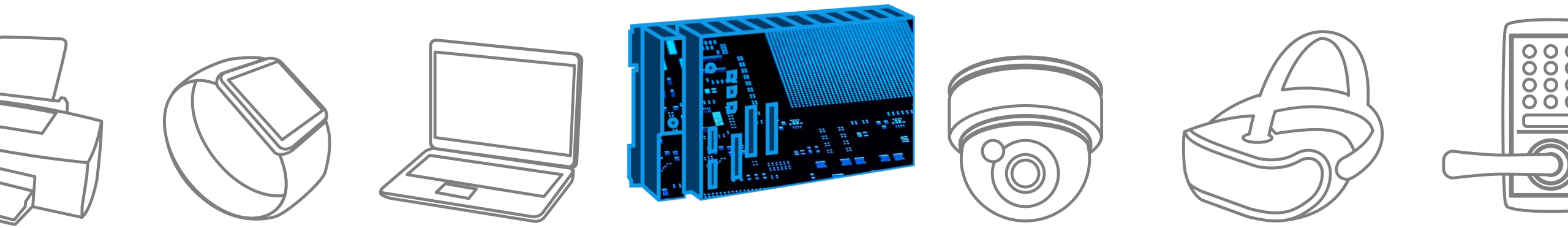
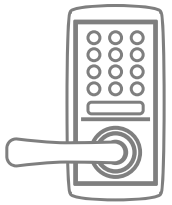
TOSHIBA

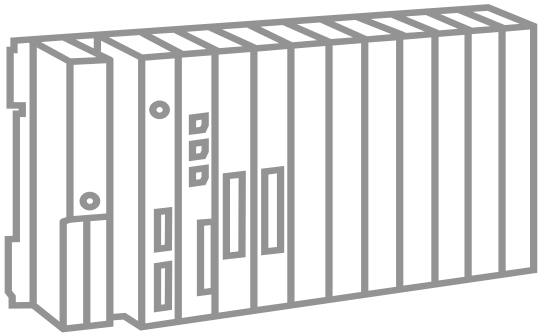
R22

Programmable Logic Controller

Solution Proposal by Toshiba

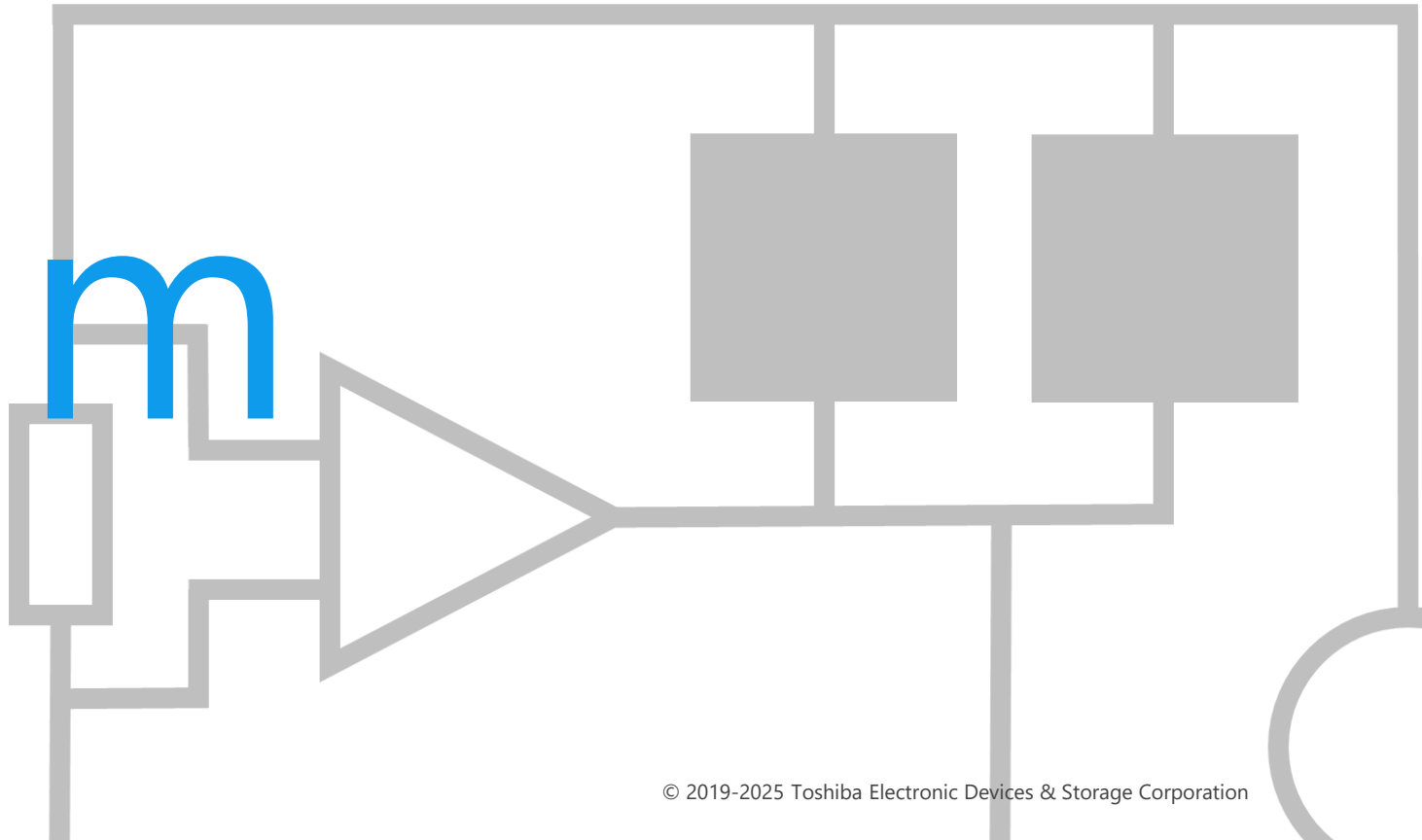




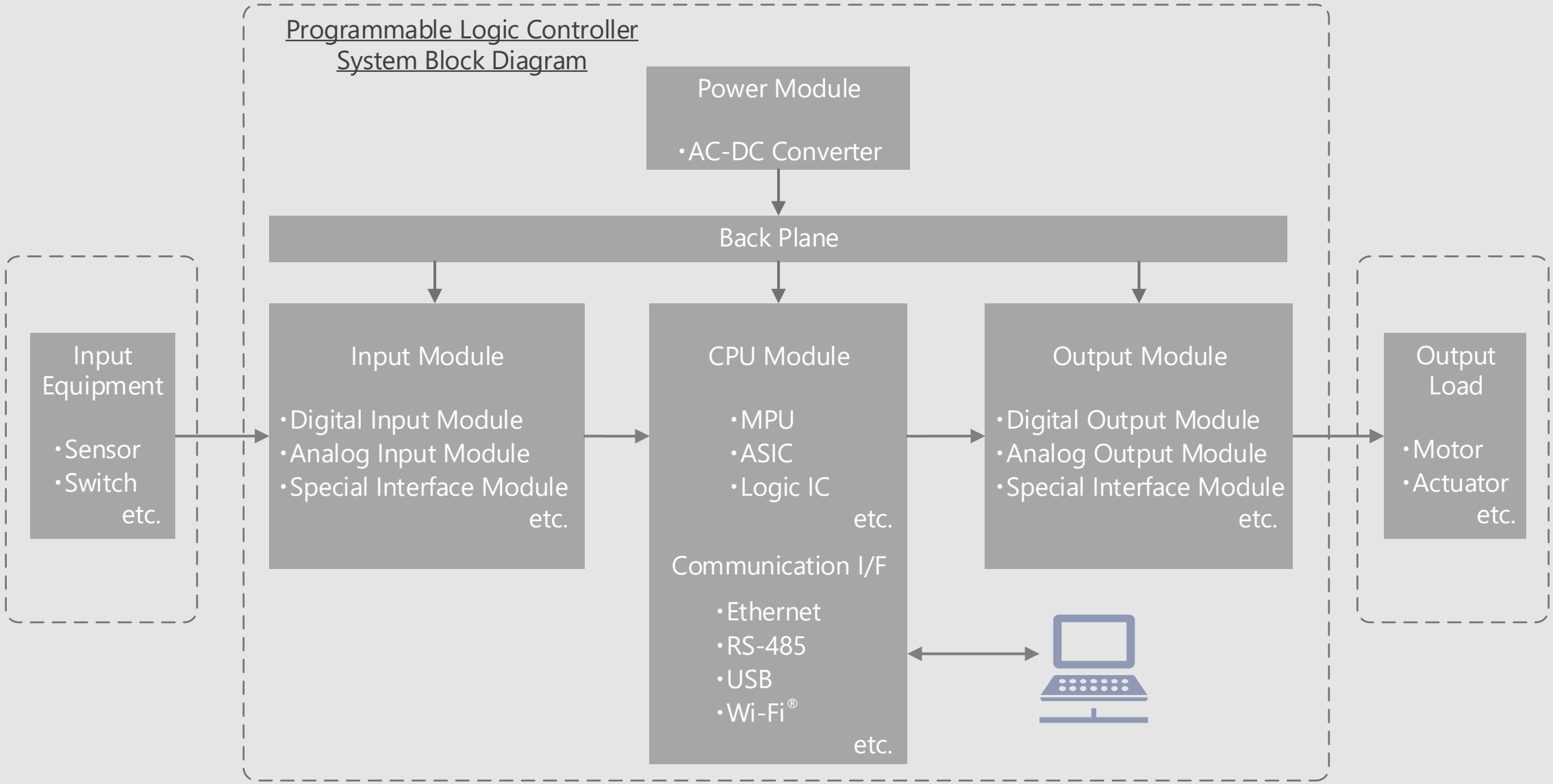


Toshiba Electronic Devices & Storage Corporation provides comprehensive device solutions to customers developing new products by applying its thorough understanding of the systems acquired through the analysis of basic product designs.

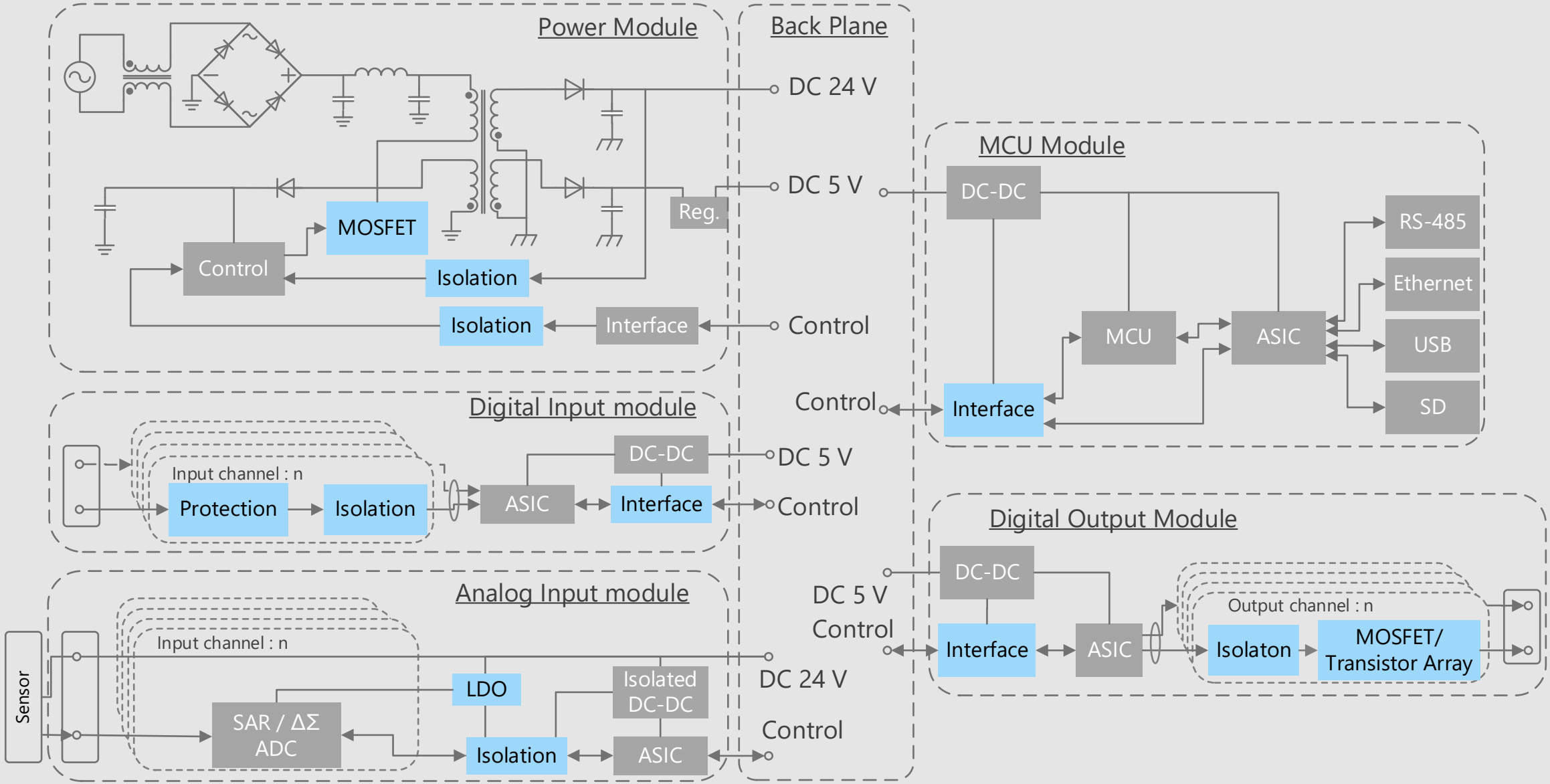
Block Diagram



Programmable Logic Controller　Overall System

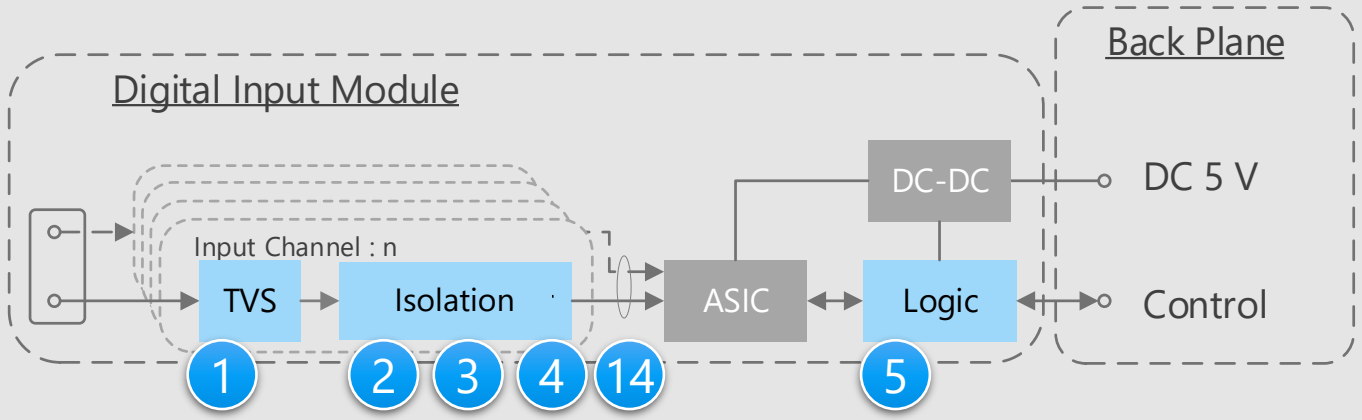


Programmable Logic Controller　Overall block diagram



Programmable Logic Controller　Detail of digital input module section

Digital input module circuit



* Click on the numbers in the circuit diagram to jump to the detailed descriptions page

Criteria for device selection

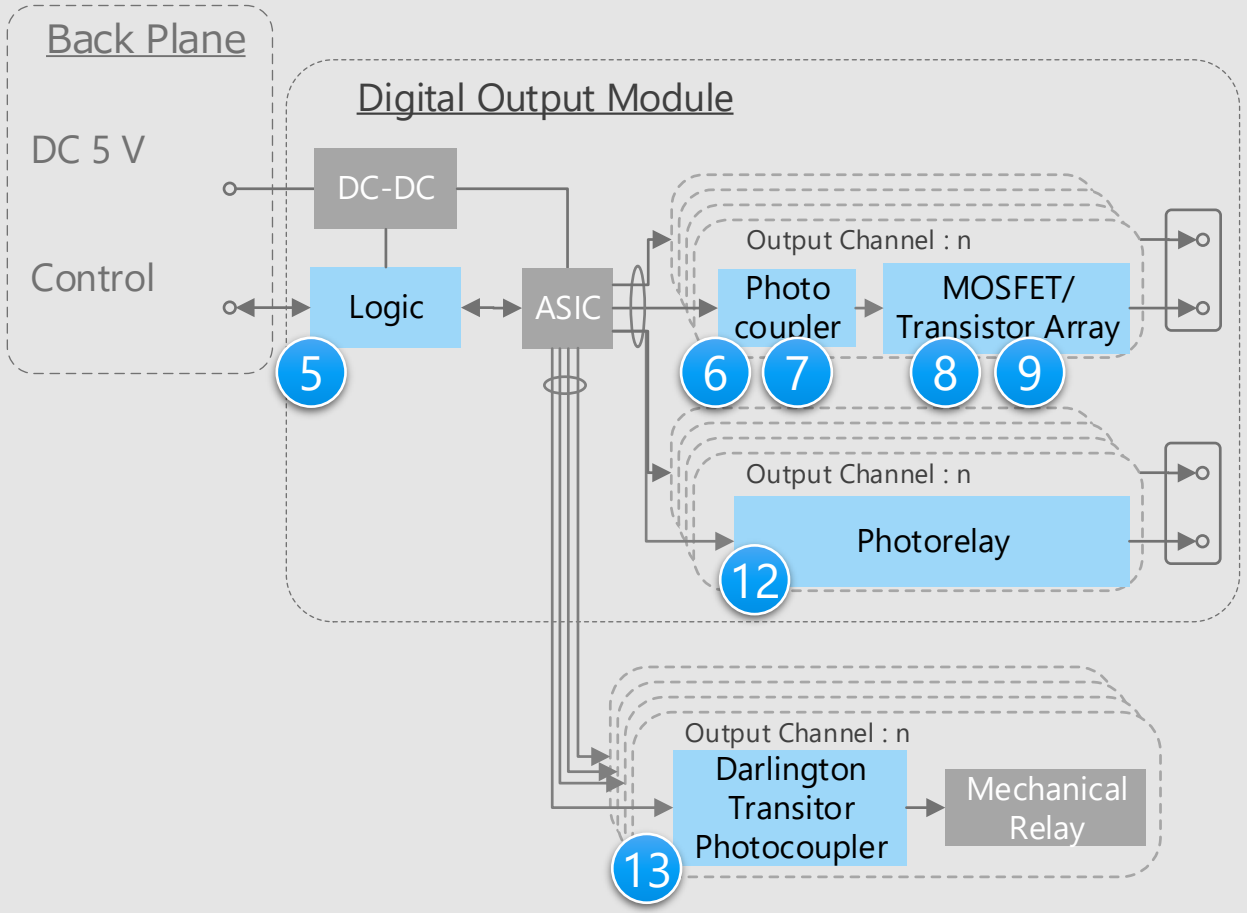
- TVS diode is suitable for ESD protection of signal input line.
- Photocoupler or digital isolator is suitable for isolation between signal input line and ASIC.

Proposals from Toshiba

- **Prevent circuit malfunctions by absorbing electrostatic discharge (ESD) from external terminals** 1
  TVS diode
- **Realize high gain and isolated high speed signal transmission**
  Transistor output photocoupler (AC input) 2
  IC output photocoupler
  for high-speed communication (AC input) 3
  IC output photocoupler
  for high-speed communication 4
  (supports IEC 61131-2)
  Standard digital isolator 14
- **Low voltage operation and small/thin package**
  One-gate logic IC 5

Programmable Logic Controller　Detail of digital output module section

Digital output module circuit



* Click on the numbers in the circuit diagram to jump to the detailed descriptions page

Criteria for device selection

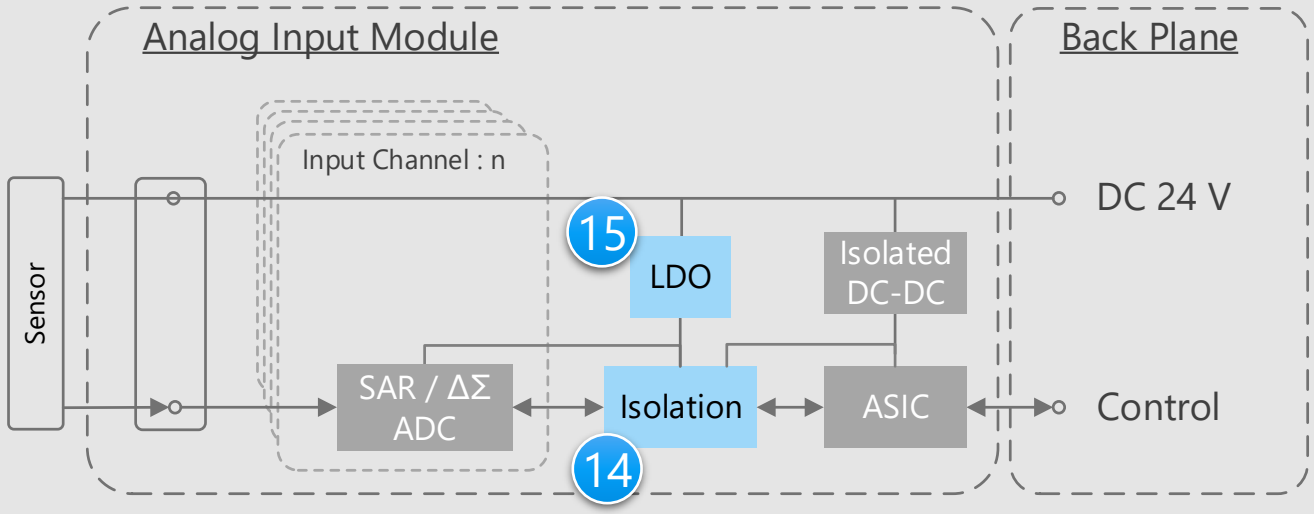
- Photocoupler or digital isolator is suitable for isolation between signal output line and ASIC.

Proposals from Toshiba

- **Low voltage operation and small/thin package**
  One-gate logic IC 5
- **Realize high gain and isolated high speed signal transmission**
  Transistor output photocoupler (DC input) 6
  IC output photocoupler for high-speed communication (DC input) 7
  Darlington transistor output photocoupler 13
- **Realize the set with low power consumption by low on-resistance**
  Small signal MOSFET 8
- **High voltage and high current by DMOS FET output**
  Transistor array 9
- **High output current and low on-resistance**
  Photorelay 12

Programmable Logic Controller　Detail of analog input module section

Analog input module circuit (single channel)



* Click on the numbers in the circuit diagram to jump to the detailed descriptions page

Criteria for device selection

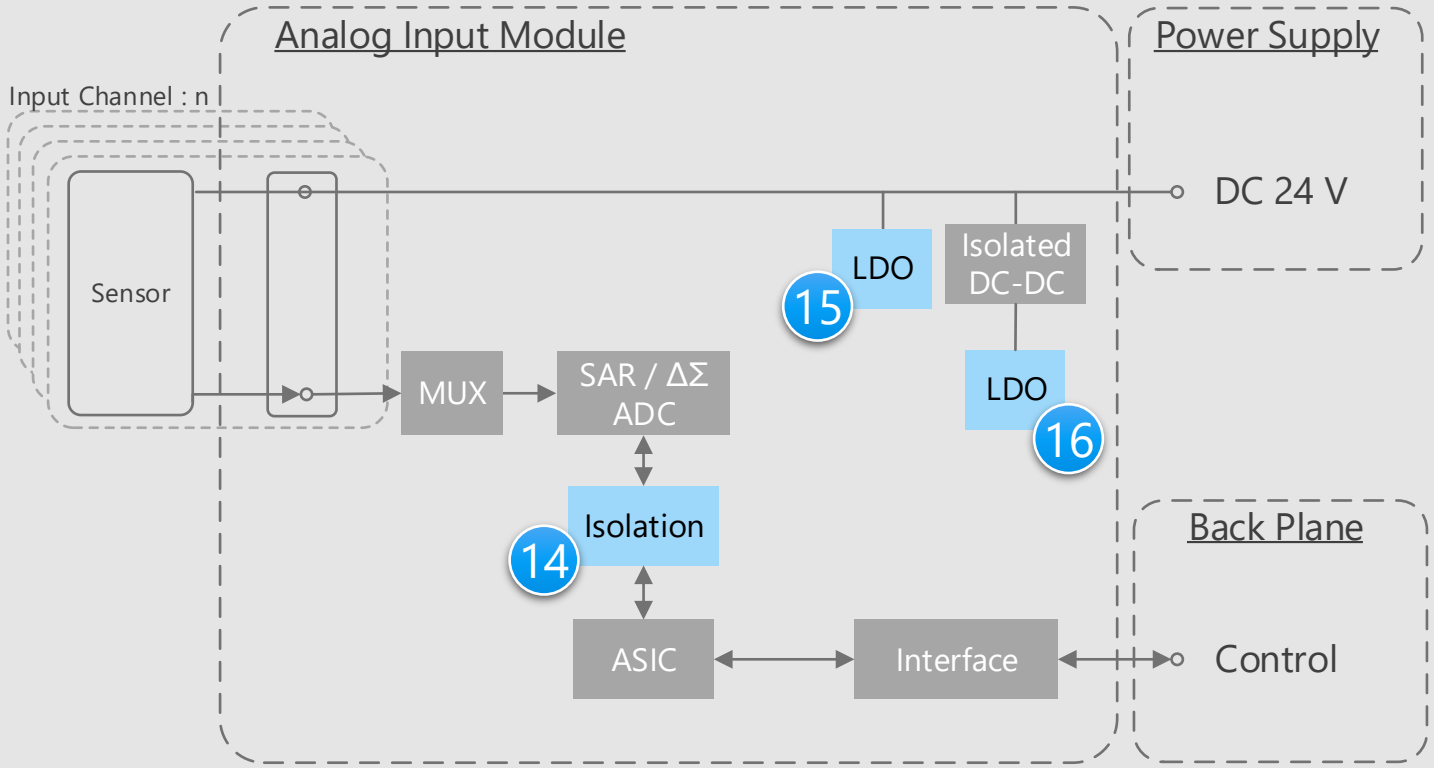
- Digital isolator is suitable for isolated high speed clock signal transmission necessary to operate SAR type AD converter.
- Digital isolator is suitable for isolation between signal input line and ASIC.

Proposals from Toshiba

- **Isolation device suitable for high-speed clock input**
  Standard digital isolator 14
- **Contribute to low power consumption in standby operation** 15
  High voltage small surface mount LDO regulator

Programmable Logic Controller　Detail of analog input module section

Analog input module circuit (multiple channels)



* Click on the numbers in the circuit diagram to jump to the detailed descriptions page

Criteria for device selection

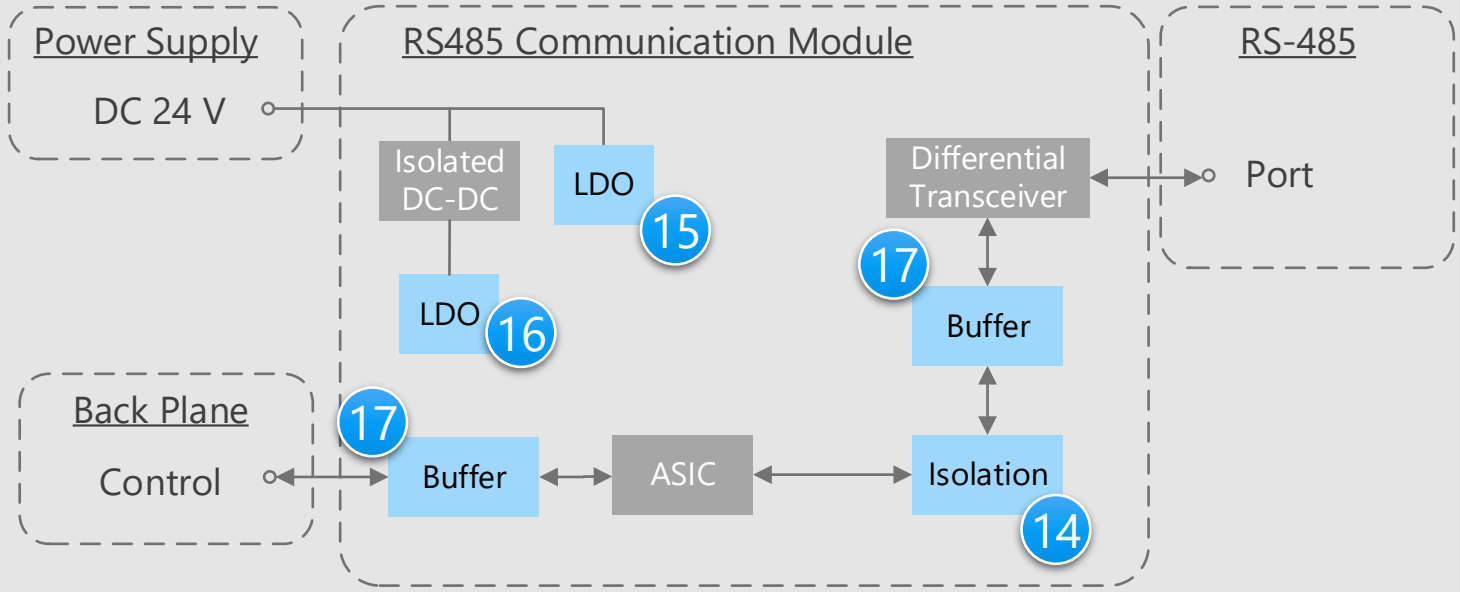
- Digital isolator is suitable for isolated high speed clock signal transmission necessary to operate SAR type AD converter.

Proposals from Toshiba

- **Isolation device suitable for high-speed clock input**
  Standard digital isolator 14
- **Contribute to low power consumption in standby operation** 15
  High voltage small surface mount LDO regulator
- **Supply the power with low noise**
  Small surface mount LDO regulator 16

Programmable Logic Controller　Detail of MCU module section

MCU module (RS-485 communication) circuit



* Click on the numbers in the circuit diagram to jump to the detailed descriptions page

Criteria for device selection

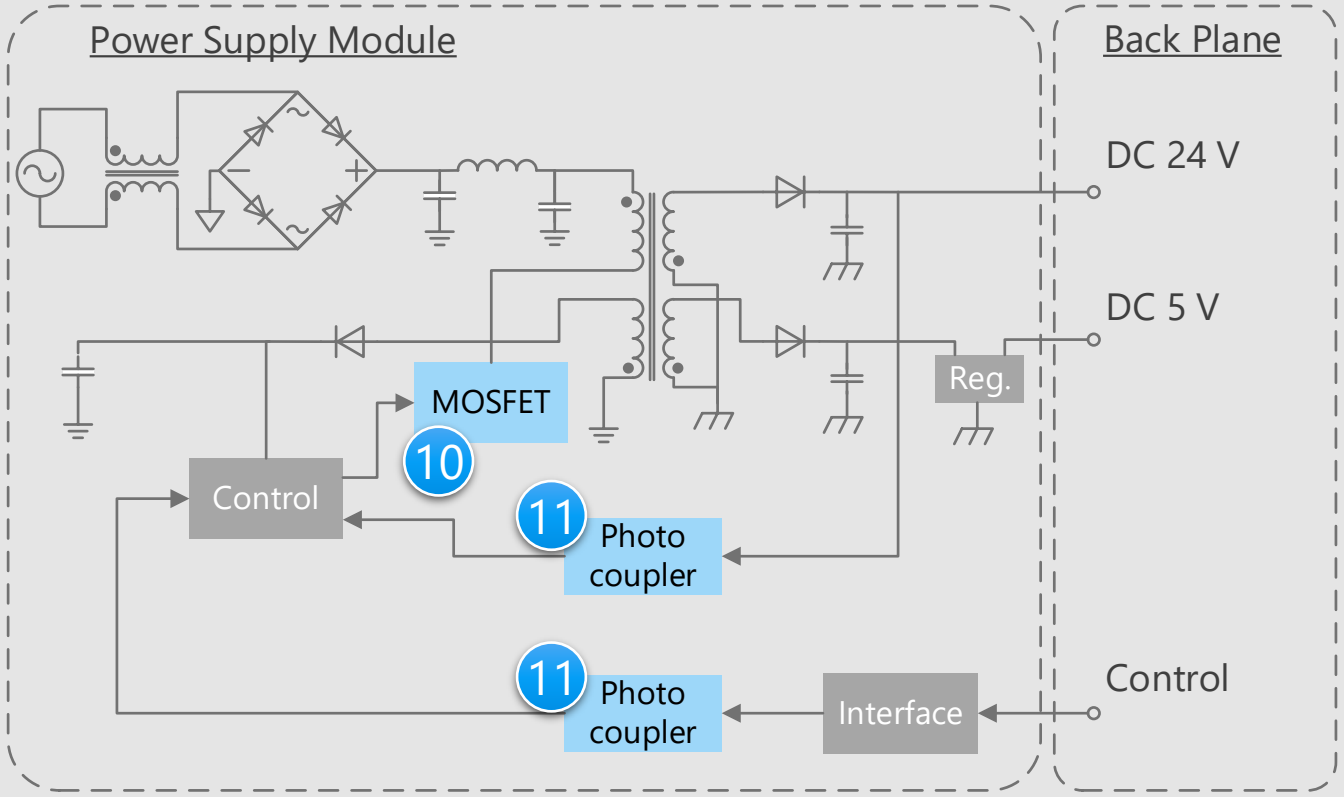
- Digital isolator is suitable for isolated high speed clock signal transmission necessary to operate SAR type AD converter.

Proposals from Toshiba

- **Isolation device suitable for high-speed clock input**
  Standard digital isolator 14
- **Contribute to low power consumption in standby operation** 15
  High voltage small surface mount LDO regulator
- **Supply the power with low noise**
  Small surface mount LDO regulator 16
- **Low voltage operation and small/thin package**
  CMOS logic IC 17

Programmable Logic Controller　Detail of power supply module section

Power supply module circuit



* Click on the numbers in the circuit diagram to jump to the detailed descriptions page

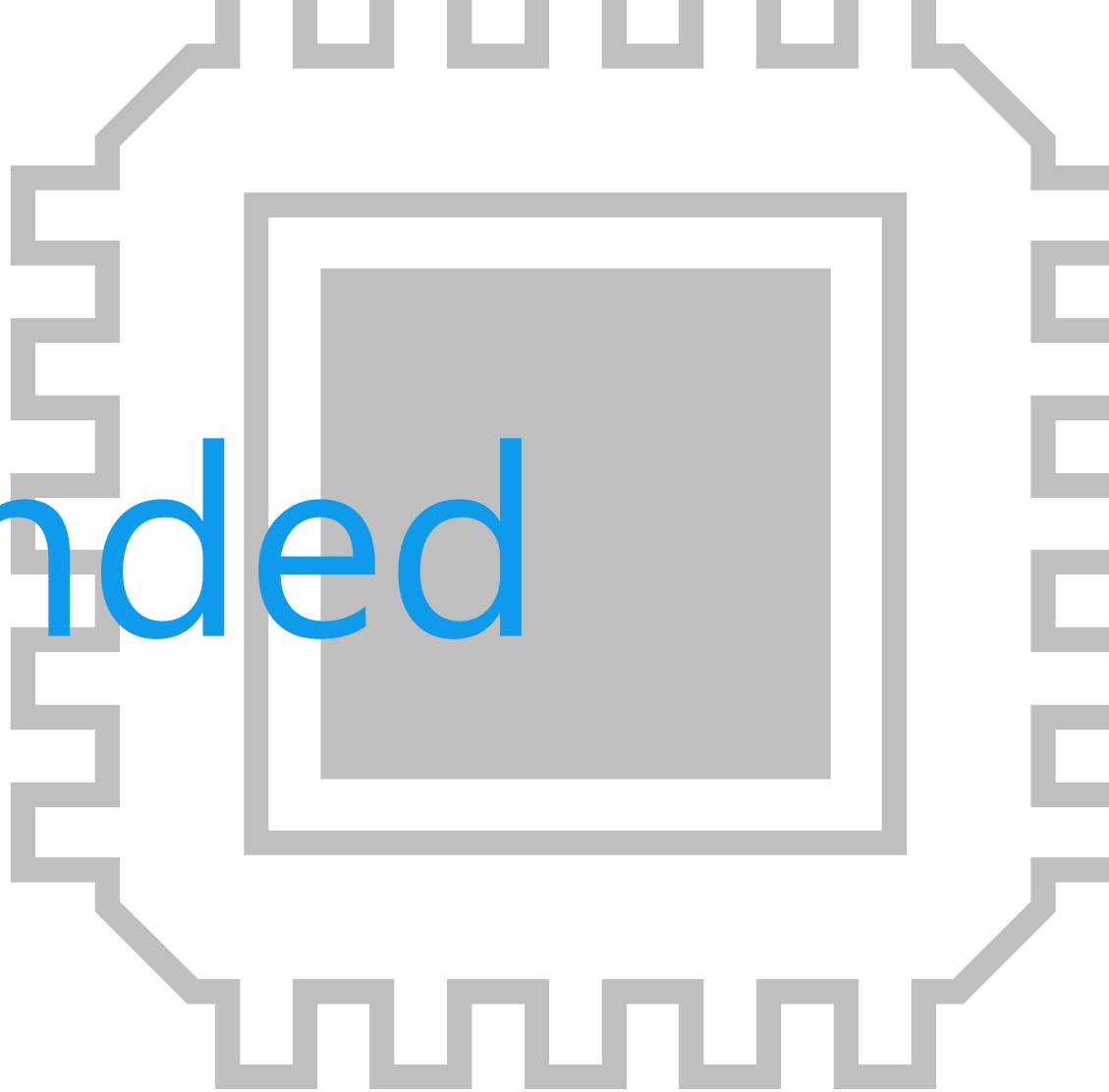
Criteria for device selection

- A low switching loss MOSFET is suitable for improving the efficiency of AC-DC power supply.
- Photocoupler is suitable for isolated signal transmission between primary and secondary sides of AC-DC power supply.

Proposals from Toshiba

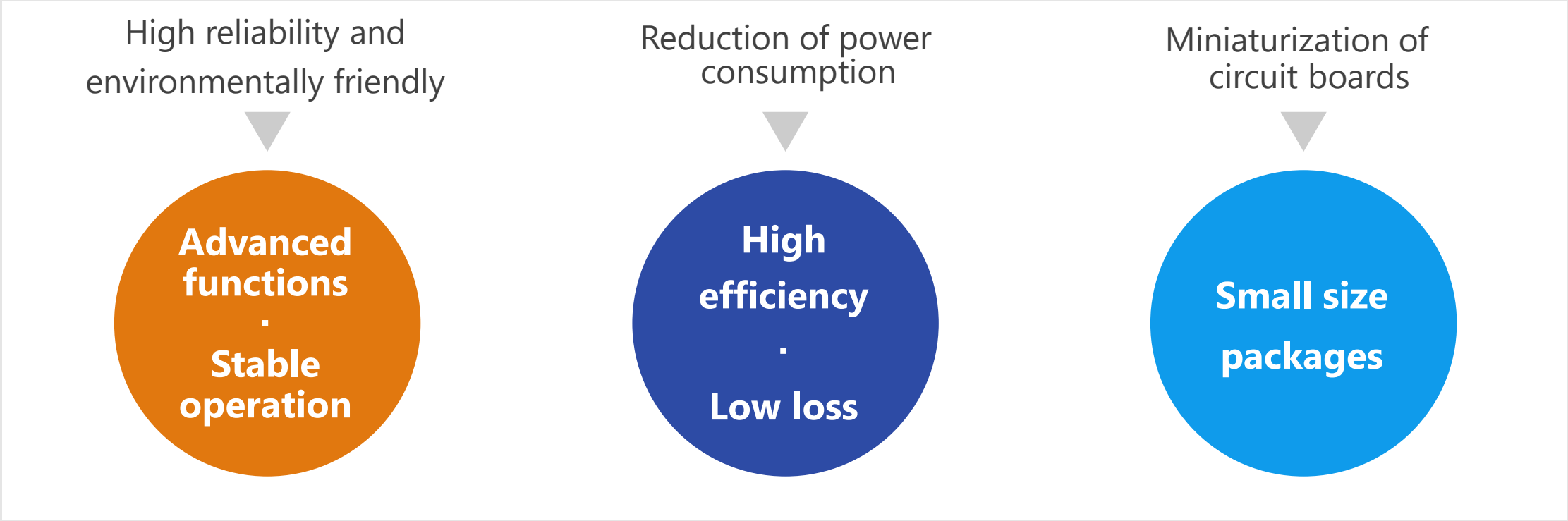
- **Low on-resistance contributes to realize low power consumption of the set**
  DTMOSⅣ Series MOSFET 10
- **High isolation voltage**
  Transistor output photocoupler (DC input) 11

Recommended Devices



Device solutions to address customer needs

As described above, in the design of Programmable Logic Controller, **“High reliability and environmentally friendly“**, **“Reduction of power consumption”** and **“Miniaturization of circuit boards”** are important factors. Toshiba’s proposals are based on these three solution perspectives.



Device solutions to address customer needs

	Advanced functions · Stable operation	High efficiency · Low loss	Small size packages
1 TVS diode	●	●	●
2 Transistor output photocoupler (AC input)	●	●	●
3 IC output photocoupler for high-speed communication (AC input)	●	●	●
4 IC output photocoupler for high-speed communication (supports IEC 61131-2)	●	●	●
5 One-gate logic IC		●	●
6 Transistor output photocoupler (DC input)	●	●	●
7 IC output photocoupler for high-speed communication (DC input)	●	●	●
8 Small signal MOSFET		●	●
9 Transistor array	●	●	●
10 DTMOSⅣ Series MOSFET		●	●

Device solutions to address customer needs

	Advanced functions · Stable operation	High efficiency · Low loss	Small size packages
11 Transistor output photocoupler (DC input)	●	●	●
12 Photorelay	●	●	●
13 Darlington transistor output photocoupler	●	●	●
14 Standard digital isolator	●	●	●
15 High voltage small surface mount LDO regulator	●	●	●
16 Small surface mount LDO regulator	●	●	●
17 CMOS logic IC		●	●

1 TVS diode

DF2B7BSL / DF2B7AFS / DF2B7ACT / DF2B7AE / DF2B7AFU

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

Absorbs static electricity (ESD) from external terminals, prevents circuit malfunction and protects devices.

1 High ESD pulse absorption performance

Improved ESD absorption compared to our conventional products. (50 % reduction in operating resistance) For some products, both low operating resistance and low capacitance are realized and ensures high signal protection performance and signal quality.

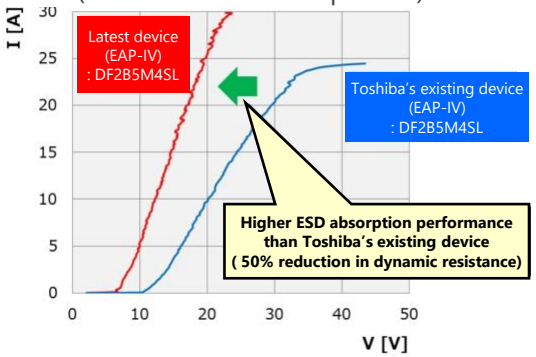
2 Suppress ESD energy by means of low clamp voltage

Protect the connected circuits/devices using Toshiba own technology.

3 Suitable for high density mounting

A variety of small packages are available.

ESD Pulse Absorption Performance
(Toshiba internal comparison)



Unidirectional

Suitable for paths such as logic signals. There are lineups of 1in1, 2in1, 4in1, 5in1, 7in1.

Bidirectional

Suitable for paths with both polar signals such as audio signals

Lineup

Part number	DF2B7BSL	DF2B7AFS	DF2B7ACT	DF2B7AE	DF2B7AFU
Package	SL2	SOD-923	CST2	ESC	USC
V_{RWM} (Max) [V]	5.5	5.5	5.5	5.5	5.5
C_t (Typ.) [pF]	12	8.5	8.5	8.5	8.5
R_{DYN} (Typ.) [Ω]	0.2	0.2	0.2	0.2	0.2
V_c (Typ.) [V] @I_{PP} = 1 A	7	8	8	8	8

(Note) This product is an ESD protection diode and cannot be used for purposes other than ESD protection.

◆Return to Block Diagram TOP

2 Transistor output photocoupler (AC input)

TLP292 / TLP292-4

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

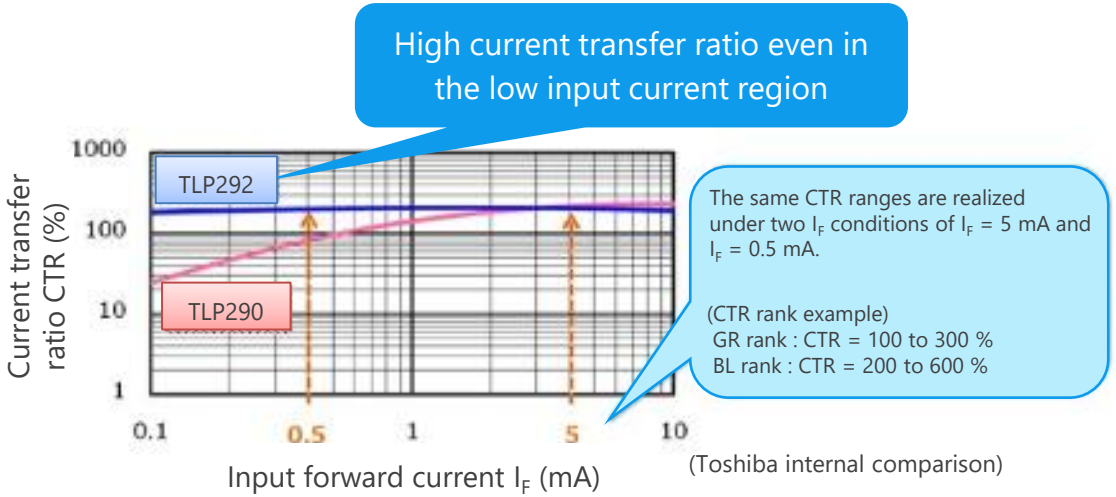
High CTR (Current Transfer Ratio) is realized even in low input current range (I_F = 0.5 mA).

1 High current transfer

The TLP292 and TLP292-4 are high-isolation photocouplers that optically couple phototransistor and high output infrared LED. Higher CTR in low input current range (@I_F = 0.5 mA) is realized.

2 Operating temperature is expanded to 125 °C

The operating temperature range is expanded (-55 to 125 °C) to ensure operating under severe conditions.



(Toshiba internal comparison)

Lineup

Part number	TLP292	TLP292-4
Package	SO4 	SO16 
BV_S [Vrms]	3750	3750
T_{opr} [°C]	-55 to 125	-55 to 125

◆Return to Block Diagram TOP

3 IC output photocoupler for high-speed communication (AC input)

TLP2395 / TLP2398

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

Input side supports the AC input and output side supports both sink and source logic signals.

1 AC input and sink/source logic output

AC input is supported by adding a reverse parallel LED on the LED side of the photocoupler. Output supports both sink and source logic signal without adding a pull-up or pull-down resistor.

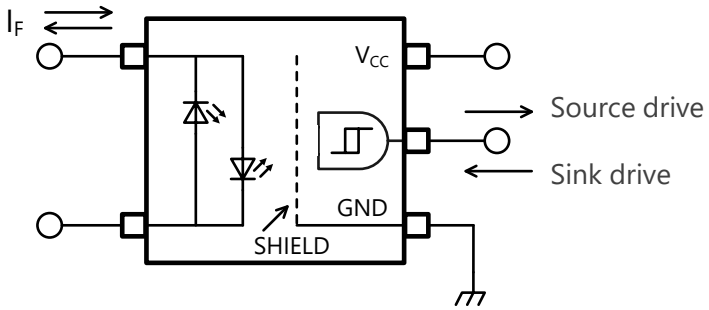
2 Operating temperature is expanded to 125 °C

The operating temperature range is expanded (-40 to 125 °C) to ensure operating under severe conditions.

3 Wide supply voltage range V_{CC} = 3.0 to 20 V

Operation with a supply voltage from 3.0 V is possible, enabling the use as common components in mixed 3.3 V and 5.0 V systems.

TLP2395 internal circuit



UL approved : UL1577, File No.E67349
cUL approved : Component Acceptance Service No.5A File No.E67349
VDE approved : EN60747-5-5, EN62368-1 (Note)
CQC approved : GB4943.1, GB8898 Thailand factory
(Note) To select a VDE approved type, designate the "Option (V4)".

Lineup

Part number	TLP2395	TLP2398
Package	5pin SO6 	5pin SO6 
BV_S [Vrms]	3750	3750
T_{opr} [°C]	-40 to 125	-40 to 125
Output type	Buffer logic	Inverter logic

◆Return to Block Diagram TOP

Value provided

Supports the system design compliant to IEC 61131-2 Type 1.

1 IEC 61131-2 Type1 compliant

Minimum and maximum value of input threshold current are specified to support designing a digital input module to follow the operation range that is defined in IEC 61131-2 Type 1.

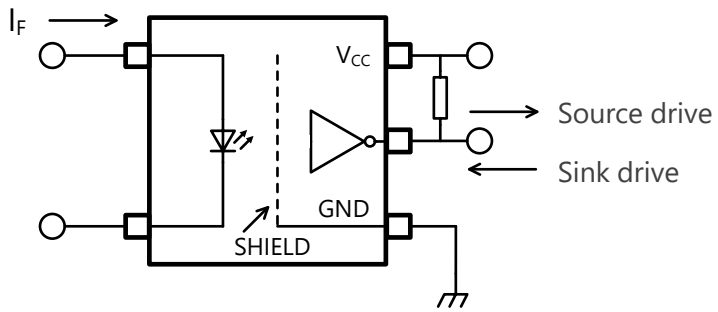
2 High immunity to slow inputs

The output without chattering is kept even when the input has gradual rise/fall time until 60 s at 24 V.

3 Wide supply voltage range V_{CC} = 2.7 to 5.5 V

Operation with a supply voltage from 2.7 V to 5.5 V is possible, enabling the use as common components in mixed 3.3 V and 5.0 V systems.

TLP2363 internal circuit



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cUL approved : Component Acceptance Service No.5A File No.E67349
VDE approved : EN60747-5-5, EN62368-1 (Note)
CQC approved : GB4943.1, GB8898 Japan factory
(Note) To select a VDE approved type, designate the "Option (V4)".

Lineup

Part number	TLP2363
Package	5pin SO6 
BV_S [Vrms]	3750
T_{opr} [°C]	-40 to 105
Output type	Open collector

◆Return to Block Diagram TOP

5 One-gate logic IC

TC7WZ07FK / TC7WZ00FK

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

Offers ease of use through a lineup of common packages and suitable for low voltage operation.

1 Low power and high speed

High-speed operation is achieved with the low power of CMOS.

2 Compatible with low voltage systems

The wide operating voltage range of 1.65 to 5.5 V enables to be used with low voltage systems.

3 Power down protection function

The output terminal has a 5.5 V power-down protection function to protect the device when the power is off.

TC7WZ07FK

TC7WZ00FK

Lineup

Part number	TC7WZ07FK	TC7WZ00FK
Package	US8 	US8 
V_{CC} [V]	1.65 to 5.5	1.65 to 5.5
t_{PZL}/t_{PD} (Typ.) [ns] @V_{CC} = 5 V, C_L = 50 pF	2.3	2.4
T_{opr} (Max) [°C]	125	125
Function	Non-Inverter (open drain)	2-Input NAND

◆Return to Block Diagram TOP

6 Transistor output photocoupler (DC input)

TLP293 / TLP293-4

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

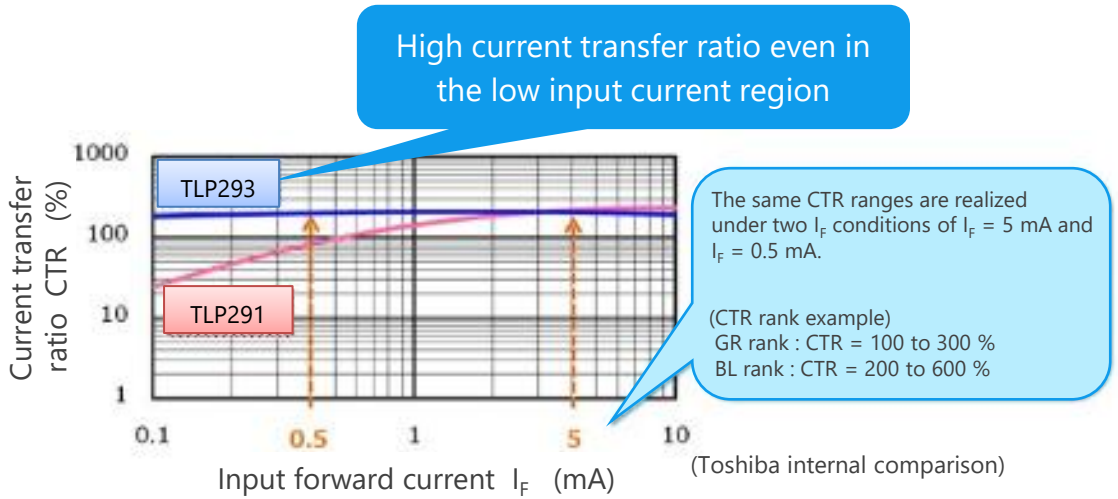
High CTR (Current Transfer Ratio) is realized even in low input current range (I_F = 0.5 mA).

1 High current transfer ratio

The TLP293 and TLP293-4 are high-isolation photocouplers that optically couple phototransistor and high output infrared LED. Higher CTR in low input current range (@I_F = 0.5 mA) is realized.

2 Operating temperature is expanded to 125 °C

The operating temperature range is expanded (-55 to 125 °C) to ensure operating under severe conditions.



(Toshiba internal comparison)

Lineup

Part number	TLP293	TLP293-4
Package	SO4 	SO16 
BV_S [Vrms]	3750	3750
T_{opr} [°C]	-55 to 125	-55 to 125

◆Return to Block Diagram TOP

IC output photocoupler for high-speed communication (DC input)

TLP2355 / TLP2358

Advanced functions · Stable operation | High efficiency · Low loss | Small size packages

Value provided

Supports both sink and source logic signal outputs.

1 Sink and source logic output

Output supports both sink and source logic signal without adding a pull-up or pull-down resistor.

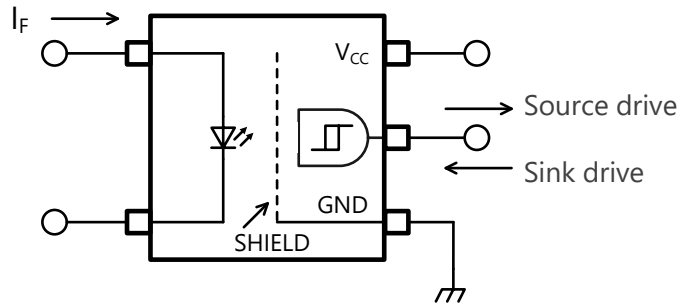
2 Operating temperature is expanded to 125 °C

The operating temperature range is expanded (-40 to 125 °C) to ensure operating under severe conditions.

3 Wide supply voltage range V_{CC} = 3.0 to 20 V

Operation with a supply voltage from 3.0 V is possible, enabling the use as common components in mixed 3.3 V and 5.0 V systems.

TLP2355 internal circuit



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VDE approved : EN60747-5-5, EN62368-1 (Note)
CQC approved : GB4943.1, GB8898 Thailand factory
(Note) To select a VDE approved type, designate the "Option (V4) ".

Lineup

Part number	TLP2355	TLP2358
Package	5pin SO6 	5pin SO6 
BV_S [Vrms]	3750	3750
T_{opr} [°C]	-40 to 125	-40 to 125
Output type	Buffer logic	Inverter logic

◆Return to Block Diagram TOP

8 Small signal MOSFET

SSM3K341R / SSM3K341TU

Advanced functions · Stable operation | High efficiency · Low loss | Small size packages

Value provided

Suitable for power management switches, contributing to the board area miniaturization.

1 High temperature operation

Channel temperature up to 175 °C and storage temperature from -55 to 175 °C are supported to ensure operating under severe conditions.

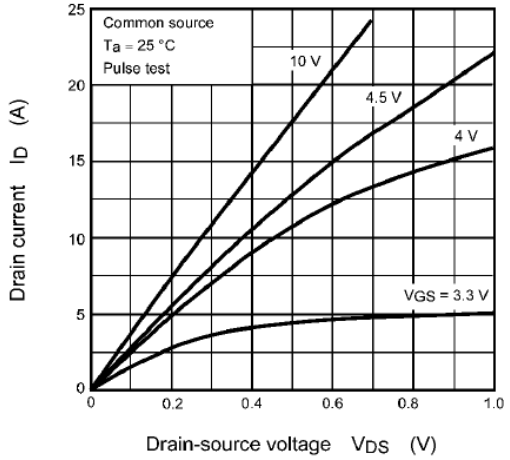
2 Low on-resistance

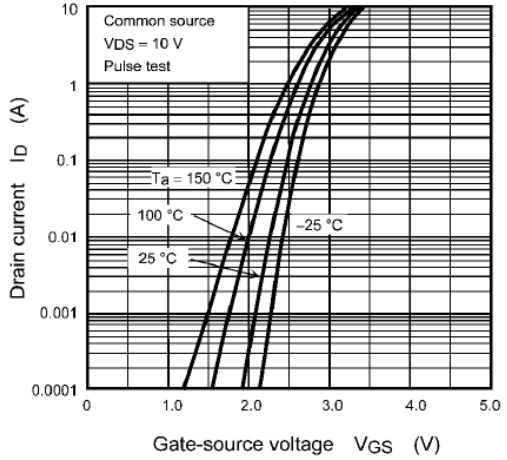
By reducing the on-resistance between the drain and source, heat generation and power consumption can be reduced.

3 Small size package

In addition to the industry standard SOT-23F package, a smaller UFM package is also available with the same level of power consumption, contributing to overall set miniaturization.

SSM3K341R, SSM3K341TU





Lineup

Part number	SSM3K341R	SSM3K341TU
Package	SOT-23F 	UFM 
Polarity	N-ch	N-ch
$R_{DS(ON)}$ (Typ.) [Ω] @V_{GS} = 10 V	28	28
I_D [A]	6	6
V_{DSS} [V]	60	60
V_{GSS} [V]	±20	±20

◆Return to Block Diagram TOP

9 Transistor array

TBD62003AFWG / TBD62083AFG / TBD62064AFG

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

DMOS FET is used for the output of drive circuit and realizes low loss. And this transistor array has a CMOS input. It can be directly controlled from the controller's I/O, etc.

1 Rich product lineup

In addition to the listed products, we have lineup of various packaged products (such as DIP, SOL, SOP, SSOP, etc.) and source output type products.

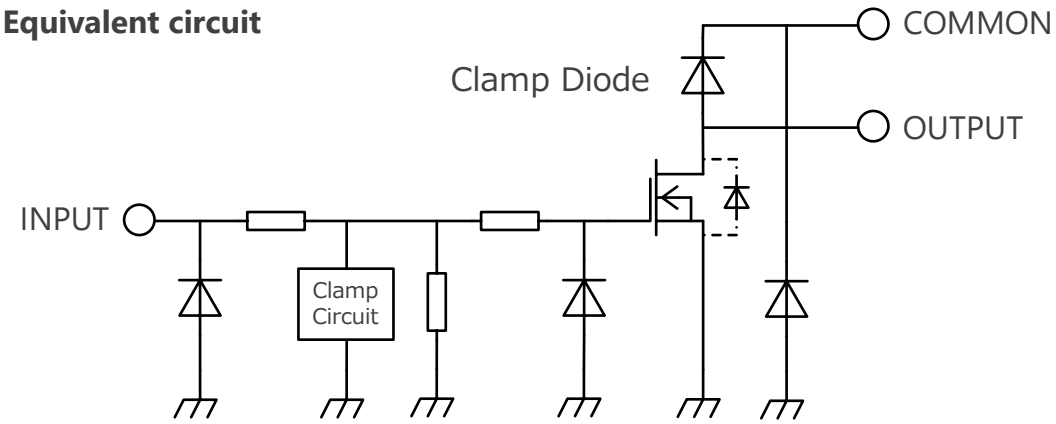
2 Built-in output clamp diode

Built-in output clamp diode regenerates the back electromotive force generated by switching of an inductive.

3 Higher current drive is possible

It can output higher current by connecting multiple outputs in parallel.

Equivalent circuit



(Note) Equivalent circuit may be simplified for explanatory purpose.

Lineup

Part number	TBD62003AFWG	TBD62083AFG	TBD62064AFAG
Package	P-SOP16-0410-1.27-002	SOP18-P-375-1.27	P-SSOP24-0613-1.00-001
Output type	Sink	Sink	Sink
Number of channels	7ch	8ch	4ch
Input level	H	H	H
I_{OUT} [mA/ch]	500	500	1500
V_{OUT} [V]	50	50	50

◆Return to Block Diagram TOP

Value provided

These are super junction structure MOSFETs with low on-resistance and suitable for switching regulators.

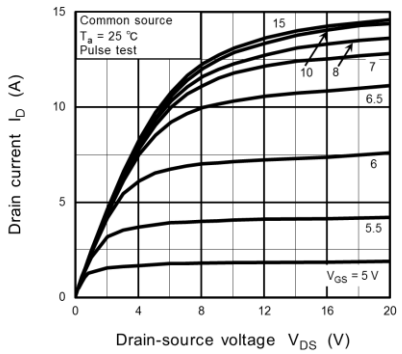
1 Low on-resistance

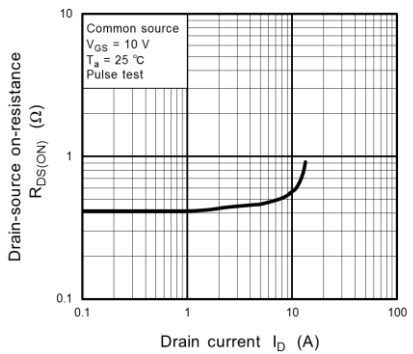
Heat generation and power consumption are reduced since the on-resistance between the drain and source is low .

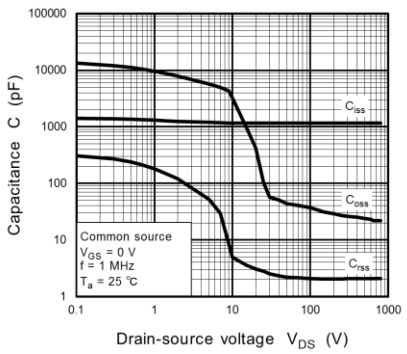
2 Low leak current

Drain cut-off current I_{DSS} = 10 μA (Max) (@V_{DS} = 800 V)

Characteristic examples of TK10A80W







Lineup

Part number	TK10A80W	TK12A80W
Package	TO-220SIS	
V_{DSS} [V]	800	800
I_D [A]	9.5	11.5
P_D [W]	40	45
C_{iss} (Typ.) [pF]	1150	1400
$R_{DS(ON)}$ (Max) [Ω]	0.55	0.45
Polarity	N-ch	N-ch

◆Return to Block Diagram TOP

11 Transistor output photocoupler (DC input)

TLP383

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

Contributes to reducing circuit board area and equipment maintenance-free operation by improving reliability.

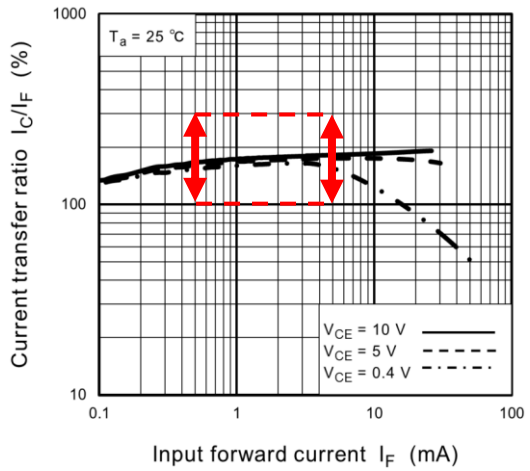
1 High and flat current transfer ratio

Current transfer ratio is flat in 0.5 to 5 mA of input current range.
This flatness is suitable for feedback use.

2 Operating temperature is expanded to 125 °C

The operating temperature range is expanded (-55 to 125 °C) to ensure operating under severe conditions.

Current transfer ratio



Example of GR rank
100 to 300 % @I_F = 0.5 mA
100 to 300 % @I_F = 5.0 mA

Lineup

Part number	TLP383
Package	4pin SO6L 
BV_S [Vrms]	5000
T_{opr} [°C]	-55 to 125

◆Return to Block Diagram TOP

Value provided

Photorelay consists of an infrared light emitting diode optically coupled to a photo-MOSFET and is suitable for replacing mechanical relays.

1 Low on-resistance

Low on-resistance contributes to low power consumption.

2 Wide on-state current range

The range of on-state current I_{ON} is wide and suitable for power line control.

I_{ON} = 2.0 A (Max)

(TLP241B: A connection) [Note]

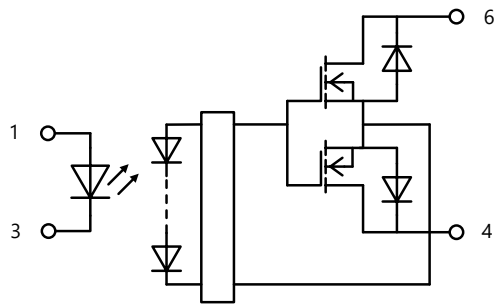
3 Small package

Packages contribute to reduce the size of the set and improve the degree of freedom for design are provided.

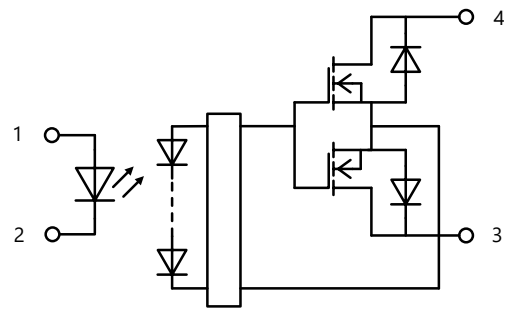
VSON package size: 1.45 x 2.45 x 1.3 mm (Typ.)

[Note] Please refer to the technical data sheet for connection.

TLP241B
Internal equivalent circuit



TLP3420
Internal equivalent circuit



Lineup

Part number	TLP241B	TLP3420
Package	DIP4 	VSON4 
I_{ON} [A]	2.0	0.1
V_{OFF} [V]	100	100
R_{ON} (Max) [Ω]	0.2	14
I_{FT} (Max) [mA]	3	3
BV_S [Vrms]	5000	500

◆Return to Block Diagram TOP

13 Darlington transistor output photocoupler

TLP187 / TLP627M

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

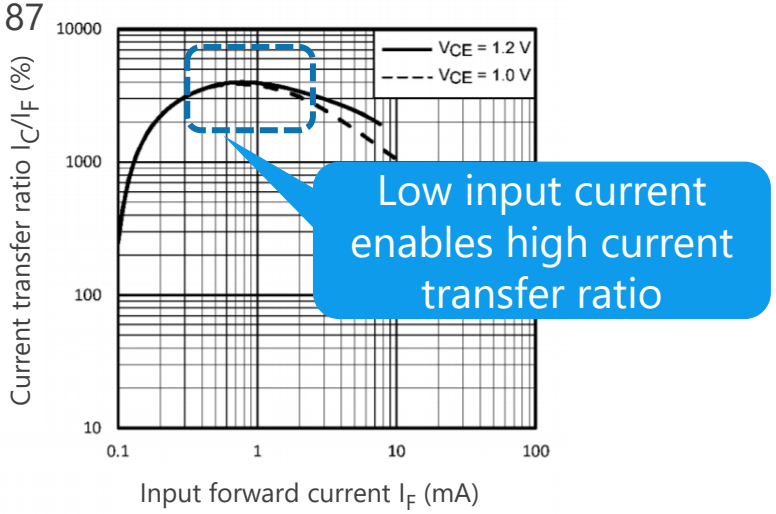
Value provided

High output current can be controlled by low input current.

1 High current transfer ratio (1000% (Min)) at low input current (I_F = 1 mA) is realized

Darlington transistor detector chip contributes to high current transfer ratio (1000% (Min)). (TLP187)

TLP187



2 Operating temperature is expanded to 110 °C

The operating temperature range is expanded (-55 to 110 °C) to ensure operating under severe conditions.
(Meanwhile, existing TLP127 was up to 100 °C)

Lineup

Part number	TLP187	TLP627M
Package	4pin SO6 	DIP4 
BV_S [Vrms]	3750	5000
T_{opr} [°C]	-55 to 110	-55 to 110

◆Return to Block Diagram TOP

14 Standard digital isolator

DCL54xx01 Series

Advanced functions · Stable operation

High efficiency · Low loss

Small size packages

Value provided

Digital isolator for high-speed logic circuits, suitable for isolating communication lines.

1 High speed response

It is a four-channel high speed logic digital isolator and realizes the data rate of 150 Mbps (Max).

2 High noise immunity

Magnetic coupling type can block the common-mode noise and realize stable operation in case of large dv/dt noise is applied between the input and output during switching.

Common Mode Transient Immunity (CMTI)

= ±200 [kV/μs] (Typ.)

3 High reliability

Double isolation structure provides high dielectric strength and reliability.

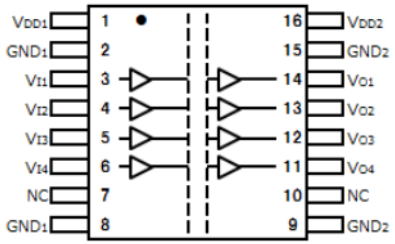
Reinforced isolation 5000 [Vrms]

Estimated isolation life >70 years [Note]

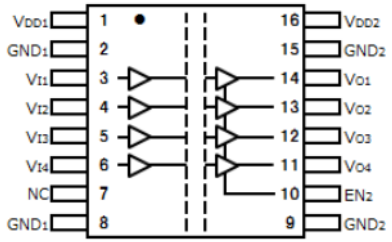
[Note] Estimated by TDDB (Time Dependent Dielectric Breakdown) test

Circuit configuration

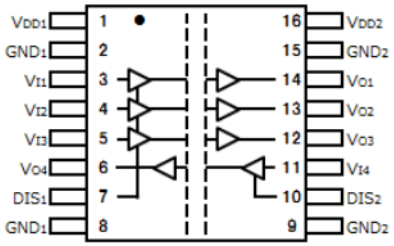
DCL540C01
DCL540D01



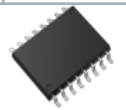
DCL540L01
DCL540H01



DCL541A01
DCL541B01



Lineup

Part number	DCL540C01	DCL540D01	DCL540L01	DCL540H01	DCL541A01	DCL541B01
Package	SOIC16-W 					
Channel	4 (Forward: 4, Reverse: 0)				4 (Forward: 3, Reverse: 1)	
BV_S [Vrms]	5000					
T_{opr} [°C]	-40 to 110					
Default output State	Low	High	Low	High	Low	High
Control signal	-		Output Enable		Input Disable	

◆Return to Block Diagram TOP

15 High voltage small surface mount LDO regulator

TCR1HF Series

Advanced functions · Stable operation | High efficiency · Low loss | Small size packages

Value provided

A wide lineup of products suitable for high-performance requirements, from general-purpose types to small package types, is offered.

1 Wide input voltage range

Operatable input voltage is up to 36 V and output voltage range is from 1.8 to 5.0 V.

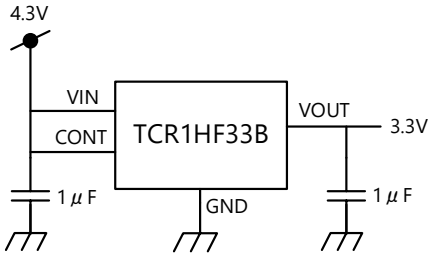
2 Low quiescent current $I_{B(ON)}$

Quiescent current $I_{B(ON)}$ is suppressed to 1 µA (Typ.), which is suitable for reducing the power consumption of equipment.

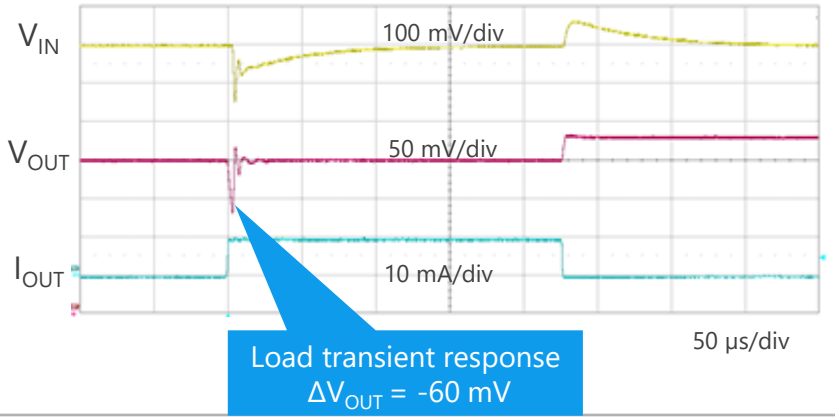
3 High speed stable operation

It has high speed load response characteristics. Stable voltage can be supplied even when high speed startup is performed from a no-load state.

Load transient measurement circuit



Load transient characteristic (0m A ↔ 10 mA)



Lineup

Part number	TCR1HF Series
Package	SMV (SOT-25) 
V_{IN} [V]	36
I_{OUT} [mA]	150
$I_{B(ON)}$ (Typ.) [µA]	1.0
Output voltage range [V]	1.8 to 5.0

◆Return to Block Diagram TOP

16 Small surface mount LDO regulator

TCR3DF / TCR2EF Series [Note]

Advanced functions · Stable operation | High efficiency · Low loss | Small size packages

[Note] For TCR2EF Series, some output voltage types are under development.

Value provided

Wide lineup from general-purpose type to small package type are provided. Contribute to realize a stable power supply not affected by fluctuation of battery.

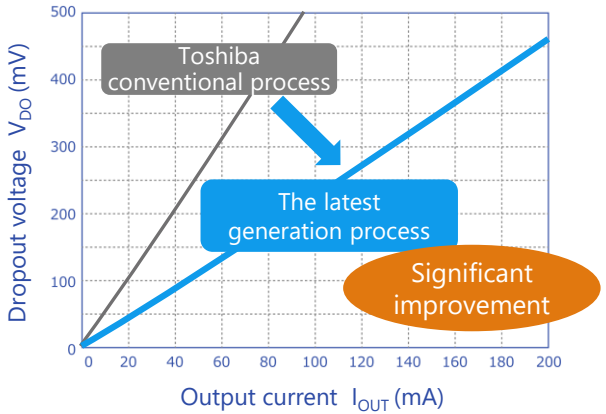
1 Low dropout voltage

The originally developed the latest generation process significantly improved the dropout voltage characteristics.

2 High PSRR Low output noise voltage

Many product series that realize both high PSRR (Power Supply Rejection Ratio) and low output noise voltage characteristics are provided. They are suitable for stable power supply for analog circuit.

Low dropout voltage



(Note) Toshiba internal comparison

Lineup

Part number	TCR3DF Series	TCR2EF Series
Package	SMV 	SMV 
V_{IN} (Max) [V]	5.5	5.5
I_{OUT} (Max) [mA]	300	200
V_{OUT} [V]	1.0 to 4.5	1.0 to 5.0

◆Return to Block Diagram TOP

17 CMOS logic IC

74VHC125FT / 74VHC541FT / 74VHCV541FT

Advanced functions · Stable operation | High efficiency · Low loss | Small size packages

Value provided

CMOS's features include low power consumption and improved noise resistance, which makes it easy to use.

1 Low power consumption and high speed operation

High speed operation is realized with the low power consumption characteristic of CMOS.

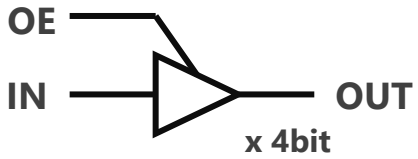
2 Compatible with low voltage systems

The wide operating voltage range of 2.0 to 5.5 V enables to be used with low voltage systems.

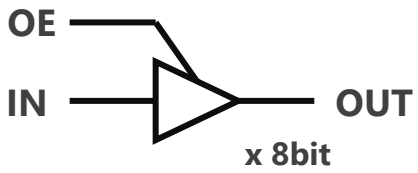
3 Improved noise resistance

VHCV series with improved noise immunity by Schmitt trigger input circuits are also provided.

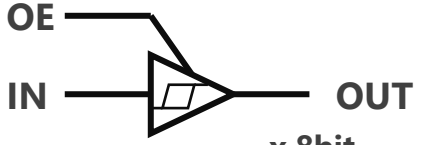
74VHC125FT



74VHC541FT



74VHCV541FT



With Schmitt input type

Lineup

Part number	74VHC125FT	74VHC541FT	74VHCV541FT
Package	TSSOP14B 	TSSOP20B 	
V_{CC} [V]	2.0 to 5.5	2.0 to 5.5	1.8 to 5.5
t_{PD} (Typ.) [ns] @V_{CC} = 5 V, C_L = 15 pF	3.8	3.5	3.9
T_{opr} (Max) [°C]	125	125	125
Function	Quad bus buffer Non-inverted (3-state outputs)	Octal bus buffer Non-inverted (3-state outputs)	Octal Schmitt bus buffer Non-inverted (3-state outputs)

◆Return to Block Diagram TOP

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