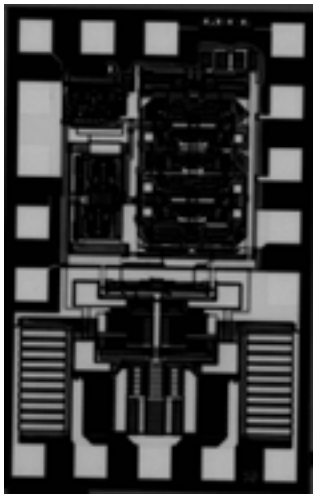
SUMITOMO ELECTRIC

01.08.28

F0601720B

High Speed

GaAs LED Driver



♦ *Features*

- high speed operation DC ~ 266 Mb/s NRZ
- Differential ECL compatible interface
- 5.0 V single power supply
- Pulse distortion control 0 ~ 350 psec

♦ *Applications*

- LED driver of an optical transmitter circuit up to 266 Mb/s

♦ *Functional Description*

The F0601720B is a high performance GaAs LED driver IC applying in an optical transmitter module up to 266 Mb/s NRZ data rate. The F0601720B specifies the rise time and the fall time of 600 psec (10%-90%) typically. It features the single 5.0 V supply operation.

♦ *Absolute Maximum Ratings*

T_a=25 °C, unless specified

Parameter	Symbol	Absolute Maximum Ratings	Units
Supply Voltage	V_{CC}	7.0	V
Supply Current	I_{CC}	100	mA
Modulation Current	$I_{OUT1,2}$	100	mA
Power Dissipation	Pdis	1	W
Input Voltage	$V_{IN1,2}$	V_{CC} ~ Max (-0.5, V_{CC} -3.0)	V
Ambient Operating Temperature	Ta	0 ~ 70	°C
Strage Temperature	Tstg	-55 ~ +125	°C

♦ *Recommended Operating Conditions*

V_{EE}= GND

Parameter	Symbol	Value			Units
		Min.	Typ.	Max.	
Supply Voltage	V_{CC}	4.75	5.0	5.25	V
Ambient Operating Temperature	Ta	0	25	70	°C

♦ *Electrical Characteristics*

V_{CC}=5 V, T_a=25 °C, unless specified

Parameter	Symbol	Conditions	Value			Units
			Min.	Typ.	Max.	
Supply Current	I_{CC}		90	100	150	mA
Input Voltage	V_{IH}	Differential Input	3.830	4.045	4.265	V
	V_{IL}		3.050	3.295	3.550	V
Input Current	I_{IN1}, I_{IN2}	-	-150	-	150	μA
Modulation Current *1)	I_{OUT1}	Tr1:open	40	-	60	mA
		Tr2=GND	60	-	80	mA
Leakage Current	Isd_{leak1}	Vsd1=V_{CC} at V_{IN1}=V_{IL}, V_{IN2}=V_I	-	-	5	μA
ECL Reference Voltage	V_{DD} *1)	Tr1:open	3.8	-	4.1	V
		Tr2=GND	3.45	-	3.75	V
Rise Time	tr *2)	RL=15Ω	-	-	1	nsec
Fall Time	rf *2)	RL=15Ω	-	-	1	nsec

*1) Adjusting by valuable resistors

*2) Measuring by the circuits shown in Figures 3 and 4

♦ *User's Guide*

(1) Application of Dly1 and Dly2

The two terminals permit presettable compensation of pulse width distortion at input signals In1 and In2 by connecting to GND as shown in Table2.

Table 1.

		Dly1	
	Presetting	open	GND
Dly2	open	1ps	150ps
	GND	250ps	350ps

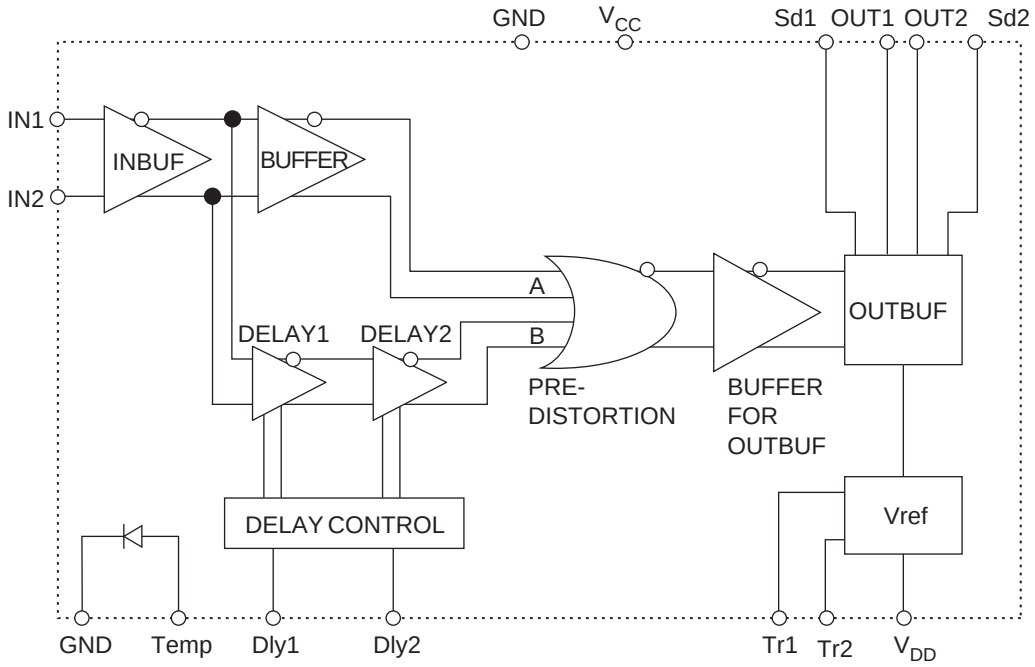
(2) Application of Tr1

The Tr1 terminal permits presettable voltage at Vbb by adjusting the valuable resistor (0 to 1kΩ) connected with GND as shown in Table2.

Table 2.

Terminal	Without control	With control
Tr1	open	0 ~ 1kΩ
Vbb	3.8V ~ 4.1V	3.72V (Recommended setting voltage)

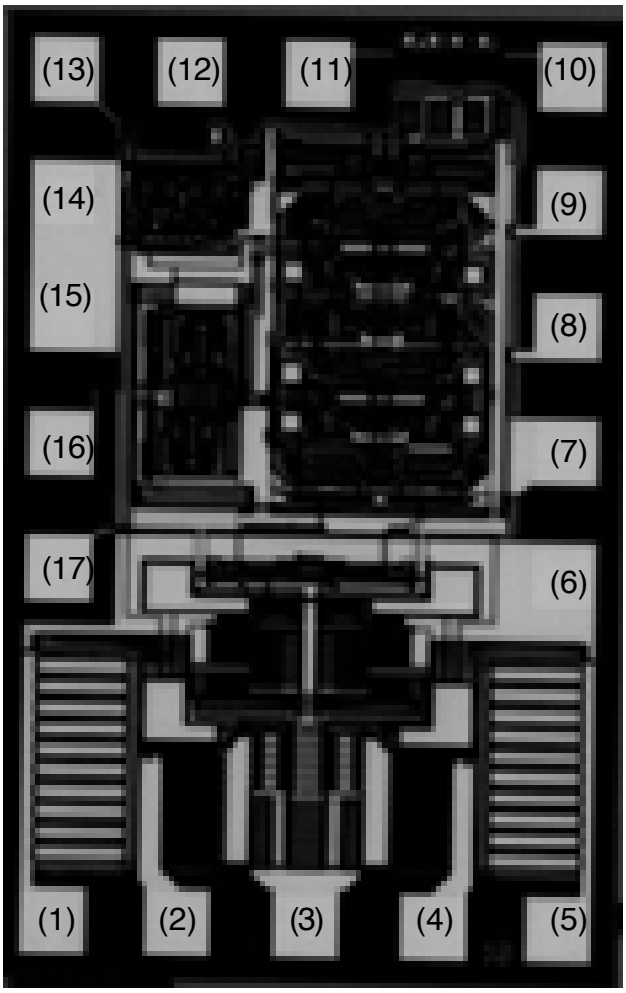
♦ *Block Diagram*



V_{CC}	: Supply Voltage
V_{IN1}, V_{IN2}	: Differential Input
OUT1, OUT2	: Differential Output (LED should be connected to Out1)
Sd1,Sd2	: Output Wave Form Control
Dly1,Dly2	: Pulse Width Distortion Control
Tr1	: Vbb Control
Tr2	: Testing
V_{DD}	: ECL Reference Voltage
Temp	: Temperature Measurement

Fig. 1

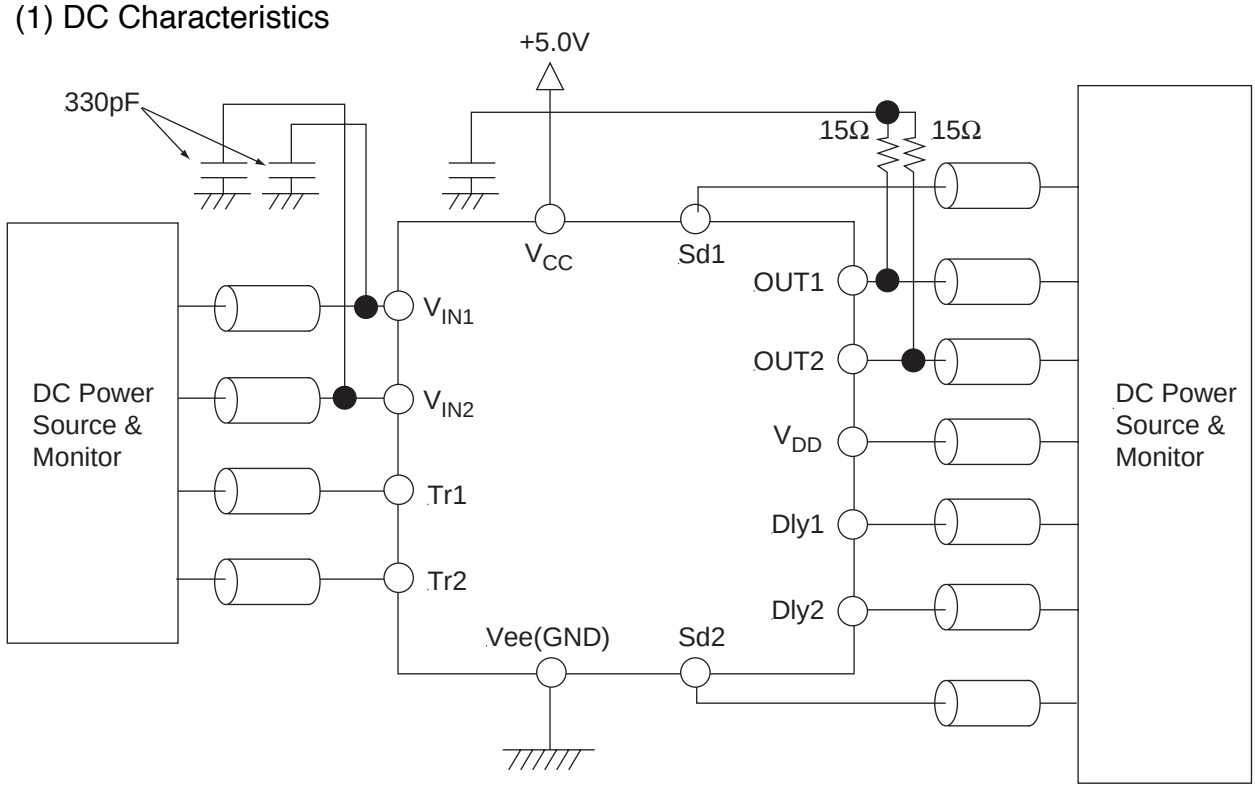
♦ *Die Pad Descriptions*



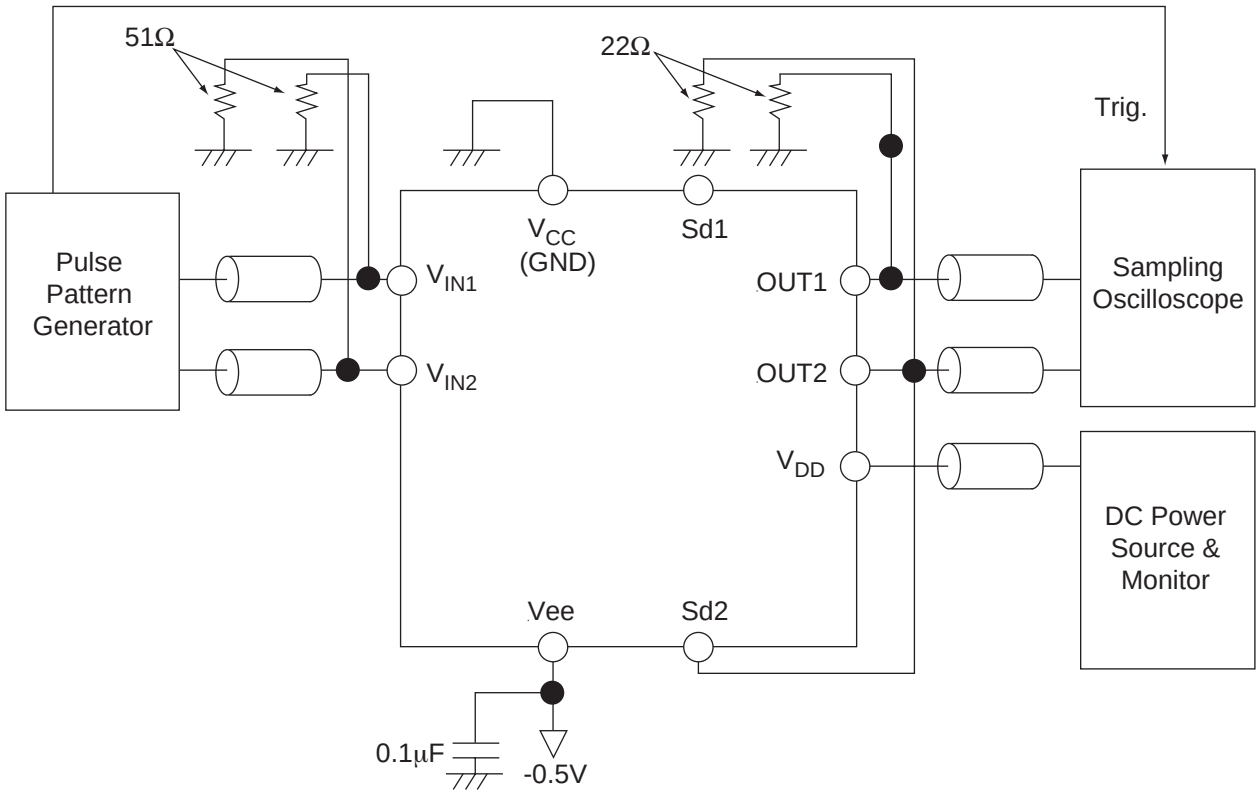
No.	Symbol	Center Coordinates (μm)	No.	Symbol	Center Coordinates (μm)
①	Sd1	(80,80)	⑪	V_{IN}	(480,1310)
②	OUT1	(260,80)	⑫	Temp	(295,1310)
③	GND2	(445,80)	⑬	V_{DD}	(115,1310)
④	OUT2	(630,80)	⑭	GND1	(80,1130)
⑤	Sd2	(810,80)	⑮	GND1	(80,950)
⑥	V_{CC2}	(810,590)	⑯	Tr2	(80,770)
⑦	V_{CC1}	(810,770)	⑰	Tr1	(80,590)
⑧	Dly2	(810,950)	O		(0,0)
⑨	Dly1	(810,1130)	A		(890,1390)
⑩	V_{IN2}	(810,1310)			

♦ *Measurement Block Dliagram*

(1) DC Characteristics



(2) AC Characteristics



♦ *Precautions*

Owing to their small dimensions, the GaAs FET's from which the F0601720B is designed are easily damaged or destroyed if subjected to large transient voltages. Such transients can be generated by power supplies when switched on if not properly decoupled. It is also possible to induce spikes from static-electricity-charged operations or ungrounded equipment.

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