

## 50 Gb/s 2: 1 SELECTOR

### Features

- Maximum output rate in multiplexing mode: 50 Gb/s
- Output amplitude: 0.9 V<sub>pp</sub>
- Single-ended inputs

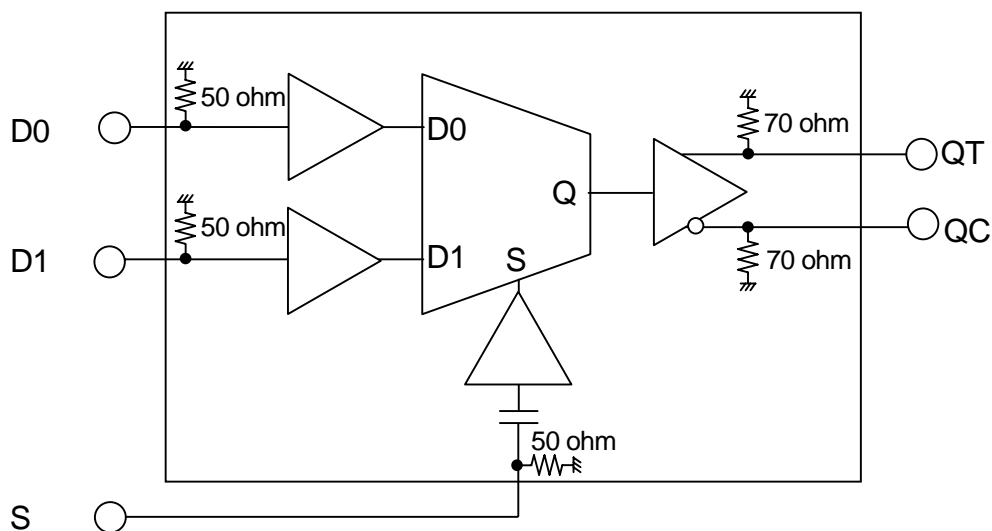
### General Description

The CI0086 is a 2: 1 selector operating at rates up to 50 Gb/s output. The I/O levels are SCFL (V<sub>H</sub>: 0.0 V, V<sub>L</sub>: -0.9 V). The IC is fabricated using a 0.1- $\mu$ m InP HEMT process. The CI0086 is provided in a hermetically-sealed package with V-connectors.

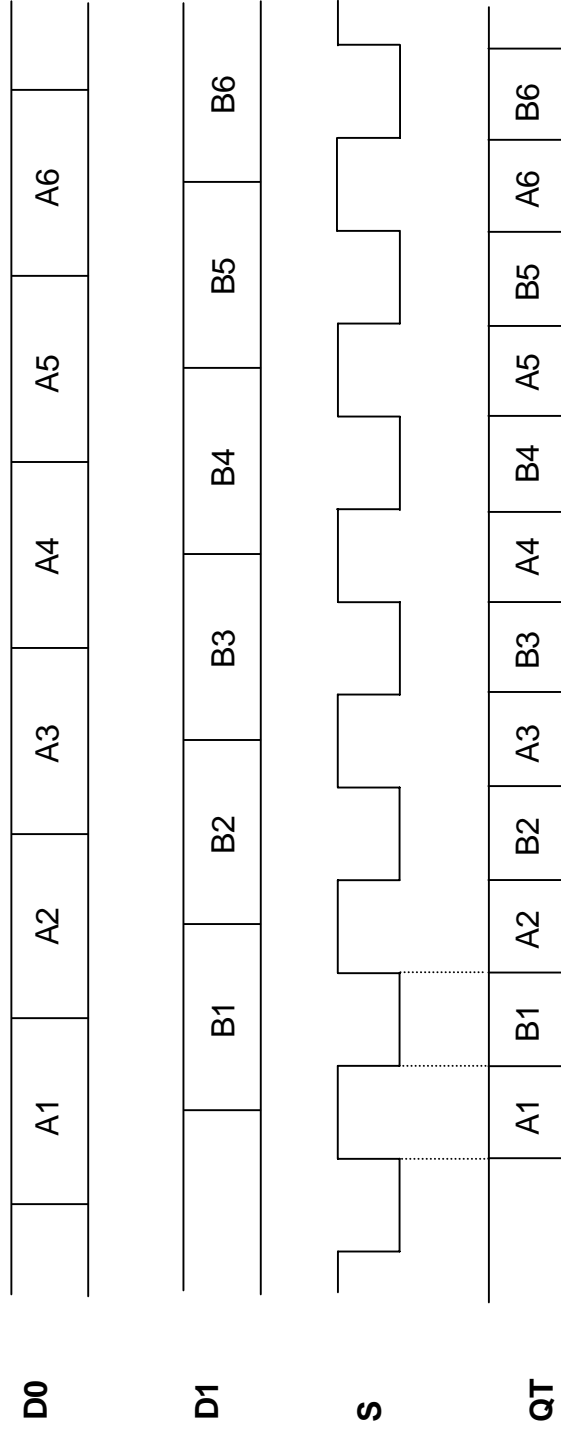
### Applications

- 2: 1 Multiplexer

### Functional Diagram



### Timing Chart



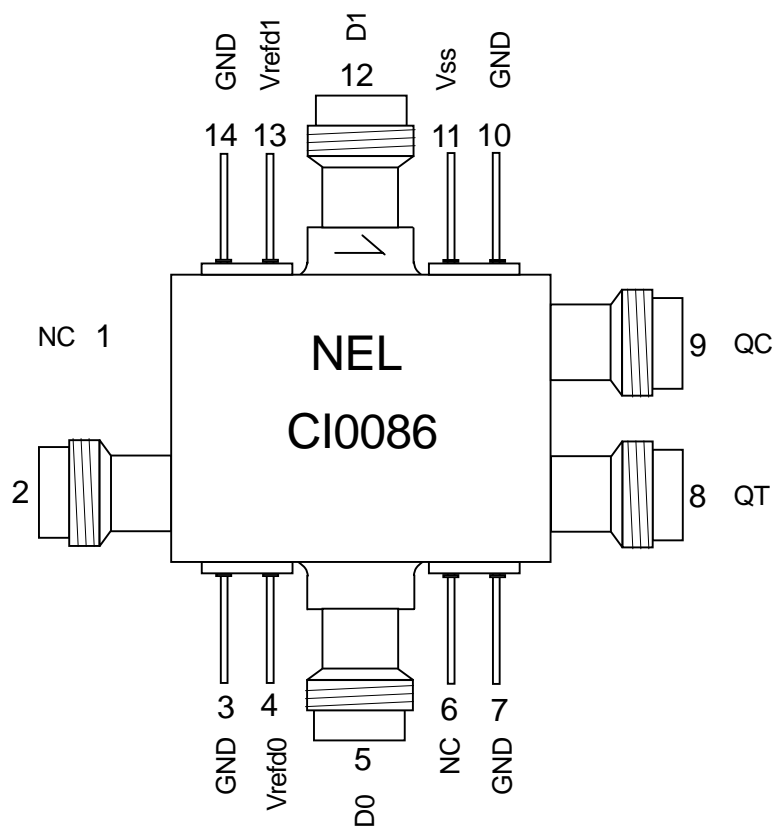
### Connection Table

No.	NAME	FUNCTION	No.	NAME	FUNCTION
1	NC	No Internal Connection	8	QT <sup>(2)</sup>	Data Output (True)
2	S	Select Signal Input	9	QC <sup>(2)</sup>	Data Output (Complementary)
3	GND	Ground (0.0 V)	10	GND	Ground (0.0 V)
4	Vrefd0 <sup>(1)</sup>	Data Input 0 Reference	11	Vss	Power Supply (-4.5 V)
5	D0	Data Input 0	12	D1	Data Input 1
6	NC	No Internal Connection	13	Vrefd1 <sup>(1)</sup>	Data Input 1 Reference
7	GND	Ground (0.0 V)	14	GND	Ground (0.0 V)

#### Notes

- (1) Adjust Vrefd0 and Vrefd1 in the range between -0.75 V and -0.2 V.
- (2) Terminate unused output to GND through 50 ohm resistors.

### Connection Diagram (Top View)



## Absolute Maximum Ratings

SYMBOL	PARAMETER	RATING	UNIT
VSS	Power Supply Voltage	-5.0 to +0.1	V
Vin	Applied Voltage Amplitude at Select Signal Input (S)	1.2	Vpp
Vind	Applied Voltage at Data Inputs (D0, D1)	-1.2 to +0.1	V
Vins	Applied Voltage at Select Signal Input (S)	-1.2 to +1.2	V
Vout	Applied Voltage at Data Outputs (QT, QC)	-1.5 to + 0.2	V
Vrefd	Applied Voltage at Vrefd0 and Vrefd1 pin	-1.2 to +0.1	V
Tstor	Storage Temperature	TBD	°C
Tc <sup>(1)</sup>	Case Temperature under Bias	TBD	°C

TBD: To Be Determined

## Recommended Operating Conditions

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
VSS	Power Supply	-4.7	-4.5	-4.3	V
Vrefd0	Data Input Reference Voltage	Adjust in the range from -0.75 V to -0.2 V			
Vrefd1					
D0	Data Input Interface	DC coupling (see DC Characteristics)			
D1					
S	Select Signal Input Interface	DC coupling (see DC Characteristics) or AC coupling (see AC Characteristics)			
QT, QC	Data Output Interface	DC coupling (see DC Characteristics) , Terminate to GND through 50 ohm			

## DC Characteristics

(V<sub>SS</sub> = -4.5 V, GND = 0.0 V, Tc<sup>(1)</sup> = 30 °C)

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
ISS	Power Supply Current		420	TBD	mA
VOH	Output Voltage, High (QT, QC)	TBD	0.0		V
VOL	Output Voltage, Low (QT, QC)		-0.9	TBD	V
VIH	Input Voltage, High (D0, D1, S)	TBD	0.0		V
VIL	Input Voltage, Low (D0, D1, S)		-0.9	TBD	V

TBD: To Be Determined

Note

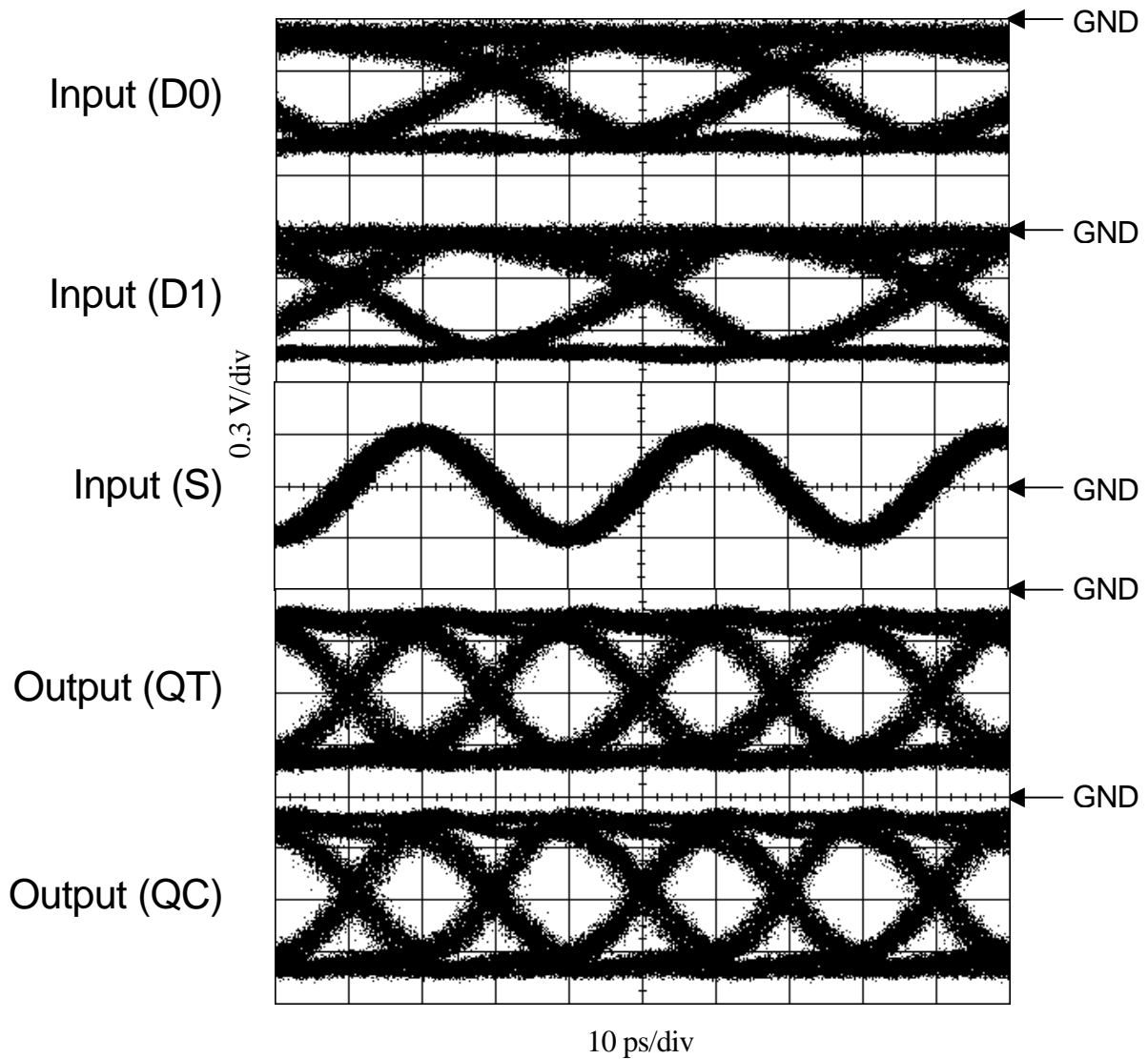
(1) Tc: Temperature at package base.

## AC Characteristics (50 GHz)

(V<sub>ss</sub> = -4.5 V, GND = 0.0 V, V<sub>refd0</sub> and V<sub>refd1</sub>: Adjust in the range from -0.75 V to -0.2 V)

SYMBOL	PARAMETER	T <sub>c</sub> =30 °C			UNIT
		MIN.	TYP.	MAX.	
V <sub>in</sub>	Select Signal Input Voltage Amplitude	TBD	0.9		V <sub>pp</sub>
f <sub>MAX</sub>	Maximum Output Data Rate	50			Gb/s
S <sub>MIN</sub>	Minimum Select Signal Frequency		10		GHz
V <sub>amp</sub>	Output Voltage Amplitude (QT, QC)	TBD	0.9		V <sub>pp</sub>
t <sub>r</sub>	Output Rise Time (QT, QC) 20 - 80%		10	TBD	ps
t <sub>f</sub>	Output Fall Time (QT, QC) 20 - 80%		10	TBD	ps

## Sample Waveforms (50 Gb/s)



### Measurement Conditions

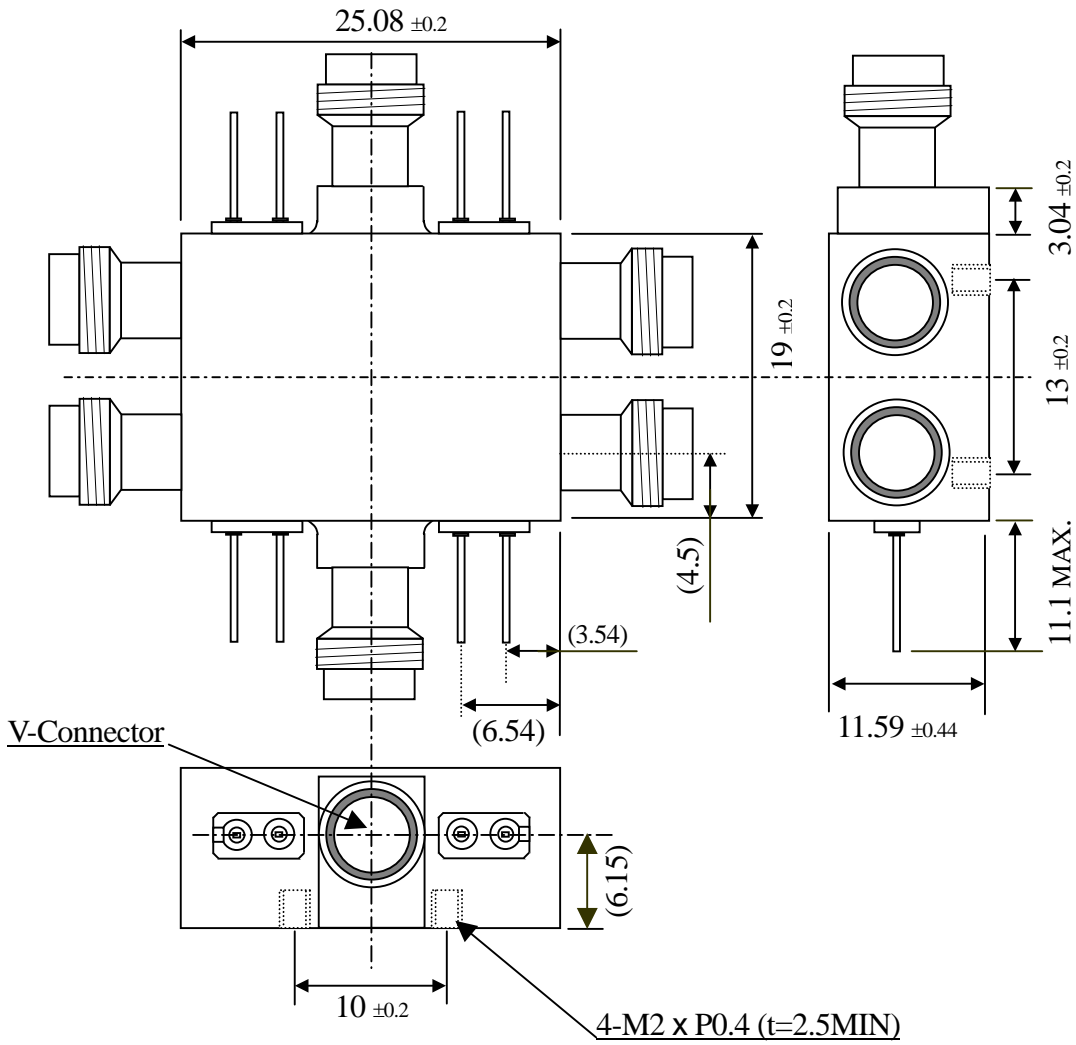
$V_{ss} = -4.5$  V, Vrefd0: Optimum, Vrefd1: Optimum

Input Data: 25 Gb/s

Input Select Signal: 25 GHz



**SCMD Package Dimension (mm)**



## Handling Instructions

Since the IC is fabricated using InP HEMT process, users are recommended to follow the instructions below to prevent damage to the chip from electro-static discharge.

- 1) Use a conductive working desk connected to the ground (or, a conductive table top connected to the ground).
- 2) Require all handling personnel to wear a conductive bracelet or wrist-strap connected to the ground through a 1 M-ohm resistor.
- 3) Ground all test equipment.
- 4) Ground all soldering iron tops.
- 5) Store IC's and other devices such as chip capacitors in their conductive carriers until they are soldered.

## Caution

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