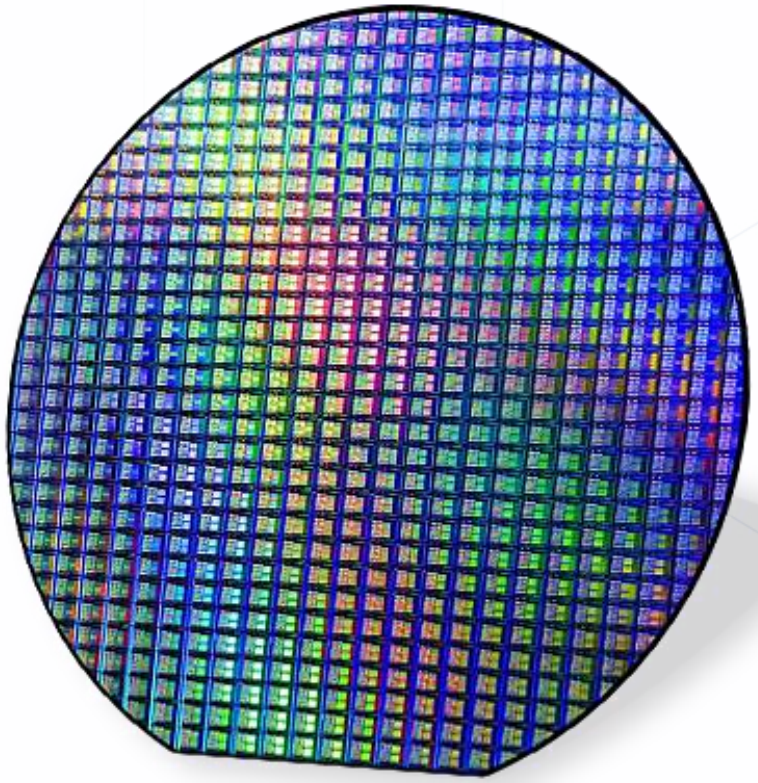
PROTON

PHOTODIODE ARRAYS

HIGH QUALITY POLYSILICON STRUCTURE

PRE-EMINENCE OF OUR CHIPS

- Superior reliability
- Better thermal conductivity
- High radiation stability



WIDE RANGE OF PRODUCTS

TECHNICAL SUPPORT

R&D\OEM

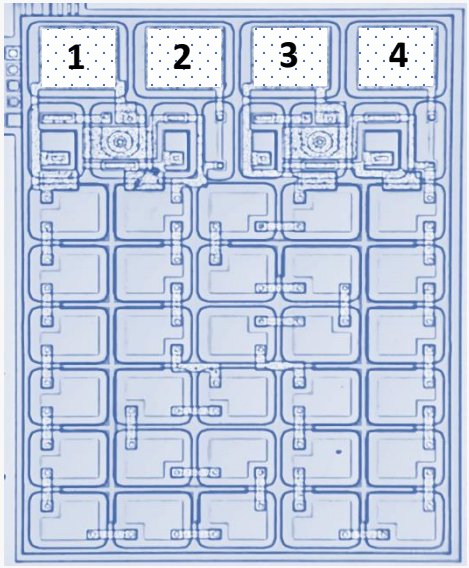
Description

The **FM15DP** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay. It consists of two independent photomatrixes. Can be used to control two independent transistors or as high voltage photomatrix.

Main features

- 30 (2x15) photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 1.0 x 1.4 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – GND1
2 – output1
3 – GND2
4 – output2



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6.0	7.5		1
Short Current	I_{SC}	µA	3.0	4.5	-	1
Output Voltage	V_{OUT}	V		0.7	1.0	2
Turn-On time	T_{ON}	ms		0.2		3
Turn-Off time	T_{OFF}	ms		0.1		3

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

1 – Light source with peak wavelength λ = 850±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 10 µA
3 – I_{RLED} = 10 mA with peak wavelength λ = 850 ± 20 nm, P = 1400 µW

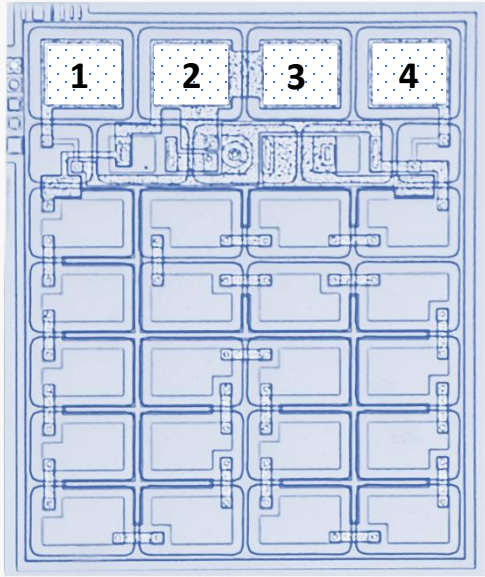
Description

The **FM24P** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay. Consists of 20 photodiodes that allows to control MOSFET chips with threshold voltage 2-4 V.

Main features

- 20 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 1.0 x 1.2 mm ±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – output
2 – GND
3 – GND
4 – output



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	11.0	11.4	-	1
Short Current	I_{SC}	µA	2.0	3.5	-	1
Output Voltage	V_{OUT}	V	-	0.7	0.9	2
Turn-On time	T_{ON}	ms		1.0		3
Turn-Off time	T_{OFF}	ms		0.2		3

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

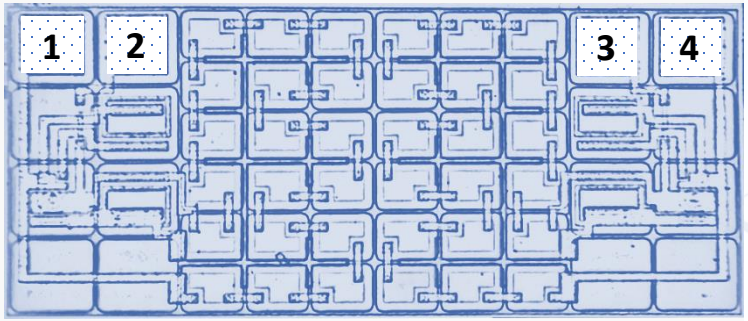
1 – Light source with peak wavelength λ = 850±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 10 µA
3 – I_{RLED} = 10 mA with peak wavelength λ = 850 ± 20 nm, P = 1400 µW

Description

The **FM229P** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay. Can be used as two separate MOSFETs` driver or high voltage photodiode array.

Main features

- 36 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 2.05 x 0.93 mm ±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.



1 – GND
2 – output
3 – output
4 – GND

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	9.0	10.0		1
Short Current	I_{SC}	µA	1.0	1.8	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Turn-On time	T_{ON}	ms		1.0		3
Turn-Off time	T_{OFF}	ms		0.5		3

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

1 – Light source with peak wavelength λ = 850±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 10 µA
3 – I_{RLED} = 10 mA with peak wavelength λ = 850 ± 20 nm, P = 1400 µW

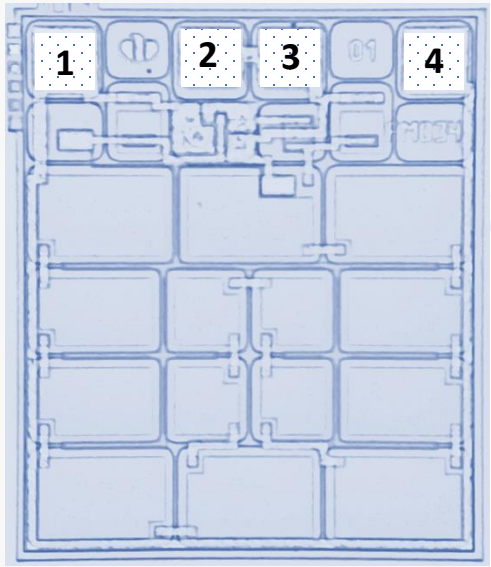
Description

The **FM034MP.01** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay.

Main features

- 14 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 1.2 x 1.4 mm ±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – output
2 – GND
3 – GND
4 – output



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	7.0	7.8	-	1
Short Current	I_{SC}	µA	3.4	4.2	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Turn-On time	T_{ON}	ms		1.0		C_L = 250 pF
Turn-Off time	T_{OFF}	ms		0.2		C_L = 250 pF

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

1 – Light source with peak wavelength λ = 850±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 100 µA

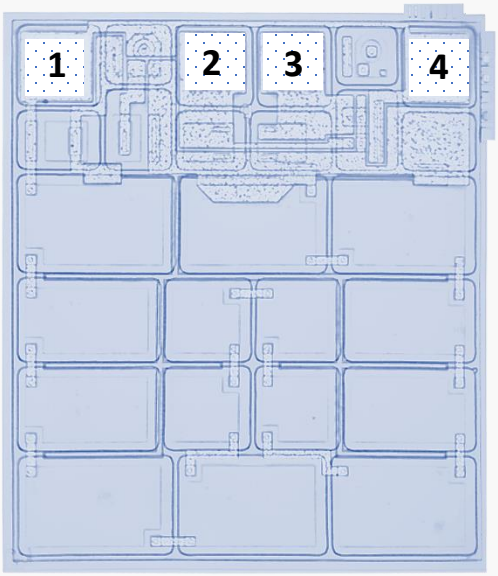
Description

FM037P is designed to be used in reactive load commutation MOS-relay and includes short current circuit limit. Chip fabricated using Silicon Bipolar process technology.

Main features

- 14 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 1.2 x 1.4 mm ±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – output
2 – GND
3 – GND
4 – output



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	7.0	8.0	-	1
Short Current	I_{SC}	µA	3.1	3.4	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Current Limit	Ilmt	mA	100	180	240	
Turn-On time	T_{ON}	ms		0.2		C_L = 250 pF
Turn-Off time	T_{OFF}	ms		0.1		C_L = 250 pF

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

1 – Light source with peak wavelength λ = 850±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 100 µA

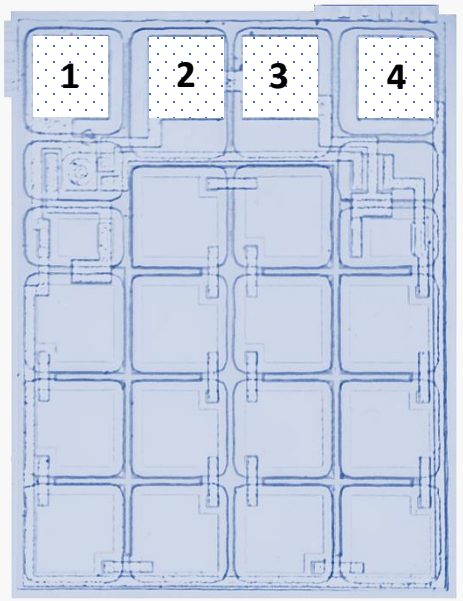
Description

The **FM043P** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay.

Main features

- 14 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 1 x 1.22 ±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – output
2 – GND
3 – GND
4 – output



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6.5	7.0	-	1
Short Current	I_{SC}	µA	2.7	3.2	-	1
Output Voltage	V_{OUT}	V		0.7	0.9	2
Turn-On time	T_{ON}	ms		1		C_L = 250 pF
Turn-Off time	T_{OFF}	ms		0.2		C_L = 250 pF

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

1 – Light source with peak wavelength λ = 850±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 100 µA

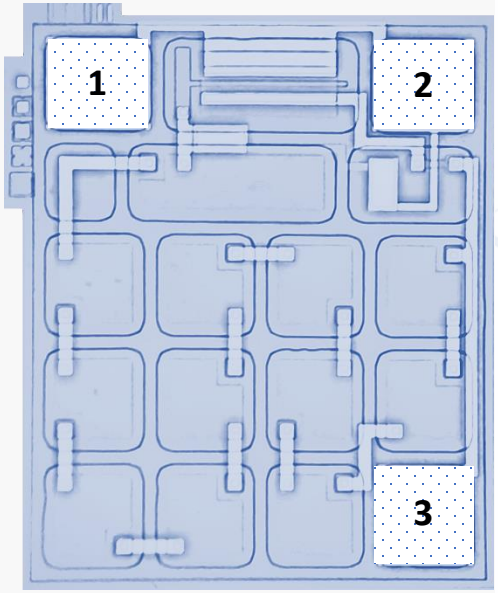
Description

The **FM051P** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay.

Main features

- 12 photodiodes
- MOSFET discharge circuit
- Aluminium contact pad
- Chip size 0.8 x 0.95±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – output
2 – output
3 – GND



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6,5	7.0	-	1
Short Current	I_{SC}	µA	1,5	2.0	-	1
Clamp Current	I_{CLAMP}	µA	40	-	400	2
Turn-On time	T_{ON}				0.5	3
Turn-Off time	T_{OFF}				0.1	3

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

1 – Light source with peak wavelength λ = 840±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light
3 – I_{RLED} = 5 mA , CL = 330 pF with peak wavelength λ = 840 ± 20 nm, P = 1000 µW

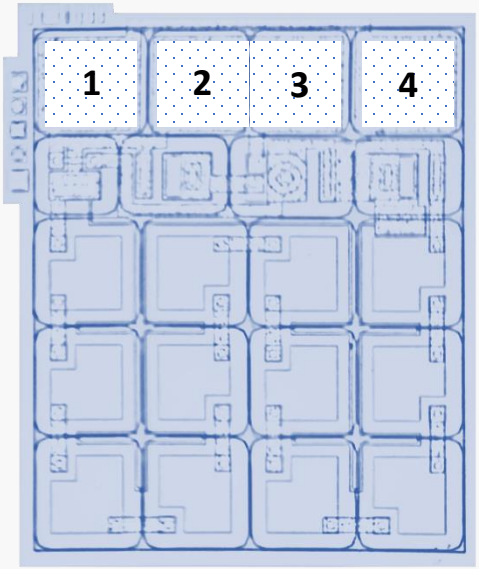
Description

The **FM052P** chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay.

Main features

- 12 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 0.8 x 0.95±0.01 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.

1 – output
2 – GND
3 – GND
4 – output



ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6,5	7	-	1
Short Current	I_{SC}	µA	1,5	2	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Turn-On time	T_{ON}	ms		0.24	1.0	3
Turn-Off time	T_{OFF}	ms		0.1	0.1	3

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C

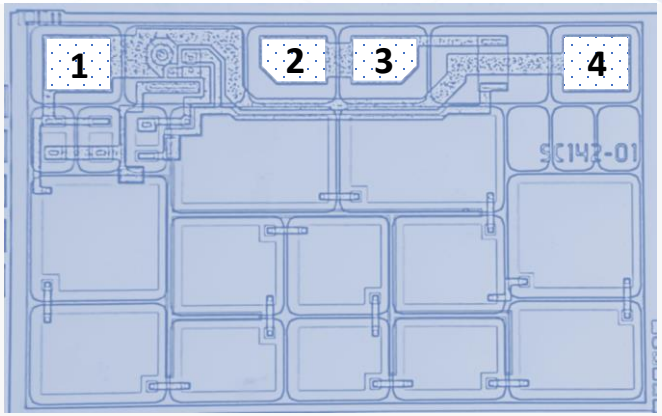
1 – Light source with peak wavelength λ = 840±20 nm. Provides surface illuminance E = 20 mWt/cm2
2 – No light. I_F = 100 µA
3 – I_{RLED} = 5 mA , CL = 330 pF with peak wavelength λ = 840 ± 20 nm, P = 1000 µW

Description

The **SC142-01P** chip is fabricated using Silicon Bipolar process technology. This chip is improved to be used in emitter-receiver side-by-side design of MOS-relay.

Main features

- 12 photodiodes
- Thyristor discharge circuit
- Aluminium contact pad
- Chip size 1.0 x 1.6 mm
- Chip thickness 0.32±0.02 mm
- Spectral response range is 850 – 920 nm.



1 – output
2 – GND
3 – GND
4 – output

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6.0	6.4	-	1
Short Current	I_{SC}	µA	3.4	3.8	-	1
Output Voltage	V_{OUT}	V	-	0.75	1.0	2
Turn-On time	T_{ON}	ms		0.2		3
Turn-Off time	T_{OFF}	ms		0.1		3

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-55°C to 150°C
Operating Junction Temperature	-40°C to 100°C

1 – I_{RLED} = 10 mA with peak wavelength λ = 850±20 nm, P = 1000 µW
2 – No light. I_F = 100 µA
3 – I_{RLED} = 10 mA ,CL = 330 pF with peak wavelength λ = 850 ± 20 nm, P = 500 µW

Contacts

Anton Bulavin
Foreign Trade Specialist| Proton JSC

Tel.:+7(4862)498534
Email: bulavin.a@proton-orel.ru

About us

Proton JSC is a leading manufacturer of optoelectronics in Russia. The company has successfully been working on the market since 1972, possesses modern technologies for optoelectronic devices manufacturing and performs the whole manufacturing cycle from chips to finished devices.

Our clients

SOLID STATE OPTRONICS

MICROPAC

TOWARD RELAYS

Letex Technology Corp.

VISHAY

and other companies …