condition: MODE1=0, MODE2=1)
for I2D & O1Dxx ~ O2Dxx (identical to I4D & O3Dxx ~ O4Dxx)
Note: I1D and I3D must not be used.**



1:16 Parallel-Serial Conversion (Condition: MODE1=1, MODE2=1)

for I4D & O1Dxx ~ O4Dxx

Note: I1D, I2D and I3D must not be used.

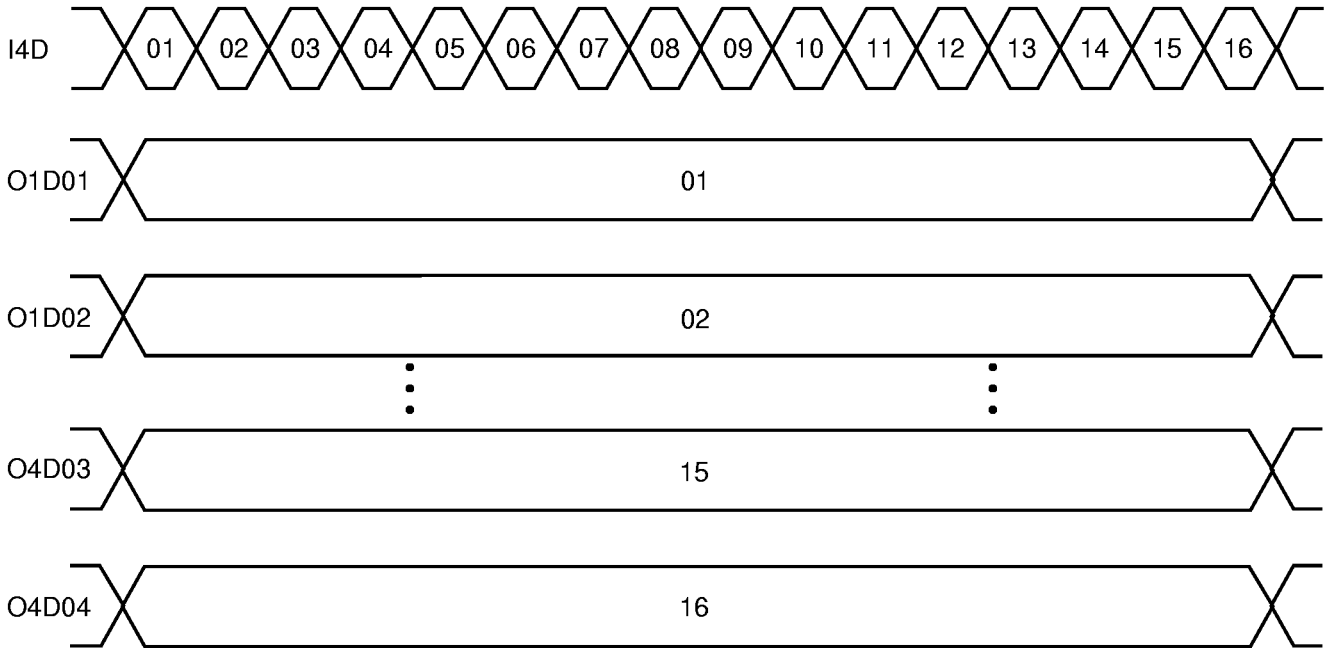
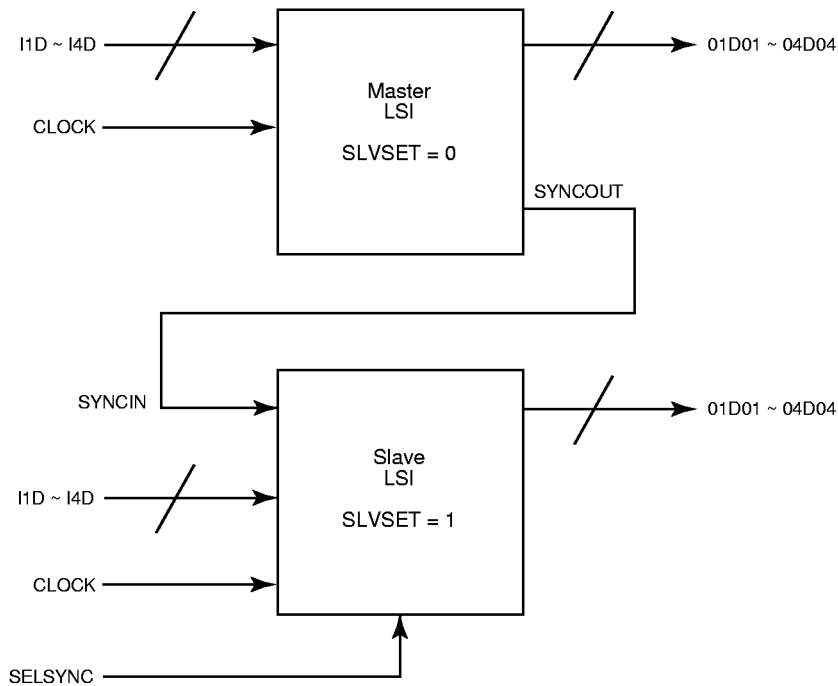
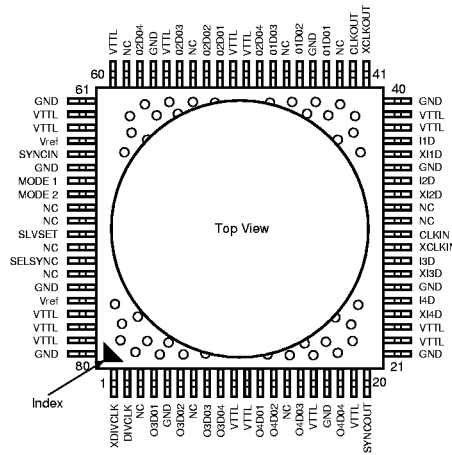


Figure 1 SYNCHRONOUS MASTER/SLAVE OPERATION
(Condition: SLVSET=0 for Master, SLVSET=1 for Slave)

Synchronous master-slave operation is available through the following usage. Signal phase of SYNCIN can be changed by selecting SELSYNC HIGH/LOW. This function enables to expand the bit width twice or more by appending slave LSI's.



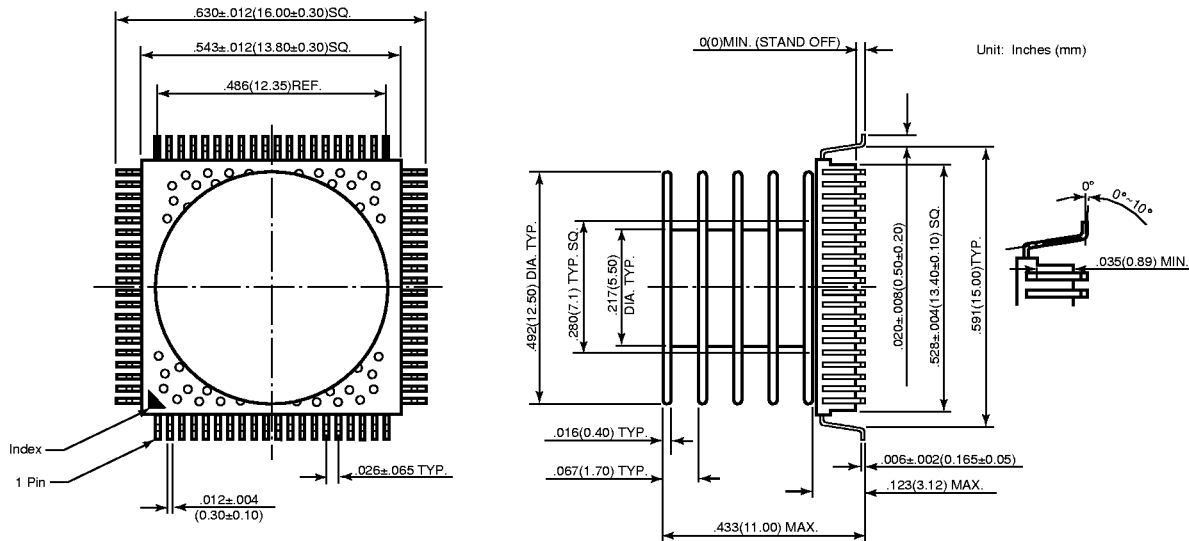
FMM4005EK Pin Assignment



PIN DESCRIPTION

Pin Name	Pin No.	I/O	Description	Pin Name	Pin No.	I/O	Description
XDIVCLK	1	TLV-O	Divided Clock Out(I)	XCLKOUT	41	PECL-O	CLOCK Output(Invert)
DIVCLK	2	TLV-O	Divided Clock Out(T)	CLKOUT	42	PECL-O	CLOCK Output(True)
NC	3	-	Connected to GND	NC	43	-	Connected to GND
O3D01	4	TLV-O	I3D DEMUX Output	O1D01	44	TLV-O	I1D DEMUX Output
GND	5	-	---	GND	45	-	---
O3D02	6	TLV-O	I3D DEMUX Output	O1D02	46	TLV-O	I1D DEMUX Output
NC	7	-	Connected to GND	NC	47	-	Connected to GND
O3D03	8	TLV-O	I3D DEMUX Output	O1D03	48	TLV-O	I1D DEMUX Output
O3D04	9	TLV-O	I3D DEMUX Output	O1D04	49	TLV-O	I1D DEMUX Output
VTTL	10	-	---	VTTL	50	-	---
VTTL	11	-	---	VTTL	51	-	---
O4D01	12	TLV-O	I4D DEMUX Output	O2D01	52	TLV-O	I2D DEMUX Output
O4D02	13	TLV-O	I4D DEMUX Output	O2D02	53	TLV-O	I2D DEMUX Output
NC	14	-	Connected to GND	NC	54	-	Connected to GND
O4D03	15	TLV-O	I4D DEMUX Output	O2D03	55	TLV-O	I2D DEMUX Output
VTTL	16	-	---	VTTL	56	-	---
GND	17	-	---	GND	57	-	---
O4D04	18	TLV-O	I4D DEMUX Output	O2D04	58	TLV-O	I2D DEMUX Output
VTTL	19	-	---	NC	59	-	Connected to GND
SYNCOUT	20	PECL-I	Sync. Output	VTTL	60	-	---
GND	21	-	---	GND	61	-	---
VTTL	22	-	---	VTTL	62	-	---
VTTL	23	-	---	VTTL	63	-	---
XI4D	24	PECL-I	Serial data Input(I)	Vref	64	PECL-I	Vref(LVPECL)+2.0V
I4D	25	PECL-I	Serial data Input(T)	SYNCIN	65	PECL-I	Sync. Input
GND	26	-	---	GND	66	-	---
XI3D	27	PECL-I	Serial data Input(I)	MODE1	67	TLV-I	Mode select 1
I3D	28	PECL-I	Serial data Input(T)	MODE2	68	TLV-I	Mode select 2
XCLKIN	29	PECL-I	CLOCK Input(Invert)	NC	69	-	Connected to GND
CLKIN	30	PECL-I	CLOCK Input(True)	NC	70	-	Connected to GND
NC	31	-	Connected to GND	SLVSET	71	TLV-I	set master/slave
NC	32	-	Connected to GND	NC	72	-	Connected to GND
XI2D	33	PECL-I	Serial data Input(I)	SELSYNC	73	TLV-I	select Sync. phase
I2D	34	PECL-I	Serial data Input(T)	NC	74	-	Connected to GND
GND	35	-	---	GND	75	-	---
XI1D	36	PECL-I	Serial data Input(I)	Vref	76	TLV-I	Vref(T-LVTTTL)+1.65V
I1D	37	PECL-I	Serial data Input(T)	VTTL	77	-	---
VTTL	38	-	---	VTTL	78	-	---
VTTL	39	-	---	VTTL	79	-	---
GND	40	-	---	GND	80	-	---

Case Style "EK" Plastic 80-Pin QFP Package



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