

■ PHOTOTRANSISTOR LINEUP

Package	Output type	Features	Half sensitivity angle	Model No.	
				Standard	Visible light cut-off
Epoxy resin with lens (ø3 mm)	Single phototransistor	General purpose	±20°	PT380	PT380F
	Darlington phototransistor	High sensitivity	±20°	PT381	PT381F
Epoxy resin with lens	Single phototransistor	General purpose/Narrow acceptance	±13°	PT480	PT480F
		Compact, thin	±35°	PT4800	PT4800F / PT4850F
	Darlington phototransistor	High sensitivity/Narrow acceptance	±13°	PT481	PT481F
		High sensitivity/Narrow acceptance/Long lead	±13°	—	PT483F1
		High sensitivity/Compact, thin	±35°	PT4810	PT4810F
		High sensitivity/Intermediate acceptance	±40°	—	PT491F
		High sensitivity/Intermediate acceptance/Long lead	±40°	—	PT493F
		High sensitivity/Intermediate acceptance/Long lead	±40°	—	PT495F
TO-18	Single phototransistor	Narrow acceptance	±6°	PT501	—
		Narrow acceptance/With base terminal	±6°	PT510	—
	Darlington phototransistor	Narrow acceptance/With base terminal	±6°	PT550	—
		Narrow acceptance/With base terminal	±50°	PT550F	—
Leadless	Single phototransistor	Subminiature	±60°	PT600T	—
		Subminiature (side view/top view mounting possible)	±15°	PT100MCOMP	PT100MF0MP
	Darlington phototransistor	Subminiature	±60°	PT601T	—

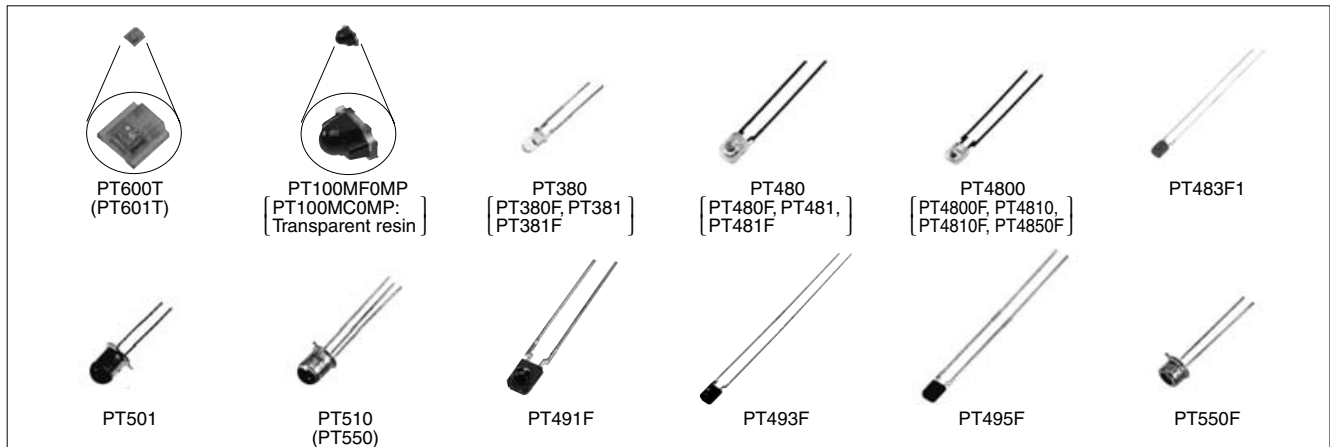
PHOTOTRANSISTORS

(Ta = 25°C)

Type	Model No.	Package	Absolute maximum ratings			Ic (mA)				ICEO(A)		$\Delta\theta$ (°) TYP.	λ_p (nm) TYP.
			VCE0 (V)	Pc (mW)	Topr (°C)	MIN.	MAX.	VCE (V)	Ee (mW/cm ²)	MAX.	VCE (V)		
Single	PT380	ø3 resin	35	50	-25 to +85	0.16	1.17	5	100 lx	1×10^{-7}	20	±20	800
	PT380F*1		35	50	-25 to +85	0.095	0.9	5	100 lx	1×10^{-7}	20	±20	860
	PT600T	Leadless chip-type	35	50	-25 to +85	0.7	TYP. 3.5	5	5	1×10^{-7}	20	±60	880
	PT100MCOMP		35	75	-30 to +85	1.7	5.1	5	1	1×10^{-7}	20	±15	900
	PT100MFOMP*1		35	75	-30 to +85	1.15	3.45	5	1	1×10^{-7}	20	±15	910
	PT480	Resin with lens	35	75	-25 to +85	0.4	TYP. 1.7	5	1	1×10^{-7}	20	±13	800
	PT480F*1		35	75	-25 to +85	0.25	TYP. 0.8	5	1	1×10^{-7}	20	±13	860
	PT4800		35	75	-25 to +85	0.12	TYP. 0.4	5	1	1×10^{-7}	20	±35	800
	PT4800F*1		35	75	-25 to +85	0.08	TYP. 0.25	5	1	1×10^{-7}	20	±35	860
	PT4850F*1		35	75	-25 to +85	0.12	0.56	5	1	1×10^{-7}	20	±35	860
PT501	TO-18	45	75	-25 to +125	2.5	TYP. 10	5	10	1×10^{-7}	30	±6	800	
PT510		35	75	-25 to +125	2.5	TYP. 20.0	5	10	1×10^{-7}	30	±6	800	
Darlington	PT381	ø3 resin	35	50	-25 to +85	0.12	1.5	10	2 lx	1×10^{-6}	10	±20	800
	PT381F*1		35	50	-25 to +85	0.07	1.08	10	2 lx	1×10^{-6}	10	±20	860
	PT481	Resin with lens	35	75	-25 to +85	1.5	25	2	0.1	1×10^{-6}	10	±13	800
	PT481F*1		35	75	-25 to +85	0.9	27	2	0.1	1×10^{-6}	10	±13	860
	PT4810		35	75	-25 to +85	0.45	7.0	2	0.1	1×10^{-6}	10	±35	800
	PT4810F*1		35	75	-25 to +85	0.27	6.0	2	0.1	1×10^{-6}	10	±35	860
	PT483F1*1		35	75	-25 to +85	1.5	4.0	2	0.1	1×10^{-6}	10	±13	860
	PT491F*1		35	75	-25 to +85	0.2	0.8	2	2 lx	1×10^{-6}	10	±40	860
	PT493F*1		35	75	-25 to +85	0.2	0.8	2	2 lx	1×10^{-6}	10	±40	860
	PT495F*1		35	75	-25 to +85	0.2	0.8	2	2 lx	1×10^{-6}	10	±40	860
	PT550	TO-18	35	150	-25 to +125	3	TYP. 20.0	5	0.1	1×10^{-6}	10	±6	800
	PT550F		35	150	-25 to +125	3	TYP. 20.0	5	1.0	1×10^{-6}	10	±50	800
	PT601T	Leadless chip-type	35	50	-25 to +85	0.03	0.3	10	0.01	1×10^{-6}	10	±60	880

*1 Visible light cut-off type

Note) Some products are handled by the Compound Semiconductor Division.



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■ PIN PHOTODIODES

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm ²)	Topr (°C)	Isc (μA) MIN.	Ev (lx)	Id (A) MAX.	VR (V)	tr, tf (μs) TYP.	VR (V)	RL (kΩ)	λp (nm) TYP.
PD49PI*1	PIN type	Visible light cut-off resin	7.73	-25 to +85	2.4	100	3 × 10 ⁻⁸	10	0.2	10	1	1 000
PD410PI*1		Visible light cut-off resin with condenser (lens)	3.31	-25 to +85	2.5	100	1 × 10 ⁻⁸	10	0.2	10	1	1 000
PD411PI		With transparent condenser (lens)	3.31	-25 to +85	5	100	1 × 10 ⁻⁸	10	0.2	10	1	960
PD412PI*2		With transparent condenser (lens)	3.31	-25 to +85	3.5	100	1 × 10 ⁻⁸	10	0.25	10	1	800
PD413PI*1	PIN type IrDA1.0	Visible light cut-off resin with condenser (lens)	3.31	-25 to +85	MIN. 4.5 (TYP. 5.4)	100	1 × 10 ⁻⁸	10	0.2	10	1	(820 to 1 040)
PD414PI*1 ▲	PIN type, High speed response	Visible light cut-off resin with condenser (lens)	-	-25 to +85	1.3	100	2 × 10 ⁻⁸	10	40 (MHz)	5	5	960
PD480PI	PIN type	Transparent epoxy resin	0.3	-25 to +85	1	100	1 × 10 ⁻⁸	10	0.1	10	1	950
PD481PI*1		Visible light cut-off resin	7.73	-25 to +85	3.5	100	3 × 10 ⁻⁸	10	1	3	0.2	960
PD60T	Chip device type	Transparent epoxy resin	-	-25 to +85	TYP. 4	1 000	1 × 10 ⁻⁸	10	0.1	10	1	960
PD100MCOMP	Leadless chip-type	Transparent epoxy resin	-	-30 to +85	0.6	100	1 × 10 ⁻⁸	10	0.1	15	0.18	820
PD100MFOMP*1	Leadless chip-type	Visible light cut-off resin	-	-30 to +85	0.4	100	1 × 10 ⁻⁸	10	0.1	15	0.18	850

*1 Visible light cut-off type

*2 Tape packaging type (PD412TN)

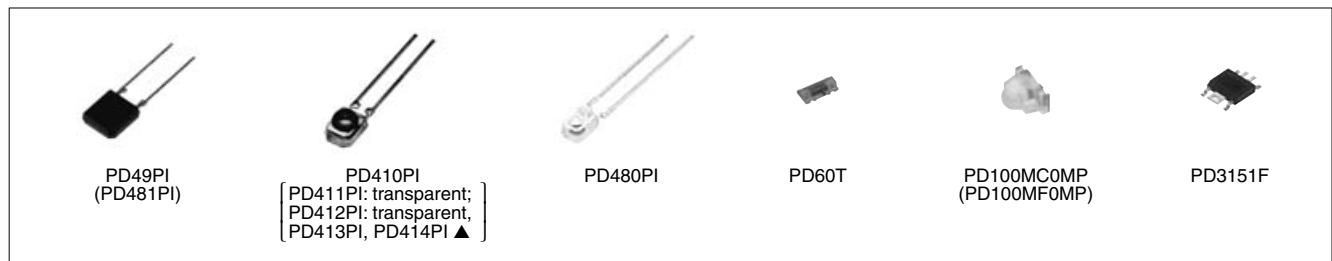
The model marked with ▲ may not be available in the near future. Contact Sharp sales personnel for details before use.

■ PSD (Position Sensitive Detector)

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm ²)	Topr (°C)	IL (μA) MIN.	Ev (lx)	Interelectrode resistance (kΩ) TYP.	VR (V)	tr, tf (μs) TYP.	VR (V)	RL (kΩ)	Position detection error (μm) MAX.
PD3151F	Position sensitive detector With mounting hole	Visible light cut-off resin	1.2 (0.8 × 1.5 mm)	-25 to +85	6	1 000	320 to 480	1	5	1	1	±25

Custom-made products (detecting portion changed products) are also available.



■ BLUE SENSITIVE PHOTODIODES

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm ²)	Topr (°C)	Isc (μA) MIN.	Ev (lx)	Id (A) MAX.	VR (V)	λp (nm) TYP.
BS120	Planer type	Resin (black)	1.55	-20 to +60	0.14	100	1 × 10 ⁻¹¹	1	560
BS520			5.34	-20 to +60	0.4	100	1 × 10 ⁻¹¹	1	560



■ LASER POWER MONITORING DIODE FOR OPTICAL DISC SYSTEM

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm ²)	Topr (°C)	Isc (μA) MIN.	Ev (lx)	Id (A) MAX.	VR (V)	λp (nm) TYP.
PD101SC0SS	High response speed (cut-off frequency: 400 MHz)	Transparent epoxy resin	-	-25 to +85	360	100	1 × 10 ⁻⁹	5	820

Internet address for Electronic Components Group
<http://sharp-world.com/ecg/>

Notice

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OPIC LIGHT DETECTORS

“OPIC” (Optical IC) is a trademark of the SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics								
			V _{CC} (V)	P (mW)	I _O (mA)	T _{opr} (°C)	EV _{LH} (lx) MAX.	EV _{HL} (lx) MAX.	V _{CC} (V)	t _{PLH} (μs) TYP.	t _{PHL} (μs) TYP.	V _{CC} (V)	Ev (lx)	R _L (Ω)	
IS485	Built-in schmidt trigger circuit, amplifier and voltage regulator	Resin with lens	-0.5 to +17	175	50	-25 to +85	-	35	5	5	3	5	50	280	
IS486			-0.5 to +17	175	50	-25 to +85	35	-	5	3	5	5	50	280	
IS488			-0.5 to +35	175	50	-25 to +85	35 ^{*1}	-	5	3	5	5	50	280	

*1 R_L = 280 Ω

<Low voltage operation>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics								
			P (mW)	I _O (mA)	T _{opr} (°C)	Operating supply voltage (V)	EV _{LH} (lx) MAX.	EV _{HL} (lx) MAX.	V _{CC} (V)	t _{PLH} (μs) TYP.	t _{PHL} (μs) TYP.	V _{CC} (V)	Ev (lx)	R _L (Ω)	
IS481	Built-in Schmidt trigger circuit and amplifier	Resin with lens	80	8	-25 to +85	2.3 to 7.0	-	15	5	3	9	5	50	1 200	
IS482 ▲			80	8	-25 to +85	2.3 to 7.0	15	-	5	9	3	5	50	1 200	
IS489			80	2	-25 to +85	1.4 to 7.0	-	15	3	1.3	8.5	3	125	3 000	

The model marked with ▲ may not be available in the near future. Contact Sharp sales personnel for details before use.

<Model employing a light modulating system>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics ²						External disturbing light illuminance EvDX(lx) TYP.
			V _{CC} (V)	P (mW)	I _O (mA)	T _{opr} (°C)	V _{OL} (V) MAX.	V _{OH} (V) MIN.	t _{PLH} (μs) TYP.	t _{PHL} (μs) TYP.	V _{CC} (V)	R _L (Ω)	
IS471F ^{*1,*3}	Built-in pulse driver circuit at the emitter side, synchronous detector circuit, amplifier circuit and demodulator circuit	Visible light cut-off epoxy resin	-0.5 to +16	250	50	-25 to +60	0.35	4.97	400	400	5	280	4 500

*1 IS471F is less susceptible to disturbing effects thanks to the light modulation system

*2 V_{CC} = 5 V

*3 Straight lead type (IS471FS) is also available.

<Linear output>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics ¹							
			V _{CC} (V)	P (mW)	I _{OL} (mA)	T _{opr} (°C)	I _{CC} (mA) MIN.	Ev (lx)	I _{O1} (μA) MIN.	Ev (lx)	I _{O2} (mA) MIN.	Ev (lx)	Output current ratio I _{O2} /I _{O1}	
IS455	Built-in amplifier and voltage regulator	Transparent epoxy resin	-0.5 to +8	150	-10	-25 to +85	0.2	0	-6.5	10	-0.65	1 000	92	108

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics ¹					
			V _{CC} (V)	P (mW)	I _{OL} (mA)	T _{opr} (°C)	I _{O1} (μA) TYP.	Ev (lx)	I _{O2} (μA) TYP.	Ev (lx)	Output current ratio I _{O2} /I _{O1} TYP.	Peak sensitivity wavelength λ _p (nm)
IS474	Built-in amplifier, special sensitivity akin to that of human eye	Case (with hook)	-0.5 to +8	150	-10	-25 to +85	-10	100	-100	1 000	10	TYP.550

*1 V_{CC} = 5 V

<For laser beam printer>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings			Electro-optical characteristics							
			V _{CC} (V)	I _{OL} (mA)	T _{opr} (°C)	V _{OH} (V) MIN.	V _{OL} (V) MAX.	H→L threshold incident light intensity (μW) TYP.	R _O (kΩ)	t _{PHL} (ns) MAX.	t _{PLH} (ns) MAX.	C _L (pF)	
IS456	Built-in amplifier circuit Detector: 2.3 × 0.5 mm	Mini-flat package	-0.5 to +7	20	-25 to +80	4.9	0.6	100	5.1	400	400	15	

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☆New product
★Under development

<Optical disk devices for RF signal detection>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics					
			Vcc (V)	P (mW)	Vk (V)	Topt (°C)	Icc (mA) MIN.	Vcc (V)	fc (MHz) TYP.	Vcc (V)	Vn (dBm) TYP.	f (Hz)
IS1682E	Built-in amplifier circuit, built-in RF addition amplifier (6-division PINPD + IC), for x50 CD-ROM	Transparent 10-pin package	6.0	-	-	-30 to +80	8.8	5	55 ¹ 70	5	-81	23.1M
IS1622	Built-in amplifier circuit (6-division PINPD + IC), switchable of sensitivity due to playback/recording mode for MD	Transparent mini-flat 10-pin package	-0.5 to +6.0	150	-0.5 to +6.0	-20 to +70	2.0/3.0 ²	3	5.3/3.8 ²	3	-90	720k
IS1623			-0.5 to +6.0	150	-0.5 to +6.0	-20 to +70	1.9/2.1 ²	3	5.3/3.8 ²	3	-90	720k
IS1640	Built-in amplifier circuit (6-division PINPD + IC), for x2 DVD-ROM drive	With sensitivity switching terminal enabling to read both of the 1st and the 2nd layer	6.0	-	-	-20 to +80	5.4/6.6 ³	5	(20/20) 27/27 ³	5	-72	10M
IS1650	Built-in RF addition amplifier, for x4 to x6 DVD-ROM drive	Transparent mini-flat 12-pin package	6.0	-	-	-30 to +80	8.8	5	(40/40) 65/55 ⁴	5	-81	23.1M
IS1684	Built-in RF amplifier, for x6 DVD-ROM drive	Transparent mini-flat 10-pin package	6.0	-	-	-30 to +80	8.8	5	(45/36) ⁴ 70/60	5	-81	23.1M
IS1685												
IS1660 ▲	Built-in RF amplifier, for x8 to x10 DVD-ROM drive	Transparent mini-flat 12-pin package	6.0	-	-	-30 to +80	8.8	5	(60/60) 85/85	5	-81	36M
GA200T8R1SZ	For x12 CD-R writable drive		(6.0)	-	-	-10 to +70	(TYP. 17)	5	(45/15) ⁵ 75/25	5	(-87)	23M
★ GA201TXR1ZZ	For x20 CD-R writable drive For x8 DVD-ROM read only	Transparent mini-flat 12-pin package (3.2 × 4.0 mm)	(6.0)	-	-	-10 to +80	(TYP. 21)	5	(50/50) 90/90	5	(-73)	45M
★ GA100T8R3MZ	Built-in RF amplifier, built-in bypass condenser for power supply, for x20 CD-R drive, for DVD-ROM drive	Leadless chip-type	(6.0)	-	-	-10 to +80	(TYP. 21)	5	(60/70) ⁶	5	-73	45M
☆ GA100TX03MZ ^{*7}	Built-in RF amplifier, built-in bypass condenser for power supply, for x16 DVD-ROM drive, 12-division PD type	Leadless chip-type	6.0	-	-	-10 to +80	TYP. 21	5	(90/80) 130/115 ⁴	5	-80	72M
☆ GA100T802MZ1	Built-in RF amplifier, built-in bypass condenser for power supply, for x16 DVD-ROM drive, 8-division PD type	Leadless chip-type	6.0	-	-	-10 to +80	TYP. 23	5	(90/80) 130/115 ⁴	5	-80	72M

<Laser power monitoring diode for optical disc system>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics			
			Vcc (V)	P (mW)	Vk (V)	Topt (°C)	Icc (mA) TYP.	Vcc (V)	fc (MHz) MIN.	Vcc (V)
★ GA102T1M1MZ	For x20 CD-R writable drive built-in amplifier circuit	Leadless chip-type	(6.0)	-	-	-20 to +70	11	5	40	5

*1 VA to VD

*4 V_{RF}/VA to VD, (): minimum value

*7 PD pattern tilt type (35°)

*2 Playback/recording mode

*5 VA to D/VE to H

*3 H gain mode/L gain mode

*6 MIN. values at 780 nm/at 650 nm

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