

OKI electronic components

OC40

PHOTO COUPLER

GENERAL DESCRIPTION

The OC40 is a photo coupler, which combines a GaAs infrared light emission diode and a photo transistor. It is mounted in a 6-pin plastic package. With a response as fast as 100ns.

FEATURES

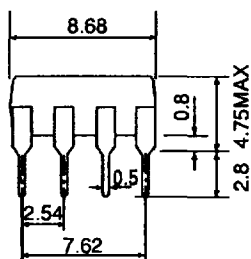
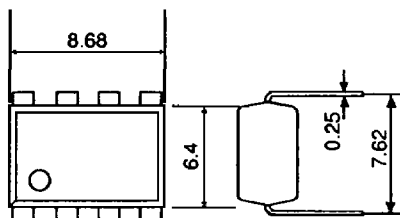
- High-speed response: 100 ns
- Isolation voltage: 1,000 V
- Low input drive current: 10 mA
- Available for direct connection with TTL, DTL, MOS IC
- 8-pin plastic DIP

APPLICATIONS

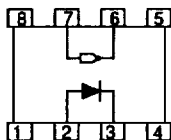
High-speed logical circuit

PIN CONFIGURATION

• Dimensions (Unit : mm)



• Pin Connection Diagram (Top View)



- 1. NC
- 2. Anode (LED)
- 3. Cathode (LED)
- 4. NC
- 5. GND (Output IC)
- 6. Vout (Output IC)
- 7. Ve (Output IC)
- 8. Vcc (Output IC)

ABSOLUTE MAXIMUM RATINGS

(Ambient Temperature Ta = 25°C)

Item		Symbol	Rating	Unit
Input diode	Power dissipation	PD	50	mW
	Forward current	IF	30	mA
	Reverse voltage	VR	3.0	V
Output TTL	Supply voltage	VCC	7.0	V
	Enable supply voltage	VE	5.5	V
	Output collector current	IC	20	mA
	Output collector voltage	Vout	7.0	V
Isolation voltage		BV I-O	1000	V
Storage temperature		Tstg	-55 ~ +125	°C

Note : Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet.

Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

- Wavelength at Peak Emission

Light source : 940 nm

Photo detector : 850 nm

ELECTRICAL CHARACTERISTICS

- I/O Electrical Characteristics

Item	Symbol	Test Condition	Guaranteed Value			Unit
			Min.	Typ.	Max.	
Isolation resistance	RI-O	V _{I-O} = 500V	10 ¹¹	—	—	Ω
Isolation capacitance	CI-O	f = 1MHz	—	1.5	—	pF

- Guaranteed Operating Range

Item	Symbol	Test Condition	Guaranteed Value			Unit
			Min.	Typ.	Max.	
Supply voltage	VCC	—	4.5	5.0	5.5	V
Operating temperature	Top	—	0	—	70	°C
Input forward voltage	VF	IF = 30mA	—	1.3	1.6	V
Input reverse current	IR	VR = 3V	—	—	100	μA

• Operating Characteristics

(Ambient Temperature 0°C through 70°C)

Item	Symbol	Test Condition					Guaranteed Value			Unit
		V _{CC}	V _E	I _{in}	V _{out}	I _{out}	Min.	Typ.	Max.	
		V	V	mA	V	mA				
High level input current	I _{in} (1)						10	—	—	mA
Low level input current	I _{in} (0)						—	—	250	μA
High level enable input voltage	V _E (1)						2	—	—	V
Low level enable input voltage	V _E (0)						—	—	0.8	
High level input current	I _{out} (1)	5.5	2.0	0.25	5.5	×	—	—	250	μA
		5.5	0.8	10	5.5	×	—	—	250	
Output voltage	V _{out} (0)	4.5	2.0	10	—	10	—	0.4	0.5	V
Low level enable input current	I _E (0)	5.5	0.5	0	—	—	—	-1.0	-2.0	mA
High level input current	I _E (1)	5.5	2.0	0	—	—	—	-0.7	—	
Rated supply current	I _{CCM}	7.0	—	30	—	—	—	—	25	
High level supply current	I _{CC} (1)	5.5	0.5	0	—	—	—	—	10	
Low level supply current	I _{CC} (0)	5.5	2.0	30	—	—	—	—	18	
High level propagation delay time	t _{pd} (1)	I _{in} =15mA V _{CC} =5.0V R _L =350Ω C _L =10PF (T _a =25°C) (Fig-1) (Fig-2)					—	100	—	ns
Low level propagation delay time	t _{pd} (0)						—	100	—	
Output rise time	t _r						—	50	—	
Output fall time	t _f						—	40	—	
High level enable propagation delay time	t _e (1)						—	50	—	
Low level propagation delay time	t _e (0)						—	40	—	

Truth Table

I _{in}	V _E	V _{out}
1	1	0
1	0	1
0	1	1
0	0	1

TYPICAL CHARACTERISTIC CURVES

Figure 1

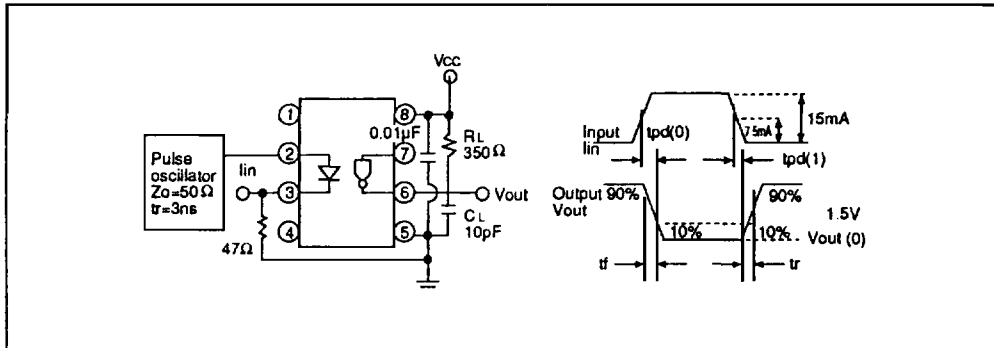
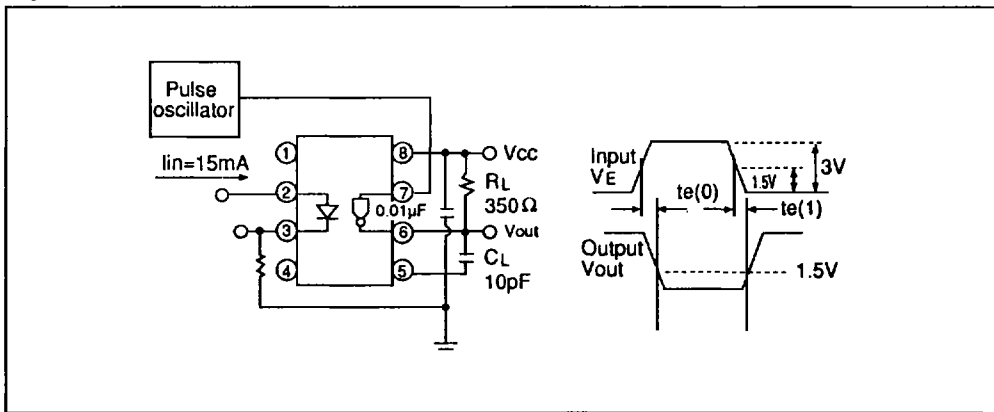
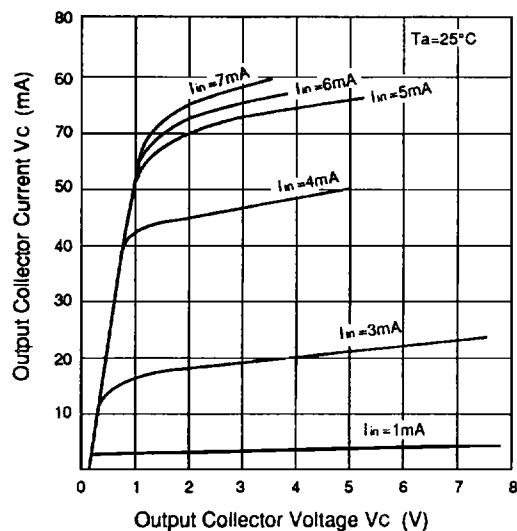


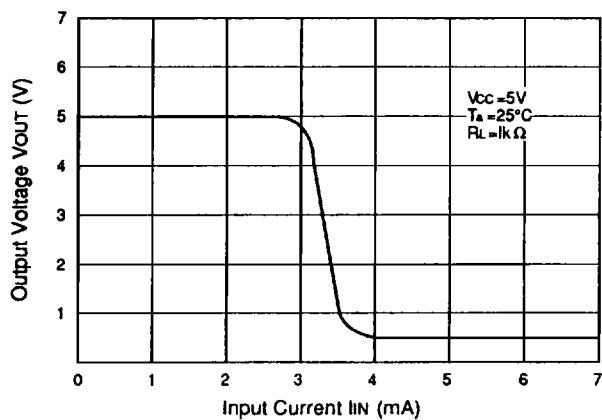
Figure 2



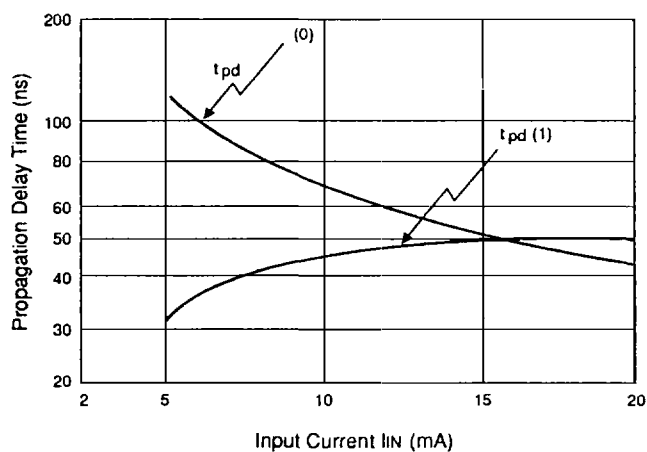
• Output Collector Current vs. Output Collector Voltage



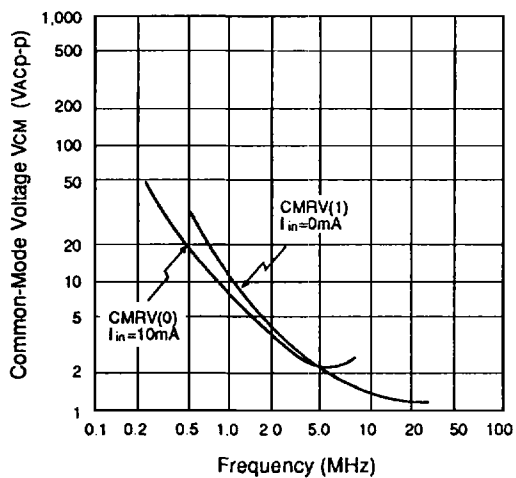
• Output Voltage vs. Input Current



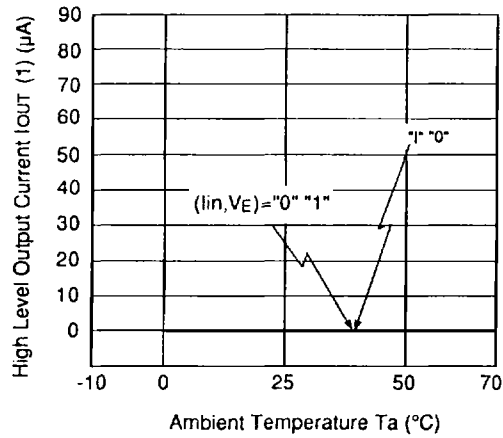
• Propagation Delay Time vs Input Current



• Common-Mode Rejection Voltage vs. Frequency



• High Level Output Current vs. Temperature



• Output Voltage vs. Temperature

