

# OKI electronic components

## OC701

### PHOTOCOUPLER

#### GENERAL DESCRIPTION

The OC701 is a photocoupler formed by combining an infrared light emitting diode as the input element, and a photo Darlington transistor as an output element. Encased in a 6-pin plastic package, the OC701 has high conversion characteristics, and is suitable for such applications as interface circuits in low-current drives.

#### FEATURES

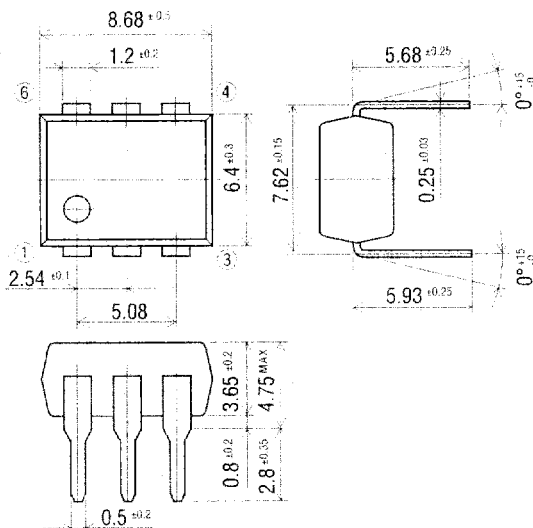
- High current transfer ratio: 1000% (Min.)
- High isolation voltage: 2,500 V (Min.)
- Collector-emitter voltage: 320 V (Min.)
- 6-pin plastic DIP
- UL recognized — File number : E86831

#### APPLICATIONS

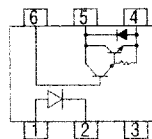
- Power separating circuit and SSR

#### PIN CONFIGURATION

(Unit: mm)



• Pin Connection Diagram



- |              |                   |
|--------------|-------------------|
| 1: Anode     | (LED)             |
| 2: Cathode   | (LED)             |
| 3: NC        | (No connection)   |
| 4: Emitter   | (Phototransistor) |
| 5: Collector | (Phototransistor) |
| 6: Base      | (Phototransistor) |

## ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Test Condition	Rating	Unit
Input Diode (LED)	Forward Current	$I_F$	Ta=25°C	60	mA
	Pulse Forward Current *	$I_{FRM}$		0.5	A
	Reverse Voltage	$V_R$		3.0	V
	Power Dissipation	$P_D$		100	mW
Output Transistor (Photo-Tr)	Collector-Emitter Voltage	$V_{CEO}$		320	V
	Collector-Base Voltage	$V_{CBO}$		320	V
	Emitter-Base Voltage	$V_{EBO}$		8	V
	Collector Current	$I_C$		150	mA
	Power Dissipation	$P_C$		300	mW
Total Dissipation	$P_{tot}$			350	mW
Isolation Voltage	Vin-out		2500	V	
Operating Temperature	$T_{opr}$	—	-20 to +100	°C	
Storage Temperature	$T_{stg}$	—	-55 to +100	°C	

\* At pulse width 100  $\mu$ s, duty ratio 1%

## ELECTRICAL CHARACTERISTICS

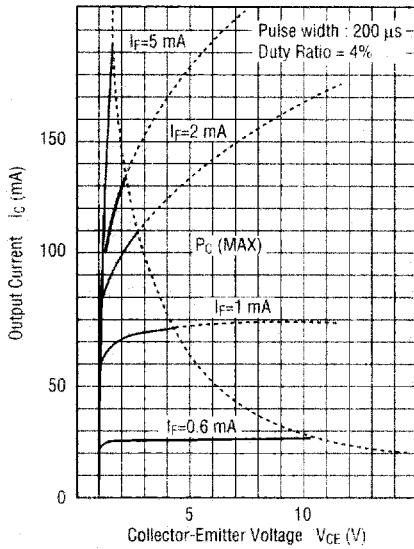
(Ambient Temperature Ta=25°C)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Characteristics	Forward Voltage	$V_F$	$I_F=40$ mA	—	—	1.4	V
	Reverse Current	$I_R$	$V_R=3.0$ V	—	—	10	$\mu$ A
Output Characteristics	Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=0.1$ mA	320	—	—	V
	Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=0.1$ mA	320	—	—	V
	Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_C=10$ $\mu$ A	8	—	—	V
	Dark Current	$I_{CEO}$	$V_{CE}=200$ V	—	—	1.0	$\mu$ A
Transfer Characteristics	Output Current	$I_C$	$I_F=1$ mA, $V_{CE}=2$ V	10	—	—	mA
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=16$ mA, $I_C=100$ mA	—	—	1.2	V
	Isolation Resistance	Rin-out	Vin-out=500 V	$10^{11}$	—	—	$\Omega$
Transfer Characteristics	Rise Time	$t_r$	$V_{CE}=2$ V, $I_C=20$ mA	—	100	—	$\mu$ s
	Fall Time	$t_f$	$R_L=100$ $\Omega$	—	35	—	$\mu$ s
	Current Transfer Rate	CTR	$I_F=1$ mA, $V_{CE}=2$ V	1000*	—	—	%

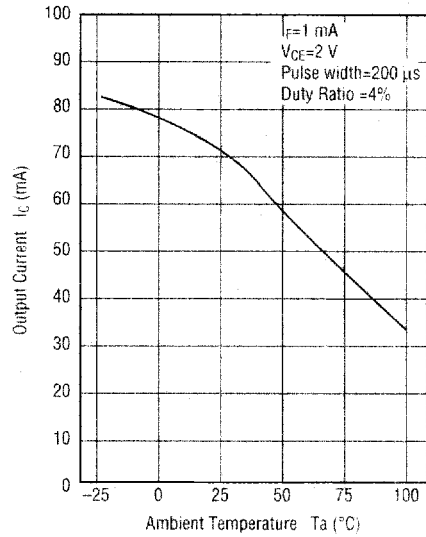
\* OC701-1 available for 4,000%

**TYPICAL CHARACTERISTICS**

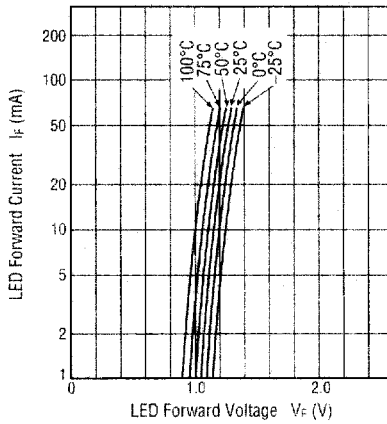
- **Output Current vs. Collector-Emitter Voltage ( $T_a=25^\circ\text{C}$ )**



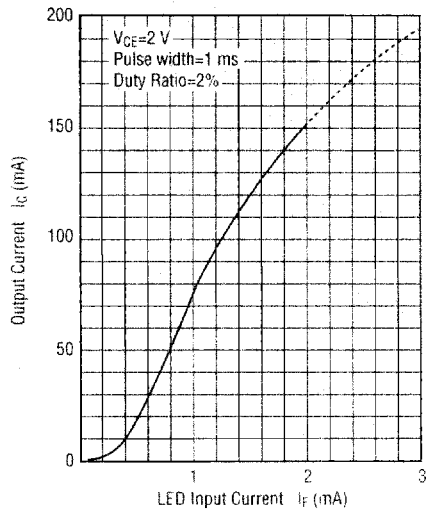
- **Output Current vs. Ambient Temperature**



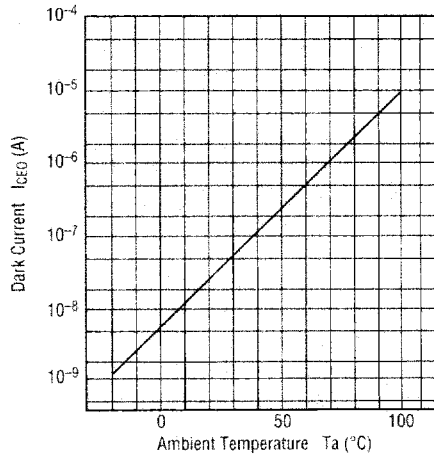
- **LED Forward Current vs. LED Forward Voltage**



- **Output Current vs. LED Input Current ( $T_a=25^\circ\text{C}$ )**



• Dark Current vs. Ambient Temperature



• Switching Time vs. Load Resistance ( $T_a=25^\circ\text{C}$ )

