PROTON

JSC “Proton”

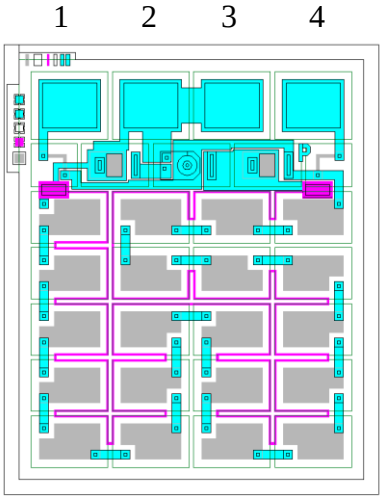
Photodiode array chip FM24P

Description

FM24P chip is fabricated using Silicon Bipolar process technology. The chip is designed to be used in MOS-relay. Consists of 20 photodiodes that allows controlling MOSFET chips with threshold voltage 2-4 V. The spectral response range is 0.85-0.92 nm.
New monolith polysilicon structure.
No delamination at high temperatures.

Features

- 20 photodiodes
- Thyristor discharge circuit
- Increased open circuit voltage
- Contact pad`s material - Aluminium
- Chip size 1.0 x 1.2 mm ± 0.1 mm
- Chip thickness 0.32 ± 0.02 mm

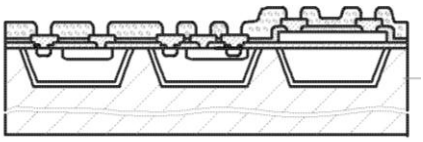


1 – Output
2 – GND
3 – GND
4 – Output

Absolute maximum ratings

Storage temperature	-65 °C to 150 °C
Operating junction temperature	-55 °C to 125 °C

Cross section view



Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	11.0	11.4	-	1
Short Circuit Current	I_{SC}	µA	2.0	3.5	-	1
Output Voltage	V_{OUT}	V	-	0.7	0.9	2
Discharge Resistor	R_{DIS}	MOhm	5.0		25.0	
Turn-On Time	T_{ON}	ms		1.0		3
Turn-Off Time	T_{OFF}	ms		0.2		

1 – Parameters are guaranteed when coupled with IR_{LED} = 10 mA with peak wavelength λ = 850 ±20 nm, Φ_e = 1000 µW, at distance 0.2 mm.
2 – No light. I_F = 1.0 µA.
3 – Typical value at IR_{LED} = 10 mA, C_L = 250 pF. Coupled with LED Φ_e = 1400 µW with peak wavelength λ = 850 ±20 nm.

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Photodiode array chip FM034MP.01

Description

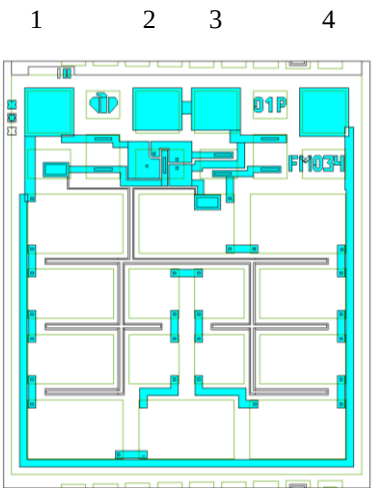
FM034MP.01 chip is fabricated using Silicon Bipolar process technology. The chip is designed to be used in MOS-relay.
New monolith polysilicon structure.
No delamination at high temperatures.

Features

- 14 photodiodes
- Thyristor discharge circuit
- Contact pad’s material - Aluminium
- Chip size 1.2 x 1.4 ± 0.1 mm
- Chip thickness 0.32 ± 0.02 mm

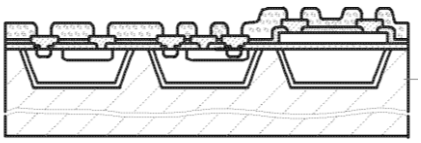
Absolute maximum ratings

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



1 – Output
2 – GND
3 – GND
4 – Output

Cross section view



Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	7.0	7.8	-	1
Short Circuit Current	I_{SC}	µA	3.4	4.2	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Discharge Resistor	R_{DIS}	MOhm	5.0	-	25.0	
Turn-On Time	T_{ON}	ms	-	1.0	-	C_L = 250 pF
Turn-Off Time	T_{ON}	ms	-	0.2	-	C_L = 250 pF

1 – Light source with peak wavelength λ = 850 ±20 nm that provides surface irradiance E_e = 20 mWt/cm^2
2 – No light. I_F = 100 µA

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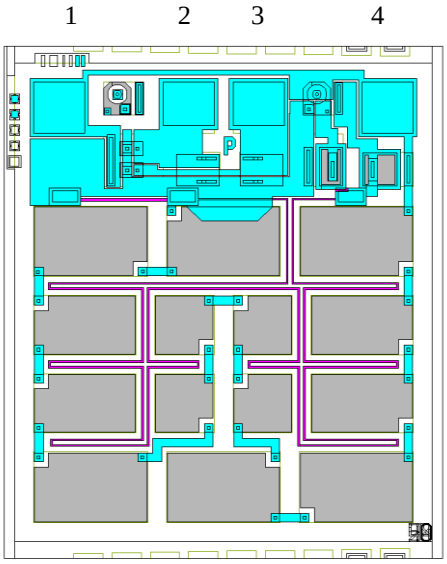
Photodiode array chip FM037P

Description

FM037P chip is fabricated using Silicon Bipolar process technology. The chip is designed to be used in MOS-relay. It includes short-current protection circuit.
New monolith polysilicon structure.
No delamination at high temperatures.

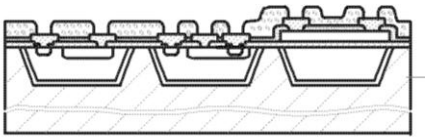
Features

- 14 photodiodes
- Thyristor discharge circuit
- Contact pad`s material - Aluminium
- Chip size 1.2 x 1.4 ± 0.1 mm
- Chip thickness 0.32 ± 0.02 mm



1 – Output
2 – GND
3 – GND
4 – Output

Cross section view



Absolute maximum ratings

Storage temperature	- 65 °C to 150 °C
Operating junction temperature	- 55 °C to 125 °C

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min	Typ	Max	Condition
Open Circuit Voltage	V_{OC}	V	7.0	8.0	-	1
Short Circuit Current	I_{SC}	µA	3.1	3.4	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Current Limit	I_{LMT}	mA	100	180	240	1
Discharge Resistor	R_{DIS}	MOhm	5.0	-	25.0	
Turn-On Time	T_{ON}	ms	-	0.2	-	C_L = 250 pF
Turn-Off Time	T_{OFF}	ms	-	0.1	-	C_L = 250 pF

1 – Light source with peak wavelength λ = 850 ±20 nm that provides surface irradiance E_e = 20 mWt/cm^2
2 – No light. I_F = 100 µA

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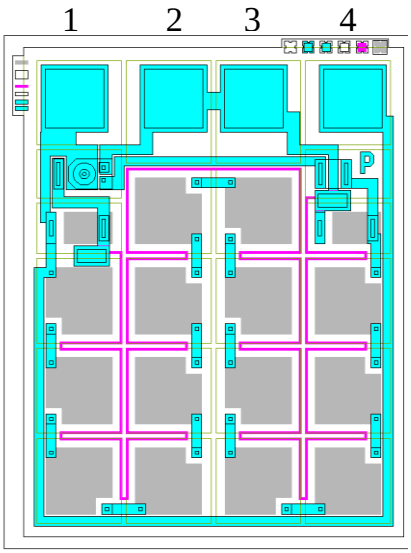
Photodiode array chip FM043P

Description

FM043P chip is fabricated using Silicon Bipolar process technology. The chip is designed to be used in MOS-relay.
New monolith polysilicon structure.
No delamination at high temperatures.

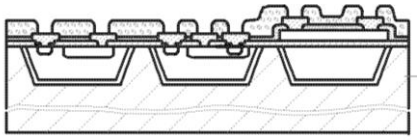
Features

- 14 photodiodes
- Thyristor discharge circuit
- Contact pad’s material - Aluminium
- Chip size 1.0 x 1.22 mm ± 0.1 mm
- Chip thickness 0.32 mm ± 0.02 mm



1- Output
2 - GND
3 - GND
4 - Output

Cross section view



Absolute maximum ratings

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

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	7.0	7.5	-	1
Short Circuit Current	I_{SC}	µA	2.7	3.2	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Discharge Resistor	R_{DIS}	MOhm	5.0	-	25.0	
Turn-On Time	T_{ON}	ms	-	1.0	-	C_L = 250 pF
Turn-Off Time	T_{OFF}	ms	-	0.2	-	C_L = 250 pF

1 – Light source with peak wavelength λ = 850 ±20 nm that provides surface irradiance E_e = 20 mWt/cm^2
2 – No light. I_F = 100 µA

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Photodiode array chip FM052P

Description

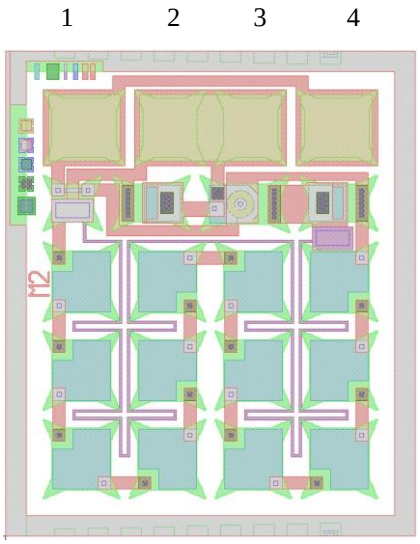
FM052P chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in MOS-relay.
New monolith polysilicon structure.
No delamination at high temperatures.

Features

- 12 photodiodes
- Thyristor discharge circuit
- Contact pad`s material – Aluminium
- Chip size 0.8 x 0.95±0.01 mm
- Chip thickness 0.32±0.02 mm

Absolute maximum ratings

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



1 – output
2 – GND
3 – GND
4 – output

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6.5	6.8	-	1
Short Circuit Current	I_{SC}	µA	1.5	2.0	-	1
Output Voltage	V_{OUT}	V	-	-	0.9	2
Discharge Resistor	R_{DIS}	MOhm	5.0	-	25.0	
Turn-On Time	T_{ON}	ms		0.24	1.0	3
Turn-Off Time	T_{OFF}	ms		0.1	0.1	3

1 – Light source with peak wavelength λ = 840 ±20 nm that provides surface irradiance E_e = 20 mW/cm^2 is used.
2 – No light. I_F = 100 µA.
3 – Typical value at IR_{LED} = 5 mA, C_L = 330 pF. Coupled with LED Φ_e = 1000 uW with peak wavelength λ = 840 ±20 nm.

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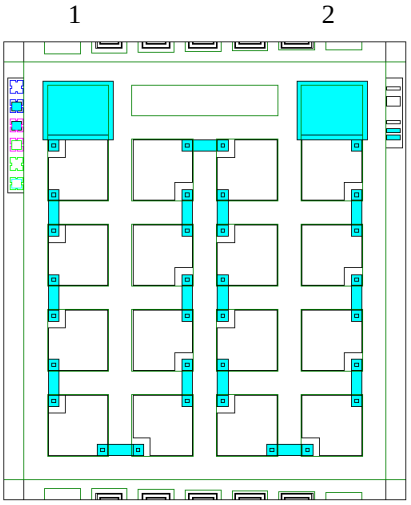
Photodiode array chip FM5040

Description

FM5040 chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used as photo receiver for visible and IR lights. The spectral response range is 0.85-0.92 nm.

Features

- 16 photodiodes
- Without discharge circuit
- Contact pad`s material - Aluminium
- Chip size 0.9x1.02 mm
- Chip thickness 0.32±0.02 mm



1 – GND
2 – Output

Absolute maximum ratings

Storage temperature	-65°C to150°C
Operating junction temperature	-55°C to125°C

Electrical characteristics (T= 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Open Circuit Voltage	V_{OC}	V	7.0	8.5		1
Short Circuit Current	I_{SC}	μA	1.0	5.0	-	1
Leakage current	I_{LEAK}	nA			100	2

1 – Parameters are guaranteed when coupled with IR_{LED} = 10 mA with peak wavelength λ = 850 ±20 nm, Φ_e = 1000 μW at distance 0.2 mm.
2 – No light.
Parameters are guaranteed when coupled with LED Φ_e > 1000 μW at distance 0.2 mm.

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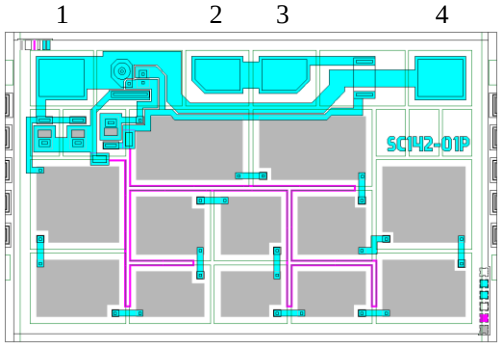
Photodiode array chip SC142-01P

Description

SC142-01P chip is fabricated using Silicon Bipolar process technology. The chip is designed to be used in MOS-relay. The chip is optimized for side-by-side MOS-relay design. The spectral response range is 0.85-0.92 nm.
New monolith polysilicon structure.
No delamination at high temperatures.

Features

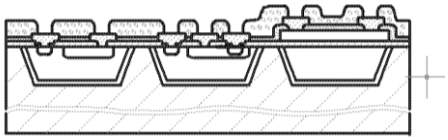
- 12 photodiodes
- Thyristor discharge circuit
- Contact pad`s material - Aluminium
- Chip size 1.0 x1.6 mm
- Chip thickness 0.32±0.02 mm



Absolute maximum ratings

Storage temperature	-65°C to 150°C
Operating junction temperature	-55°C to 125°C

Cross section view



Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Condition
Open Circuit Voltage	V_{OC}	V	6.0	6.4		1
Short Circuit Current	I_{SC}	µA	3.4	3.8	-	1
Output Voltage	V_{OUT}	V		0.75	1.0	2
Discharge Resistor	R_{DIS}	MOhm	15		50	
Turn-On Time	T_{ON}	ms		0.2		3
Turn-Off Time	T_{OFF}	ms		0.1		

1 – Parameters are guaranteed when coupled with IR_{LED} = 10 mA with peak wavelength λ = 850 ±20 nm, Φ_e = 1000 µW at distance 0.2 mm.
2 – No light. I_F = 100 µA.
3 – Typical value at IR_{LED} = 10 mA, C_L = 250 pF. The PDA is coupled with LED Φ_e = 500 µW with peak wavelength λ = 850 ±20 nm at distance 0.2 mm.

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Phototransistor chip FT050

Description

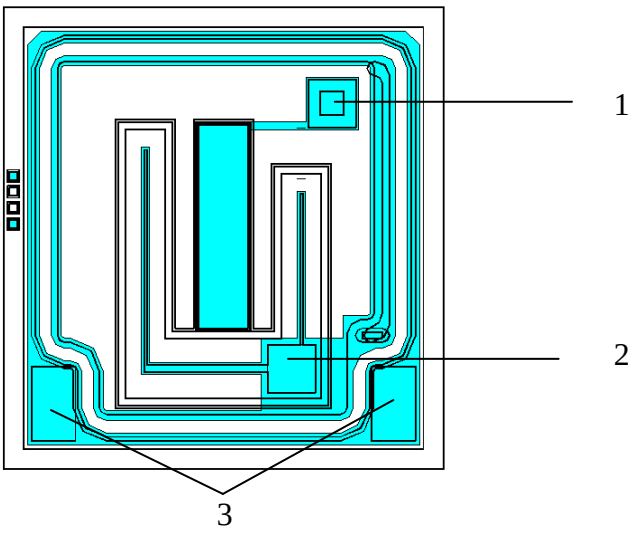
FT050 chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in optocouplers.

Features

- High Collector-Emitter Breakdown Voltage
- Chip size - 1.1 x 1.15 mm
- Chip thickness - 0.36 mm±0.02mm
- Contact pads size:
  Base - 0.12 mm x 0.12 mm
  Emitter - 0.12 mm x 0.12 mm
  Collector - 0.11 mm x 0.185 mm
- Metallization: top - AlSi;
  bottom (Collector) - CrNi for bonding on conductive adhesive

Absolute maximum ratings

Operating junction temperature	-45°C to 70°C
Limiting temperature	-60°C to 85°C



1 - Base
2 - Emitter
3 - Collector

Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-Emitter Breakdown Voltage	BV_{CE}	220	-	-	V	I_{CE}=10 mA
Collector-Emitter Leakage Current	$I_{LEAK\ CE}$	-	-	1.0	µA	V_{CE}=250 V
Collector-Emitter Saturation Voltage	$V_{CE\ SAT}$	-	-	0.4	V	I_C=2 mA, I_B=150 µA
Current Transfer Ratio	h_{21E}	60	-	170	-	V_{CE}=5 V, I_B=150 µA

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Phototransistor chip FT059

Description

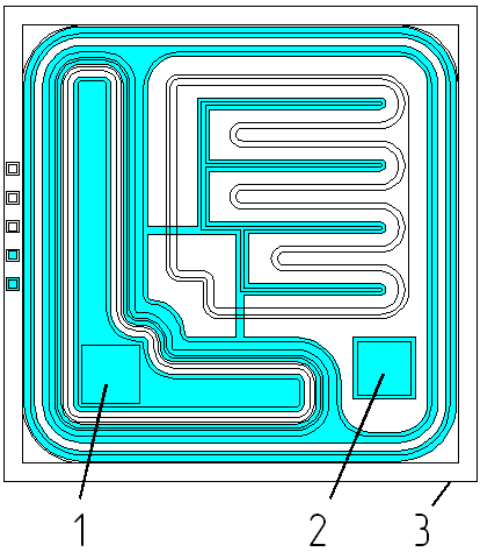
FT059 chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in high CTR optocouplers.

Features

- High Sensitivity - Darlington Output
- High Breakdown Voltage 60 V
- Chip Size - 1.15 x 1.15 mm
- Chip Thickness - 0.35 mm±0.02mm
- Metallization: top - AlSi;
  bottom (Collector) - CrAu for bonding on conductive adhesive

Absolute maximum ratings

Operating Junction Temperature	-45°C to 85°C
Limiting Temperature	-45°C to 85°C



1 - Emitter
2 - Base
3 - Collector

Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-Emitter Breakdown Voltage	BV_{CEOL}	60	-	-	V	I_C = 10 mA
Collector-Emitter Leakage Current	$I_{LEAK\ CE}$	-	-	1.0	µA	V_{REV}=60 V
Emitter-Base Current	I_{EB}	-	-	0.1	µA	V_{EB}=5 V
Collector-Emitter Saturation Voltage	$V_{CE\ SAT}$	-	-	1.2	V	I_B=50 µA, I_C = 80 mA
Current Transfer Ratio	h_{21E}	-	-	10 000	-	I_B=35 µA, V_{CE} = 10 V

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Phototransistor chip FT060-02

Description

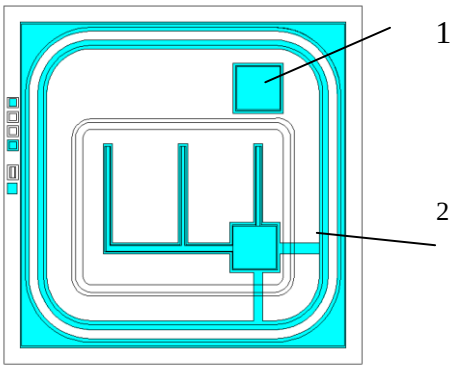
FT060-02 chip is designed to be used in transistor optocouplers, hybrid microcircuits and packaged phototransistors.

Features

- High Current Transfer Ratio
- Chip size - 1.0 x 1.0 mm
- Chip thickness - 0.36 mm±0.02mm
- Contact pads size:
  Base - 0.12 mm x 0.12 mm
  Emitter - 0.12 mm x 0.12 mm
- Metallization: top - Al
  bottom (Collector) - CrAu for bonding on conductive adhesive

Absolute maximum ratings

Operating junction temperature	-55°C to 110°C
Limiting temperature	-60°C to 150°C



1 - Base
2 - Emitter

Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-Emitter Breakdown Voltage	BV_{CEOL}	60	-	-	V	I_{CE}=10 mA
Collector-Emitter Leakage Current	$I_{LEAK\ CE}$	-	-	1.0	μA	V_{CE}=75 V
Emitter-Base Current	$I_{CE\ 0}$	-	-	1.0	μA	V_{EB}=5 V
Collector-Emitter Saturation Voltage	$V_{CE\ SAT}$	-	-	0.2	V	I_B=35 μA, I_C =10 mA
Current Transfer Ratio	h_{21E}	400	-	1 100	-	V_{CE}=10 V, I_B=35 μA

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Phototransistor chip FT231

Description

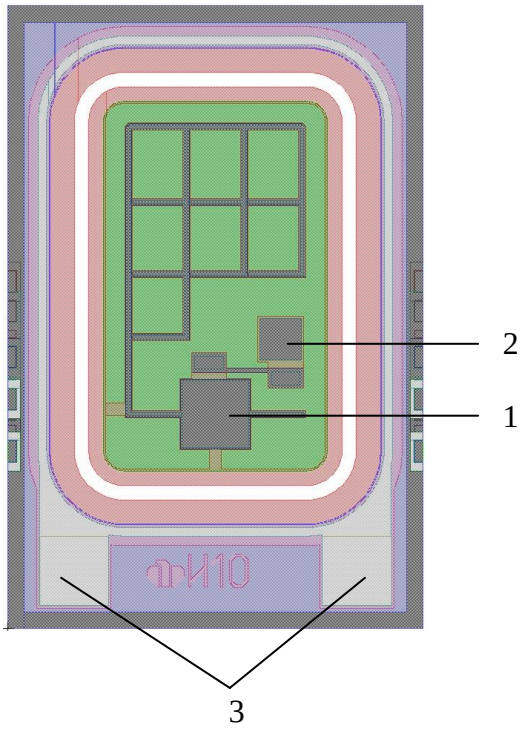
FT231 chip is fabricated using Silicon Bipolar process technology with high-ohmic polysilicon shunt. It is designed to be used in optocouplers. The maximum spectral response range is 0.85-0.92 nm.

Features

- Photosensitive Area - 0.7x1.0 mm
- Chip Size - 1x1.5 mm
- Chip Thickness - 0.35±0.02 mm
- High-ohmic Shunt
- Contact pads material - Aluminum;
- Metallization: bottom - Si

Absolute Maximum Rating

Storage Temperature	-65°C to 150°C
Operating Temperature	-60°C to 125°C



1 - Emitter
2 - Base
3 - Collector

Electrical Characteristics (T= 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Collector-Emitter Dark Current	$I_{CE\ 0}$	µA		0.05	0.1	V_{CE} = 70 V
Collector-Emitter Breakdown Voltage	BV_{CEOL}	V	150	160		I_C = 10 mA
Collector-Emitter Saturation Voltage	$V_{CE\ SAT}$	V	-	0.25	0.4	I_B = 50 µA, I_C = 2 mA
Current Transfer Ratio	h_{21E}		100		300	I_B = 50 µA, V_{CE} = 10 V
Polysilicon Shunt Resistance	R	MOhm	0.125	0.5	1.0	V_{EB} = 5 V

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Phototransistor chip FT232

Description

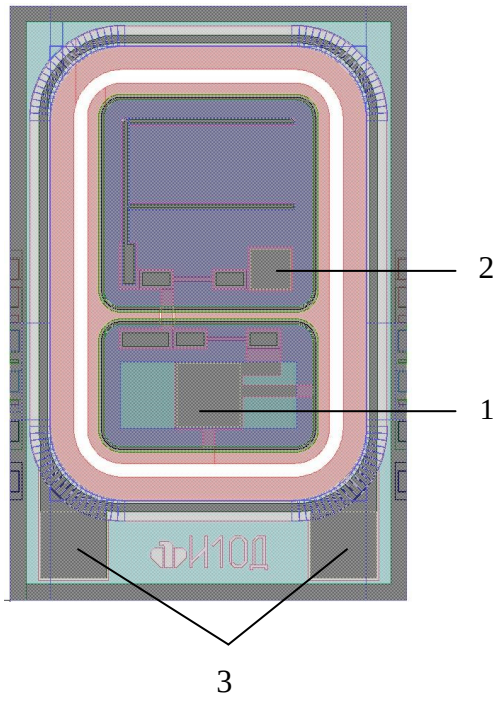
FT232 chip is fabricated using Silicon Bipolar process technology with high-ohmic polysilicon shunt. It is designed to be used in optocouplers. The maximum spectral response range is 0.85-0.92 nm.

Features

- Photosensitive Area - 0.7x0.7 mm
- Chip Size - 1x1.5 mm
- Chip Thickness - 0.35±0.02 mm
- High-ohmic Shunt
- Contact pads material – Aluminum
- Metallization: bottom – Si

Absolute Maximum Ratings

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-60°C to 125°C



1 - Emitter
2 - Base
3 - Collector

Electrical Parameters (T= 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Collector-Emitter Dark current	$I_{CE\,0}$	µA		0.05	0.1	V_{CE} = 220 V
Breakdown Voltage Collector-Emitter	BV_{CEOL}	V	160	180		I_C = 10 mA
Collector-Emitter Saturation Voltage	$V_{CE\,SAT}$	V	-	0.9	1.2	I_B = 50 µA, I_C = 5 mA
Current Transfer Ratio	h_{21E}		400		2500	I_B = 50 µA, V_{CE} = 5 V
Polysilicon Shunt Resistance	R	MOhm	0.0625	0.12	0.25	V_{EB} = 5 V

Photodiode chip FD016-01

Description

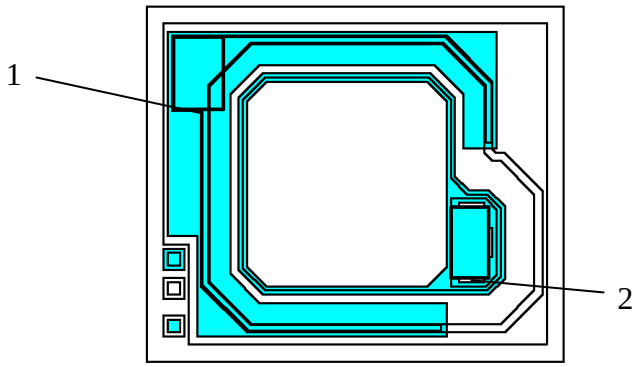
FD016-01 chip is designed to be used in optocouplers, hybrid microcircuits and packaged photodiodes.

Features

- Chip Size – 1.0 x 0.85 mm
- Chip Thickness – 0.32 mm±0.02mm
- Contact pads size:
  Cathode – 0.120 x 0.174 mm;
  Anode – 0.090 x 0.170 mm
- Metallization: top – AlSi;
  bottom (Collector) - Si

Absolute maximum ratings

Operating Junction Temperature	-60 °C to 85 °C
Limiting Temperature	-60°C to 85 °C



1- Cathode
2- Anode

Electrical characteristics (T=25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Dark current	I_D	nA	-	-	100	V_{REV} =30 V
Forward voltage	V_F	V	-	-	2.0	$I_{F(ON)}$ =1 mA
Responsivity	S_L	μA/μW	0.1	-	-	V_{REV} =16 V λ = 0.82 mm±0.9 μm Note 1

Note 1 – Guaranteed by the chip design

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Photologic chip FS195

General description

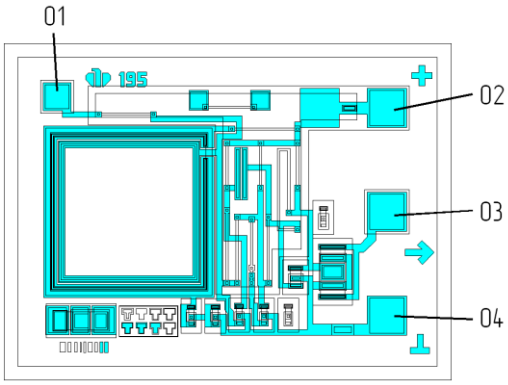
FS195 chip is fabricated using Silicon Bipolar process technology. This chip is designed to be used in high speed digital optocouplers. Chip consists of a high gain linear amplifier and output Shottky transistor. Chips can be specially probed to satisfy customer`s requirements.

Features

- LSTTL/TTL Input and Output Compatible
- High Speed Switching
- Open Collector Output
- Chip Size – 1.6 x 1.2 mm
- Chip thickness 0.38mm ±0.02 mm
- Metallization: top – Aluminium
- Data transfer rate – 5 Mbit/sec

Absolute maximum ratings

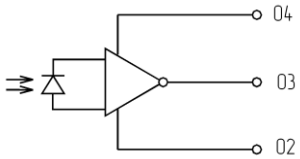
Storage Temperature	-65 °C to 150 °C
Operating Junction Temperature	-55 °C to 125 °C
Supply voltage	5.5 V
Output voltage	15 V
Output current	20 mA



Contact pads sizes

Pad #	X, mm	Y, mm	Pad #	X, mm	Y, mm
01	0.084	0.084	03	0.124	0.124
02	0.124	0.124	04	0.124	0.124

01 – Testing Input
02 – Power Supply
03 – Output
04 – Ground



Note – Proper operation is guaranteed with high-frequency ceramic capacitor 0.1 µF connected between power supply and ground pads not more than 10 mm away from chip’s contacts.

Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Unit	Min	Typ	Max	Conditions
Low Level Output Voltage	V_{OL}	V		0.4	0.5	I_{01}= 25 µA, V_{CC} = 5.5 V I_{OL}=11 mA
High Level Output Current	I_{OH}	mA		0.001	0.25	I_{01}= 4 µA, V_{CC} = 5.5 V V_O = 15 V
Logic High Power Supply Current	I_{CCH}	mA		5.5	9.0	V_{CC} = 5.5 V, I_{OL}=0 I_{01}= 30 µA
Propagation Delay (to Logic Low)	T_{PHL}	ns		40	50	R_L=510 Ohm, C_L=15 pF, E_e =50 mW/cm^2, Note 1
Propagation Delay (to Logic High)	T_{PLH}	ns		60	80	R_L=510 Ohm, C_L=15 pF, E_e =50 mW/cm^2, Note 1
Rise Time-Fall Time	t_r, t_f	ns			20	R_L=510 Ohm, C_L=15 pF, E_e =50 mW/cm^2, Note 1

Note 1 - E_e values are measured in the packaged device

PROTON

JSC “Proton”

Phototriac chip OPTOTRIAC 130

Description

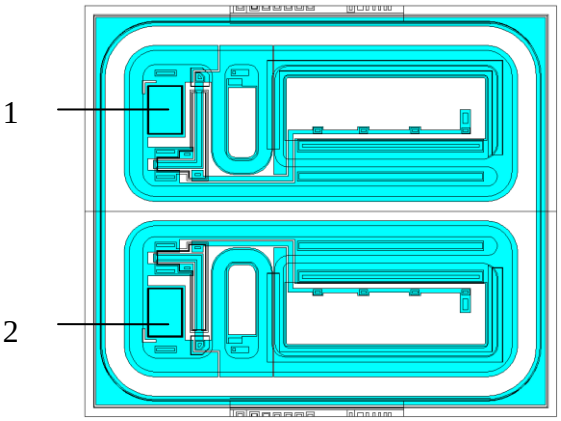
Zero voltage crossing-phototriac chip OPTOTRIAC 130 is designed to be used as phototriac receiver to drive power triacs in phototriacs and to switch AC-circuits in optoelectronic relays` circuits of consumer-oriented industrial automation.

Features

- Chip size 1.5 x 1.3 mm
- Chip thickness 0.36 ± 0.02 mm
- Contact pads size:
  Terminal 1, 2 - 0.108 mm x 0.152 mm
- Metallization: top - AlSi,
  bottom - Si

Absolute maximum ratings

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C
Output Terminal Voltage	600 V



1 – Terminal 1
2 – Terminal 2

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Min	Typ	Max	Units	Condition
Peak On-State Voltage	V_{TM}	-	1.6	2.0	V	I_{TM}=±100 mA Note 1
Leakage Current in Inhibit State	I_{IH}	-	-	400	µA	V_{TM}=±30 V Note 1
Peak Off-State Current	I_{DRM}	-	-	1.0	µA	V_{DRM}=±600V Note 2
Inhibit Voltage	V_{IH}	-	-	30	V	Note 1
Critical Rate of Rise Off-State Voltage	dv/dt	-	-	500	V/µs	Note 3

Notes:
1 – Light source with peak wavelength λ = 890 ±50 nm that provides surface irradiance E_e = 20 mW/cm^2 is used.
2 – No light.
3 – Measured in the packaged device.

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Phototriac chip OPTOTRIAC 130-01

Description

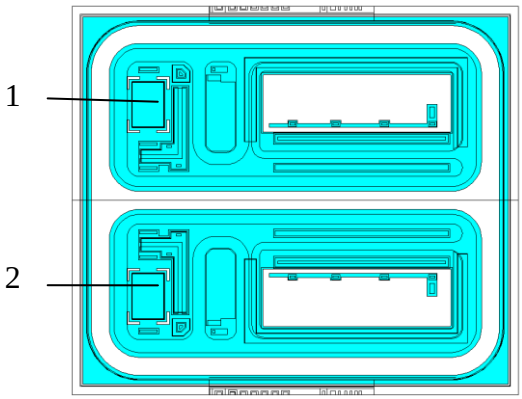
OPTOTRIAC 130-01 is designed to be used as phototriac receiver in phototriacs to drive the power triacs and in optoelectronic relays` circuits to switch AC-circuits of consumer-oriented industrial automation.

Features

- Chip size 1.5 x 1.3 mm
- Chip thickness 0.36 ± 0.02 mm
- Metallization: top – AlSi, bottom – Si

Absolute maximum ratings

Storage Temperature	-65°C to 150°C
Operating Junction Temperature	-55°C to 125°C
Output Terminal Voltage	600 V



1 – Terminal 1
2 – Terminal 2

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Min	Typ	Max	Units	Condition
Peak On-State Voltage	V_{TM}	-	1.6	2.0	V	I_{TM}=±100 mA Note 1
Peak Off-State Current	I_{DRM}	-	-	1.0	µA	V_{DRM}=±600V Note 2
Critical Rate of Rise Off-State Voltage	dv/dt	-	-	500	V/µs	Note 3

Notes:
1 – Light source with peak wavelength λ = 890 ±50 nm that provides surface irradiance E_e = 20 mW/cm^2 is used.
2 – No light.
3 – Measured in the packaged device.

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Phototriac chip OPTOTRIAC 269-01

Description

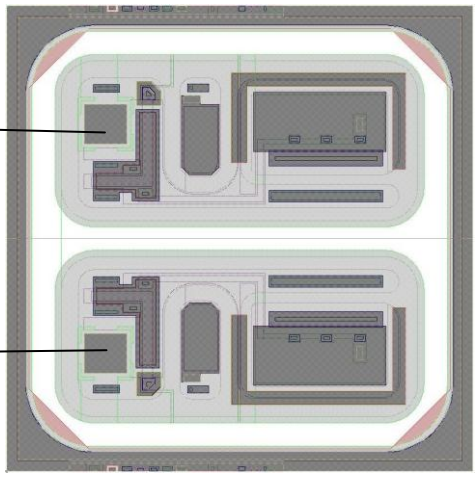
Zero voltage crossing-phototriac chip OPTOTRIAC 269-01 is designed to be used as phototriac receiver to drive power triacs in phototriacs and to switch AC-circuits in optoelectronic relays` circuits of consumer-oriented industrial automation.

Features

- Chip size 1.2 x 1.2 mm
- Chip thickness 0.30 ± 0.03 mm
- Metallization: top – AlSi, bottom – Si

Absolute maximum ratings

Storage Temperature, Tj	-65°C to 150°C
Operating Junction Temperature, Topr	-55°C to 125°C
Off-State Output Terminal Voltage, V_{DRM}	600 V
On-State RMS Current, $I_{T(RMS)}$	100 mA
Peak Repetitive Surge Current, I_{TSM}, (tp= 1 ms, F=120Hz)	1.0 A



1 – Terminal 1
2 – Terminal 2

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Peak On-State Voltage	V_{TM}	-	1.8	3.0	V	I_{TM} = 100 mA
Inhibit Voltage	V_{INH}	-	12	20	V	
Peak Off-State Current	I_{DRM1}	-	-	1	nA	V_{DRM} = 600 V
Holding Current	I_H	-	-	200	µA	
Peak Off-State Current while Lighting	I_{DRM2}	-	0.2	2.0	mA	V_{DRM} = 600 V
Critical Rate of Rise Off-State Voltage	dv/dt	200	-	-	V/µs	V_{in} = 600 V

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MOSFET chip DMOST043-02

Description

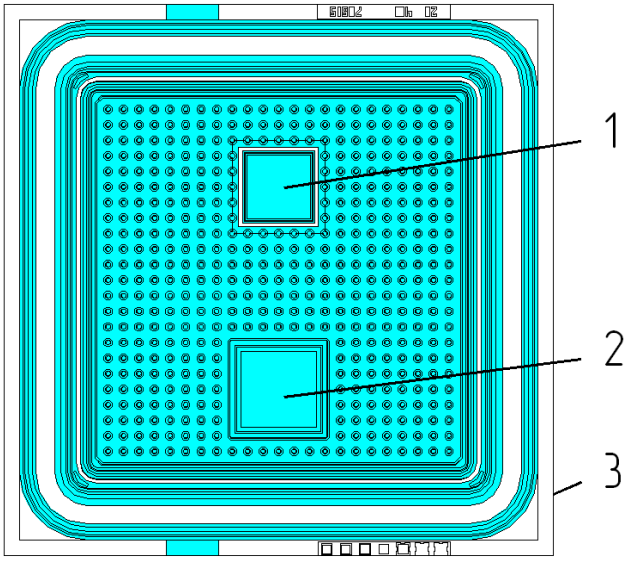
MOSFET chip with induced channel (normally-off) DMOST043-02 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

- Chip size – 1.56 x1.56 mm
- Chip thickness – 0.42±0.02 mm
- Contact pads size:
  Gate – 0.194 x0.194 mm
  Source – 0.215 x 0.215 mm
- Metallization: top – AlSi,
  bottom – CrAu for bonding on conductive adhesive

Absolute maximum ratings

Maximum temperature	
Storage temperature	- 60 °C to 100 °C
Operating junction temperature	- 45 °C to 85 °C
Maximum voltage	
Drain-to-Source voltage	400 V
Gate-to-Source voltage	± 20 V



1 - Gate
2 - Source
3 - Drain

Electrical characteristics (T_A = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Static Drain-to-Source ON-State Resistance	$R_{DS(ON)}$	Ohm			15	V_{GS} = 4.5 V, I_D = 100 mA
Gate Body Leakage Current	I_{GSS}	µA			0.1	V_{GS} = ± 20 V, V_{DS} = 0 V
Drain-to-Source Leakage Current	$I_{D(OFF)}$	µA			1	V_{GS} = 0.7 V, V_{DS} = 400 V
Gate Threshold Voltage	$V_{GS(th)}$	V			0.95	V_{GS} = 0 V, I_S = 120 mA

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MOSFET chip DMOST056

Description

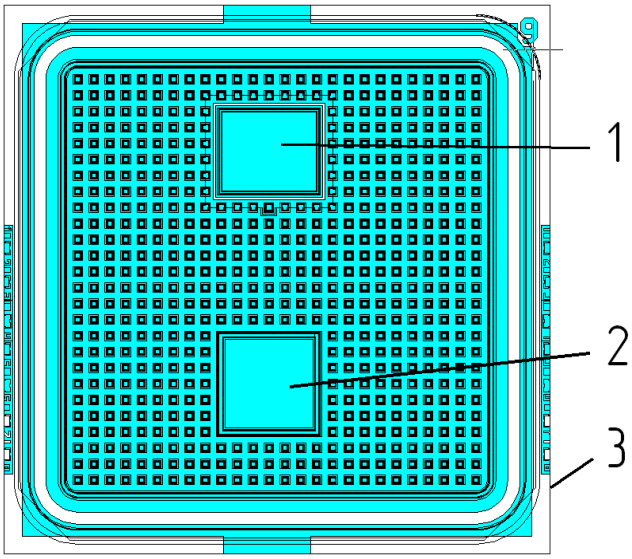
MOSFET chip with induced channel (normally-off) DMOST056 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

- Chip size – 1.37 x1.37 mm
- Chip thickness – 0.42±0.02 mm
- Contact pads size:
  Gate – 0.248 x0.208 mm
  Source – 0.221 x 0.221 mm
- Metallization: top – AlSi,
  bottom – CrAu for bonding on conductive adhesive

Absolute Maximum Ratings

Maximum Temperature	
Storage Temperature	- 55 °C to 100 °C
Operating Junction Temperature	- 45 °C to 85 °C
Maximum Voltage	
Drain-to-Source Voltage	60 V
Gate-to-Source Voltage	±20 V



1 - Gate
2 - Source
3 - Drain

Electrical Characteristics (T_A = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-to-Source ON-State Resistance	R_{DS}	Ohm			1.1	V_{GS} = 5 V, I_D = 300 mA
Gate Leakage Current	$I_{LEAK.G}$	µA			0.1	V_{GS} = ± 20 V, V_{DS} = 0 V
Drain Leakage Current	$I_{LEAK.D}$	µA			1	V_{GS} = 0 V, U_D = 60 V
LED Constant Forward Voltage (drain$^-$, source$^+$)	V_{SD}	V			0.85	V_{GS} = 0 V, I_S = 120 mA

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MOSFET chip DMOST056-01

Description

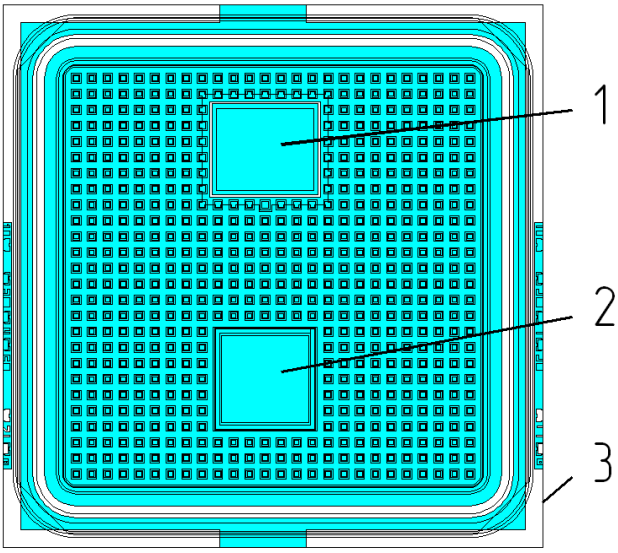
MOSFET chip with induced channel (normally-off) DMOST056-01 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

- Chip size – 1.37 x1.37 mm
- Chip thickness – 0.42±0.02 mm
- Contact pads size:
  Gate – 0.248 x0.208 mm
  Source – 0.221 x 0.221 mm
- Metallization: top – AlSi,
  bottom – CrAu for bonding on conductive adhesive

Absolute Maximum Ratings

Maximum Temperature	
Storage Temperature	- 60 °C to 100 °C
Operating Junction Temperature	- 45 °C to 85 °C
Maximum Voltage	
Drain-to-Source Voltage	230 V
Gate-to-Source Voltage	±20 V



1 - Gate
2 - Source
3 - Drain

Electrical Characteristics (T_A = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-to-Source ON-State Resistance	R_{DS}	Ohm			7.0	V_{GS} = 5 V, I_D = 150 mA
Gate Leakage Current	$I_{LEAK.G}$	µA			0.1	V_{GS} = ± 20 V, V_{DS} = 0 V
Drain Leakage Current	$I_{LEAK.D}$	µA			1	V_{GS} = 0 V, V_D = 230 V
LED Constant Forward Voltage (drain$^-$, source$^+$)	V_{SD}	V			0.95	V_{GS} = 0 V, I_S = 120 mA

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MOSFET chip Maxima-46S

Description

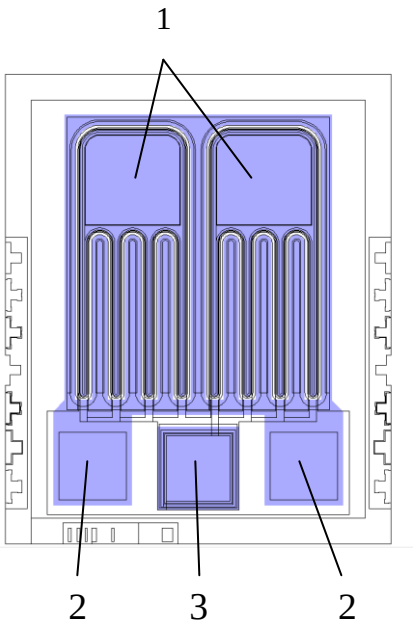
MOSFET chip with induced channel (normally-off, double drain) Maxima-46S is designed to be used in hybrid microchips and packaged field-effect transistors.

Feature

- Chip size – 0.74 x0.9 mm
- Chip thickness – 0.36±0.02 mm
- Contact pads size:
  Drain – 0.182 mm x 0.171 mm
  Gate – 0.13 x0.133 mm
  Source – 0.13 x 0.13 mm
- Metallization: top – AlSi,
  bottom – Si

Absolute Maximum Ratings

Maximum Temperature	
Storage Temperature	-55°C to150°C
Operating Junction Temperature	-40°C to100°C
Maximum Voltages	
Drain-Source Voltage	±90V
Gate-Source Voltage	±20V



1 - Drain
2 - Source
3 - Gate

Electrical characteristics (T_A = 25°C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-Source Breakdown Voltage	BV_{DS}	V	±90	±100		V_{GS} = 0 V, I_{D} = 100 μA
Gate-Source Leakage Current	I_{GSS}	nA			100	V_{GS} = 20 V, V_{DS} = 0 V
ON-State Drain Current	$I_{D\ (ON)}$	mA	100	150		V_{GS}= 6 V, V_{DS}=25 V
Drain-Drain Leakage Current	$I_{D\ Leak}$	nA		0.9	3.0	V_{GS} = 0 V, V_{DS} =±90 V
Drain-to-Drain ON-State Resistance	$R_{DD\ (ON)}$	Ohm		45	60	V_{GS} = 6 V, I_D=±20 mA
Output Drain-Drain Capacitance	$C_{OSS(OFF)}$	pF		6.0		V_{DS} = 0 V, V_{GS}= 0 V *

* Measured in the packaged device.

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MOSFET chip DMOST204

Description

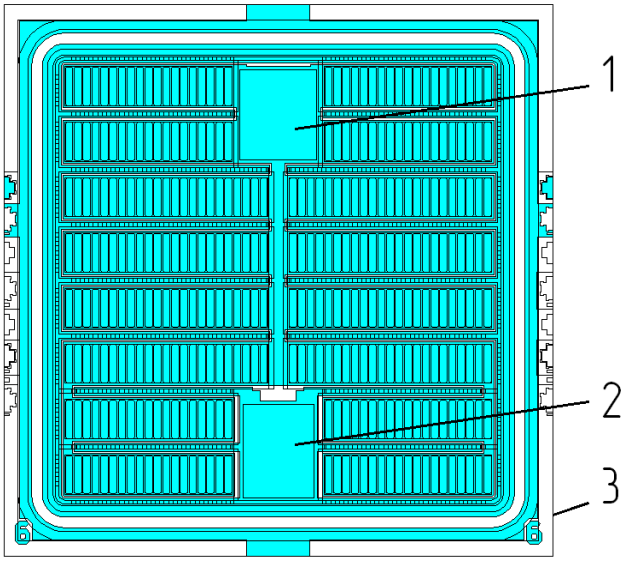
MOSFET chip with internal channel (normally-on) DMOST204 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

- Chip size – 1.55x1.55 mm
- Chip thickness – 0.42±0.02 mm
- Contact pads size:
  Gate – 0.218 x0.252 mm
  Source – 0.2 x 0.264 mm
- Metallization: top – AlSi,
  bottom – CrAu for bonding on conductive adhesive

Absolute Maximum Ratings

Maximum Temperature	
Storage Temperature	- 55 °C to 150 °C
Operating Junction Temperature	- 40 °C to 100 °C
Maximum Voltage	
Drain-to-Source Voltage	60 V
Gate-to-Source Voltage	20 V



1 - Gate
2 - Source
3 - Drain

Electrical Characteristics (T_A = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-to-Source ON-State Resistance	R_{DS}	Ohm		1.6	2.0	V_{GS} = 0 V, I_D = 300 mA
Gate Leakage Current	$I_{LEAK.G}$	µA			0.1	V_{GS} = -20 V
Drain Leakage Current	$I_{LEAK.D}$	µA		0.1	1.0	V_{GS} = -5 V, V_D = 60 V
LED Constant Forward Voltage (drain$^-$, source$^+$)	V_{SD}	V		0.8	0.95	V_{GS} = -5 V, I_{SD} = 150 mA

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MOSFET chip DMOST165

Description

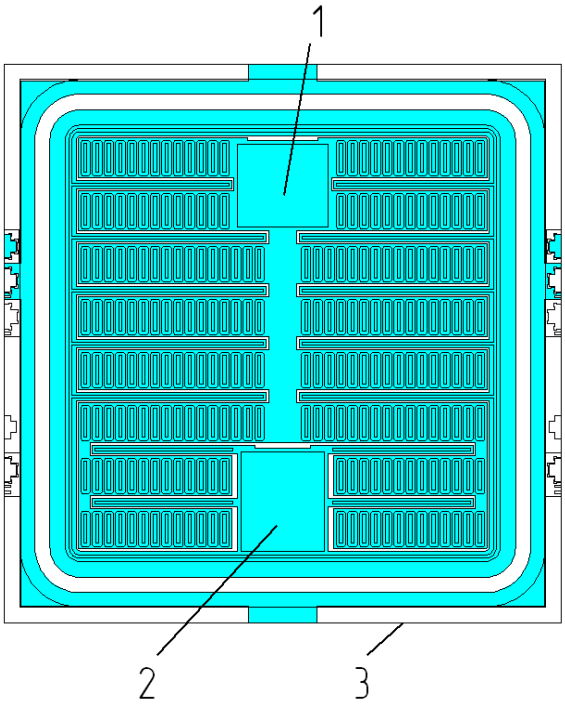
MOSFET chip with internal channel (normally-on) DMOST165 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

- Chip size – 1.44 x1.44 mm
- Chip thickness – 0.36±0.02 mm
- Contact pads size:
  Gate – 0.23 x0.21 mm
  Source – 0.22 x 0.25 mm
- Metallization: top – AlSi,
  bottom – CrAu for bonding on conductive adhesive

Absolute maximum ratings

Maximum Temperature	
Storage Temperature	- 60 °C to 100 °C
Operating Junction Temperature	- 45 °C to 85 °C
Maximum Voltage	
Drain-to-Source Voltage	230 V
Gate-to-Source Voltage	-25 V



1 - Gate
2 - Source
3 - Drain

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-to-Source ON-State Resistance	R_{DS}	Ohm			9.0	V_{GS} = 0 V, I_D = 150 mA
Drain Leakage Current	$I_{LEAK.D}$	µA			1.0	V_{GS} = - 4 V, V_{DS} = 230 V
Gate Leakage Current	$I_{LEAK.G}$	µA			0.1	V_{GS} = - 25 V
LED Constant Forward Voltage (drain$^-$, source$^+$)	V_{SD}	V			0.95	V_{GS} = - 4.5 V, I_D = 150 mA
Drain Saturation Current	$V_{SAT.D}$	mA	100			V_{GS} = - 0.5 V, V_{DS} = 5 V

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MOSFET chip DMOST165-01

Description

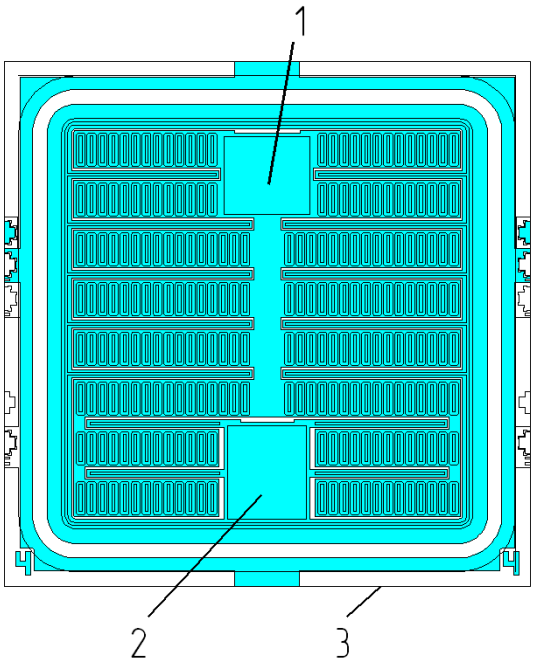
MOSFET chip with internal channel (normally-on) DMOST165-01 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

- Chip size – 1.44 x1.44 mm
- Chip thickness – 0.42±0.02 mm
- Contact pads size:
  Gate – 0.23 x0.21 mm
  Source – 0.22 x 0.25 mm
- Metallization: top – AlSi,
  bottom – CrAu for bonding on conductive adhesive

Absolute maximum rating

Maximum Temperature	
Storage Temperature	- 55 °C to 150 °C
Operating Junction Temperature	- 40 °C to 100 °C
Maximum Voltage	
Drain-to-Source Voltage	370 V
Gate-to-Source Voltage	20 V



1 - Gate
2 - Source
3 - Drain

Electrical Characteristics (T_A = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-to-Source ON-State Resistance	R_{DS}	Ohm			25	V_{GS} = 0 V, I_D = 100 mA
Drain Leakage Current	$I_{LEAK.D}$	µA			0.1	V_{GS} = - 4 V, V_{DS} = 350 V
Gate Leakage Current	$I_{LEAK.G}$	µA			0.1	V_{GS} = - 20 V
LED Constant Forward Voltage (drain$^-$, source$^+$)	V_{SD}	V			1.0	V_{GS} = - 4.5 V, I_S = 150 mA

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MOSFET chip DMOST222

Description

MOSFET chip with internal channel (normally-on) DMOST222 is designed to be used in hybrid microchips and packaged field-effect transistors.

Features

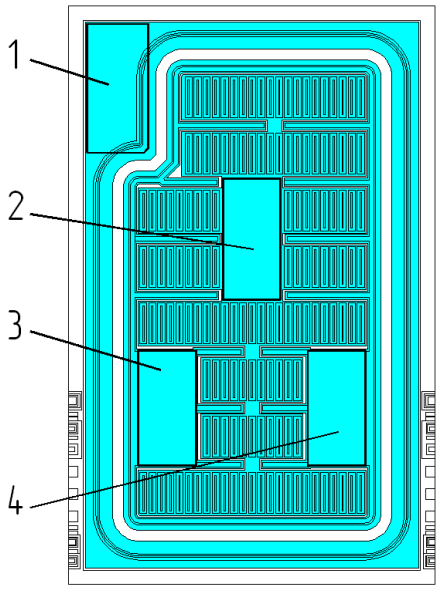
- Chip size — 1.01 x 1.6 mm
- Chip thickness – 0.36±0.02 mm
- Metallization: top – AlSi, bottom – Si

Absolute maximum ratings

Maximum Temperature	
Storage Temperature	- 60 °C to 150 °C
Operating Junction Temperature	- 60 °C to 125 °C
Maximum Voltage	
Drain-to-Source Voltage	230 V
Gate-to-Source Voltage	- 35 V

Contact pads size

Pad #	X, mm	Y, mm	Pad #	X, mm	Y, mm
1	0.17	0.36	3	0.16	0.32
2	0.16	0.33	4	0.16	0.32



1 – Drain

2 – Gate

3 – Source

4 – Source

Electrical characteristics (T = 25 °C)

Parameter	Symbol	Unit	Min.	Typ.	Max.	Conditions
Drain-to-Source ON-State Resistance	R_{DS}	Ohm			15	V_{GS} = 0 V, I_D = 100 mA
Drain Leakage Current	$I_{LEAK.D}$	µA			1.0	V_{GS} = - 4 V, V_{DS} = 230 V
Gate Leakage Current	$I_{LEAK.G}$	µA			0.1	V_{GS} = - 35 V, V_{DS} = 0 V
LED Constant Forward Voltage (drain$^-$, source$^+$)	V_{SD}	V			0.95	V_{GS} = - 4.5 V, I_D = 150 mA
Drain Saturation Current	$V_{SAT.D}$	mA	160			V_{GS} = - 0.5 V, V_{DS} = 5 V
					280	V_{GS} = - 0.5 V, V_{DS} = 8 V