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SHARP

OPTO-ELECTRONIC DEVICES DIVISION
ELECTRONIC COMPONENTS GROUP
SHARP CORPORATION

SPECIFICATION

DEVICE SPECIFICATION FOR

PHOTOCOUPLER

MODEL No.

PC817

Business dealing name

	PC817XNNSZW
	PC817X1NSZW
	PC817XYNSZW

Product name : PHOTOCOUPLER

Model No. : PC817

Business dealing name

PC817XNNSZW
PC817X1NSZW
PC817X2NSZW
PC817X3NSZW
PC817X4NSZW
PC817X5NSZW
PC817X6NSZW
PC817X7NSZW
PC817X8NSZW
PC817X9NSZW
PC817X0NSZW

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2. When using this product, please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets, as well as the precautions mentioned below. Sharp assumes no responsibility

1. Application

This specification applies to the outline and characteristics of photocoupler Model No. PC817series.

2. Outline — Refer to the attached sheet, page 3.

3. Ratings and characteristics — Refer to the attached sheet, page 4, 5.

4. Reliability — Refer to the attached sheet, page 6.

5. Outgoing inspection — Refer to the attached sheet, page 7.

6. Supplement

6.1 Isolation voltage shall be measured in the following method.

(1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.

(2) The dielectric withstanding tester with zero-cross circuit shall be used.

(3) The wave form of applied voltage shall be a sine wave.

(It is recommended that the isolation voltage be measured in insulation oil.)

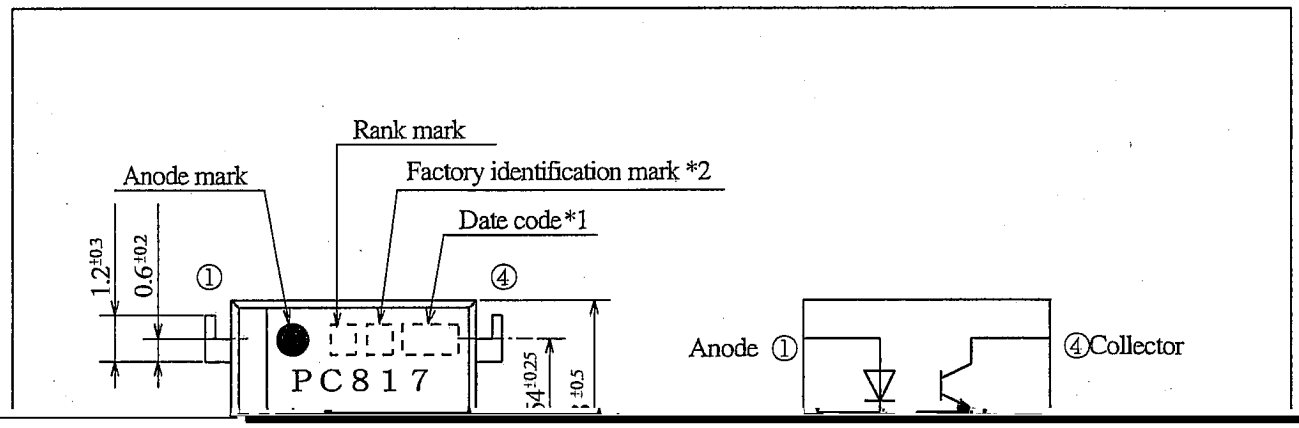
6.2 Package specifications — Refer to the attached sheet, page 8, 9.

6.3 Business dealing name ("○" mark indicates business dealing name of ordered product)

Ordered product	Business dealing name	Rank mark	Ic (mA)
	PC817XNNSZW	with or without	2.5 to 30
	PC817X1NSZW	A	4.0 to 8.0
	PC817X2NSZW	B	6.5 to 13
	PC817X3NSZW	C	10 to 20
	PC817X4NSZW	D	15 to 30
	PC817X5NSZW	A or B	4.0 to 13

Test conditions
I_F=5mA V_{CE}=5V Ta=25°C

2. Outline



3. Ratings and characteristics

3.1 Absolute maximum ratings Ta=25℃

Parameter			Symbol	Rating	Unit
Input	*1	Forward current	I_F	50	mA
	*2	Peak forward current	I_{FM}	1	A
		Reverse voltage	V_R	6	V
	*1	Power dissipation	P	70	mW
Output		Collector-emitter voltage	V_{CEO}	80	V
		Emitter-collector voltage	V_{ECO}	6	V
		Collector current	I_c	50	mA
	*1	Collector power dissipation	P_c	150	mW
*1		Total power dissipation	P_{tot}	200	mW
		Operating temperature	T_{opr}	-30 to +100	℃
		Storage temperature	T_{stg}	-55 to +125	℃
*3		Isolation voltage	$V_{iso(rms)}$	5	kV
*4		Soldering temperature	T_{sol}	270	℃

*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig. 1 to 4.

*2 Pulse width≦100 μs, Duty ratio : 0.001 (Refer to Fig. 5)

*3 AC for 1 min, 40 to 60%RH

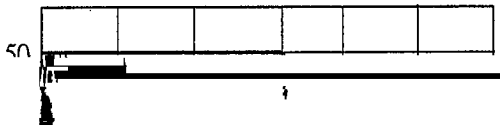
*4 For 10 s

3.2 Electro-optical characteristics Ta=25℃

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	I_F=20mA	-	1.2	1.4	V
	Peak forward voltage	V_{FM}	I_{FM}=0.5A	-	-	3.0	V
	Reverse current	I_R	V_R=4V	-	-	10	μA
	Terminal capacitance	C_t	V=0, f=1kHz	-	30	250	pF
Output	Dark current	I_{CEO}	V_{CE}=50V, I_F=0	-	-	100	nA
	Collector-emitter breakdown voltage	BV_{CEO}	I_C=0.1mA I_F=0	80	-	-	V

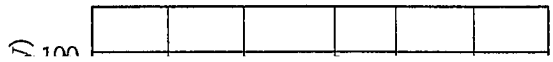
(Fig. 1)

Forward current vs. ambient temperature



(Fig. 2)

Diode power dissipation vs. ambient temperature



4. Reliability

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Test Items	Condition	Failure Judgment Criteria	Samples (n) Defective (C)
Solder ability *2	245±3°C, 3s	-	n=11, C=0
Soldering heat	(Flow soldering) 270°C, 10 s	$V_F > U \times 1.2$ $I_R > U \times 2$ $I_{CEO} > U \times 2$ $I_C < L \times 0.7$ $V_{CE(sat)} > U \times 1.2$ U: Upper specification limit L: Lower specification limit	n=11, C=0
	(Soldering by hand) 400°C, 3 s		
Terminal strength (Tension)	Weight: 5N 5 s/each terminal		n=11, C=0
Terminal strength (Bending) *3	Weight: 2.5N 2 times/each terminal		n=11, C=0
Mechanical shock	15km/s^2, 0.5ms 3 times/±X, ±Y, ±Z direction		n=11, C=0
Variable frequency vibration	100 to 2000 to 100Hz/4 min 200m/s^2 4 times/X, Y, Z direction		n=11, C=0
Temperature cycling	1 cycle –55 °C to +125 °C (30 min) (30 min) 20 cycles test		n=22, C=0
High temp. and high Humidity storage	+60, 90H, 1000h		n=22, C=0
High temp. storage	+125 °C, 1000h		n=22, C=0
Low temp. storage	-55 °C, 1000h		n=22, C=0
	I_F=50mA, P_{tot}=200mW		

5. Outgoing inspection

5.1 Inspection items

(1) Electrical characteristics

V_F, I_R, I_{CEO}, $V_{CE(sat)}$, I_c, R_{ISO}, V_{iso}

(2) Appearance

5.2 Sampling method and Inspection level

A single sampling plan, normal inspection level II based on ISO 2859 is applied.

The AQL according to the inspection items are shown below.

Defect	Inspection item	AQL (%)
Major defect	Electrical characteristics Unreadable marking	0.065
Minor defect	Appearance defect except the above mentioned.	0.25

6.2 Package specification

6.2.1 Package materials

No.	Name	Materials	Purposes
①	Sleeve	HIPS with preventing static electricity	Products packaged
②	Stopper	Styrene-Elastomer	Products fixed
③	Packing case	Corrugated cardboard	Sleeve packaged
④	Kraft tape	Paper	Lid of packaged case fixed
⑤	Label	Paper	Model No., quantity, inspection date and lot No. specified

6.2.2 Package method

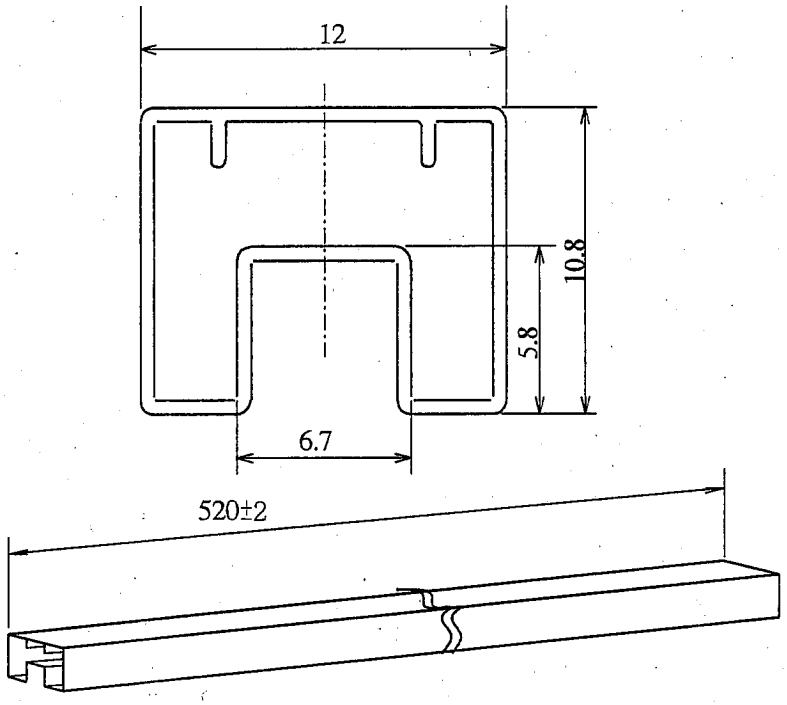
(1) MAX. 100pcs. of products shall be packaged in a sleeve and both of sleeve edges shall be fixed by stoppers.

(2) MAX. 20 sleeves above shall be packaged in a packing case and pack a sheet of cushion at one side.

(3) Model No., quantity, inspection date and lot No. shall be marked on the label and this label shall be put on the side of the packaging case.

(4) Case shall be closed with the lid and enclosed with kraft tape.

6.2.3 Sleeve ① outline dimensions



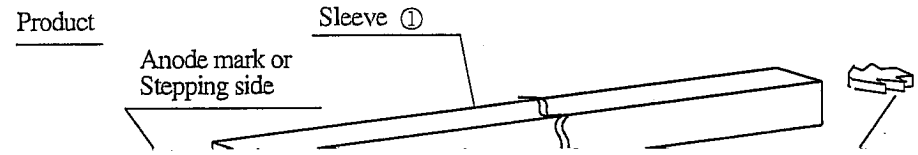
Note 1) Thickness : 0.5±0.2mm

2) Outer R : 0.5mm

3) Process with applying antistatic treatment.

4) Unless otherwise specified tolerances shall be ±0.5mm
(However except for deformation due to the rubber stopper in sleeve.)

6.2.4 Packaging case outline dimensions



REFERENCE

Precautions for Photocouplers

1. Precautions for cleaning

(1) Solvent cleaning : Solvent temperature 45℃ or less
Immersion for 3 min or less

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output, cleaning time, PCB size or device mounting condition etc.
Please test it in actual using condition and confirm that doesn't occur any defect before starting the ultrasonic cleaning.

(3) Applicable solvent : Ethyl alcohol, Methyl alcohol, Isopropyl alcohol
When the other solvent is used, there are cases that the packaging resin is eroded.
Please use the other solvent after thorough confirmation is performed in actual using condition.

2. Precautions for Circuit design

(1) The LED used in the Photocoupler generally decreases the light emission power by operation.
In case of long operation time, please design the circuit with considering the degradation of the light emission power of the LED. (50%/5years)