

PC110L/PC111L PC112L/PC113L

Long Creepage Distance Type Photocoupler

* Lead forming type (I type) and taping reel type (P type) are also available. (PC110LI / PC111LI / PC112LI / PC113LI, PC110LP0 / PC111LP0 / PC112LP0 / PC113LP0)

* DIN-VDE0884 approved type is also available as an option.

■ Features

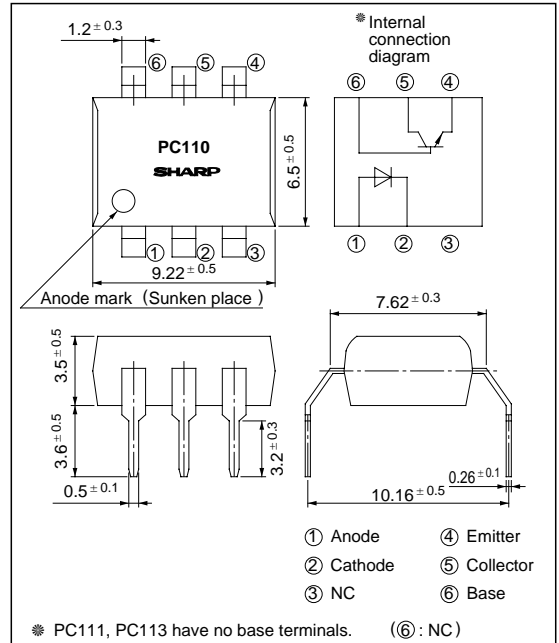
1. Long creepage distance type (Creepage distance : 8mm or more) *1
2. Internal insulation distance : 0.5mm or more
3. Recognized by UL(No. E64380)
Approved by VDE (DIN-VDE0884 : No. 77292)
Approved by BSI (BS415 : 6690, BS7002 : 7421)
Approved by SEMKO (**PC110L** : No. 8705118
PC111L : No. 8705119
PC112L : No. 8705120
PC113L : No. 8705121)

Approved by DEMKO (No. 37150)

4. High collector-emitter voltage
(V_{CE0} : 70V) : **PC112L/PC113L**
 5. High isolation voltage between input and output (V_{iso} : 5 000V_{rms})
 6. Dual-in-line package
- *1 Allows pin-to-pin distance minus PWB land space to be 8mm or more.

■ Outline Dimensions

(Unit : mm)



■ Applications

1. Switching power supplies
2. Home appliances and OA equipment for export to Europe
3. System appliances, measuring instruments

Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit	
Input	Forward current	I_F	50	mA	
	*2Peak forward current	I_{FM}	1	A	
	Reverse Voltage	V_R	6	V	
	Power dissipation	P	70	mW	
Output	Collector-emitter voltage	PC110L/PC111L	35	V	
		PC112L/PC113L	70		
	Emitter-collector voltage	V_{ECO}	6	V	
	*3Collector-base voltage	PC110L	35	V	
		PC112L	70		
	*3Emitter-base voltage	PC110L/PC112L	V_{EBO}	6	V
	Collector current	I_C	50	mA	
	Collector power dissipation	PC110L/PC111L	P _C	150	mW
PC112L/PC113L		160			
Total power dissipation	PC110L/PC111L	P _{tot}	170	mW	
	PC112L/PC113L		200		
*4Isolation voltage		V_{iso}	5 000	V _{rms}	
Operating temperature		T_{opr}	- 30 to + 100	°C	
Storage temperature		T_{stg}	- 55 to + 125	°C	
*5Soldering temperature		T_{sol}	260	°C	

*2 Pulse width ≤ 100 μs, Duty ratio: 0.001

*3 Applies only to PC110L, PC112L.

*4 40 to 60% RH, AC for 1 minute

*5 For 10 seconds

Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F = 20\text{mA}$	-	1.2	1.4	V	
	Reverse current	I_R	$V_R = 4\text{V}$	-	-	10	μA	
	Terminal capacitance	C_t	$V = 0, f = 1\text{kHz}$	-	30	250	pF	
Output	Collector dark current	I_{CEO}	$V_{CE} = 20\text{V}, I_F = 0, R_{BE} = \infty$	-	-	10^{-7}	A	
	Collector-emitter breakdown voltage	PC110L/PC111L	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0$	35	-	-	V
		PC112L/PC113L			70	-	-	
	Emitter-collector breakdown voltage	BV_{ECO}	$I_E = 10\mu\text{A}, I_F = 0$	6	-	-	V	
	Collector-base breakdown voltage	PC110L	BV_{CBO}	$I_C = 0.1\text{mA}, I_F = 0$	35	-	-	V
PC112L		70			-	-		
Transfer characteristics	Current transfer ratio	PC110L	CTR	$I_F = 5\text{mA}, V_{CE} = 5\text{V}, R_{BE} = \infty$	50	-	400	%
		PC111L			50	100	400	
		PC112L/PC113L			40	-	320	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 1\text{mA}, R_{BE} = \infty$	-	0.1	0.2	V	
	Isolation resistance	R_{ISO}	DC500V, 40 to 60% RH	5×10^{10}	1×10^{11}	-	Ω	
	Floating resistance	C_f	$V = 0, f = 1\text{MHz}$	-	0.6	1.0	pF	
	Cut-off frequency	f_c	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega, - 3\text{dB}$	-	80	-	kHz	
	Response time	Rise time	PC110L/PC111L	$V_{CE} = 2\text{V}, I_C = 2\text{mA}$ $R_L = 100\Omega$	t_r	-	4	18
PC112L/PC113L			-			4	15	
Fall time		PC110L/PC111L	-			3	18	μs
		PC112L/PC113L	-			3	15	

PC110L/PC111L

Model No.	CTR (%)
PC110L1/PC111L1	50 to 125
PC110L2/PC111L2	100 to 250
PC110L5/PC111L5	50 to 250
PC110L/PC111L	50 to 400

PC112L/PC113L

Model No.	CTR (%)
PC112L1/PC113L1	40 to 120
PC112L2/PC113L2	80 to 200
PC112L5/PC113L5	40 to 200
PC112L/PC113L	40 to 320