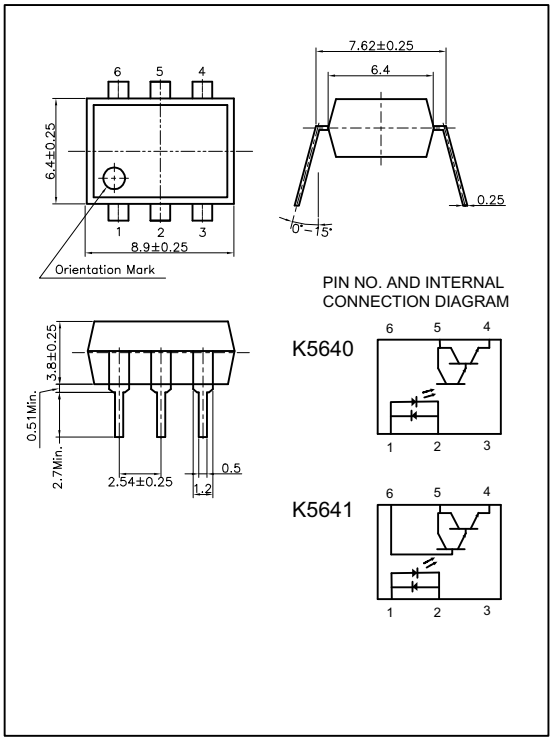
Photocoupler

K5640 • K5641

These Photocouplers cosist of two Gallium Arsenide Infrared Emitting Diodes and a Silicon NPN PhotoDarlington transistor in a 6-pin package.

DIMENSION (Unit : mm)



FEATURES

- Collector-Emitter Voltage : Min.35V
- Current Transfer Ratio : Typ.500% (at I_F=A1mA, V_{CE}=2V)
- Electrical Isolation Voltage : AC5000V_{rms}
- Without Base Connection : K5640
- With Base Connection : K5641
- UL Recognized File No. E107486

APPLICATIONS

- Interface between two circuits of different potential
- Telephone Line Receiver
- Automatic Vending Machine
- Power Supply Regulators

MAXIMUM RATINGS

(Ta=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I_F	±60	mA
	Peak Forward Current *1	I_{FP}	± 1	A
	Power Dissipation	P_D	150	mW
	Junction Temperature	T_J	125	℃
Output	Collector-Emitter Breakdown Voltage	BV_{CEO}	35	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	6	V
	Collector-Base Breakdown Voltage**	BV_{CBO}	35	V
	Collector Current	I_C	50	mA
	Collector Power Dissipation	P_C	150	mW
Input to Output Isolation Voltage*2		V_{iso}	AC5000	V_{rms}
Storage Temperature		T_{stg}	-55~+125	℃
Operating Temperature		T_{opr}	-30~+100	℃
Lead Soldering Temperature*3		T_{sol}	260	℃
Total Power Dissipation		P_{tot}	200	mW

** Except for K5640

*1. Input current with 100ms pulse width, 1% duty cycle

*2. Measured at RH=40~60% for 1min

*3. 1/16 inch form case for 10sec

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ELECTRO-OPTICAL CHARACTERISTICS (Ta=25℃ , unless otherwise noted)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit.
Input	Forward Voltage	V_F	I_F= ±10mA	-	1.15	1.30	V
	Capacitance	C_T	V=0, f=1MHz	-	30	-	pF
Output	Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=1mA	35	-	-	V
	Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E=0.1mA	6	-	-	V
	Collector-Base Breakdown Voltage **	BV_{CBO}	I_C=0.1mA	35	-	-	V
	Collector Dark Current	I_{CEO}	I_F=0, V_{CE}=10V	-	-	100	nA
	Capacitance	C_{CE}	V_{CE}=0, f=1MHz	-	10	-	pF
Coupled	Current Transfer Ratio *4	CTR	I_F= ±1mA, V_{CE}=2V		500	-	%
	Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_F= ±1mA, I_C=2mA	-	0.85	1.0	V
	Input-Output Capacitance	C_{IO}	V=0, f=1MHz	-	1	-	pF
	Input-Output Isolation Resistance	R_{IO}	RH=40~60%, V=500V	-	10^{11}	-	Ω
	Rise Time	tr	V_{CE}=10V, R_L=100	-	100	-	μs
	Fall Time	tf	I_C=2mA	-	100	-	μs

** Except for K5640

*4. CTR=(I_C/I_F) X 100 (%)

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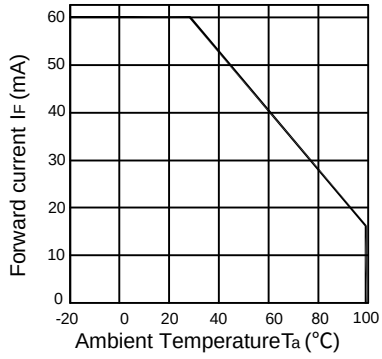
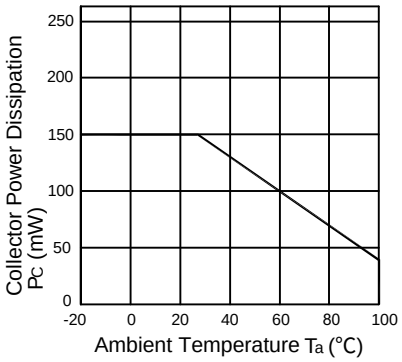
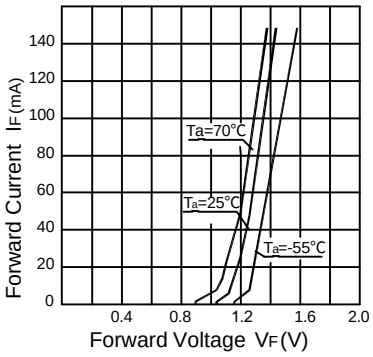
Forward Current vs. Ambient Temperature



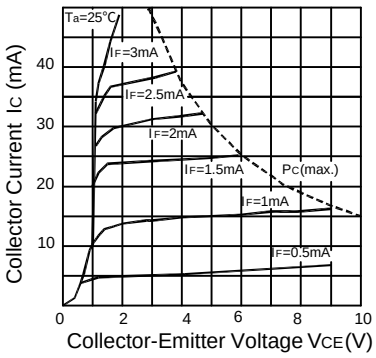
Collector Power Dissipation vs. Ambient Temperature



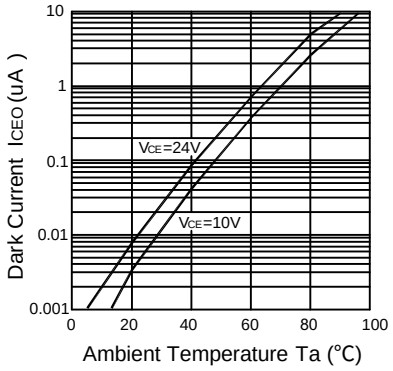
Forward Current vs. Forward Voltage



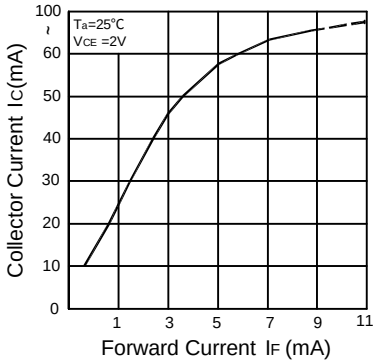
Collector Current vs. Collector-Emitter Voltage



Dark Current vs. Ambient Temperature



Collector Current vs. Forward Current



Switching Time Test Circuit