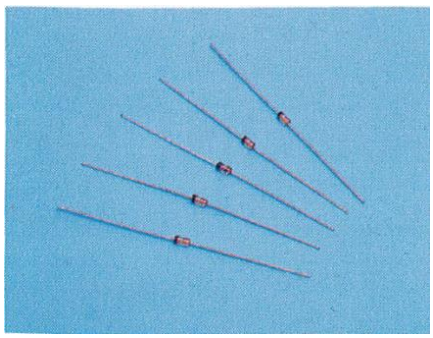
Introduction to Toshiba Switching Diode Line-up

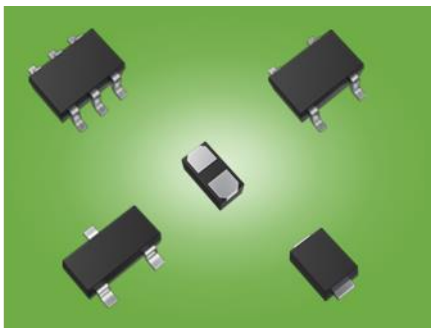
Toshiba offers a wide range of switching diodes (Switching Diodes) mounted in small packages, including single-type and combined-type diodes.

Toshiba, a leading company in diodes

Since Toshiba started mass production of diodes in 1956, it has been one of the major diode vendors who have continued to market products as a pioneer in the industry since the early days of semiconductors. Developed in 1966, M8555, our typical switching diode, is compact, high-performance, and low-cost, and has contributed to the times as the diode in terms of both name and reality. We will continue to provide a wide range of highly reliable diode products based on our experience in delivering products to many customers.



Switching diode : M8555

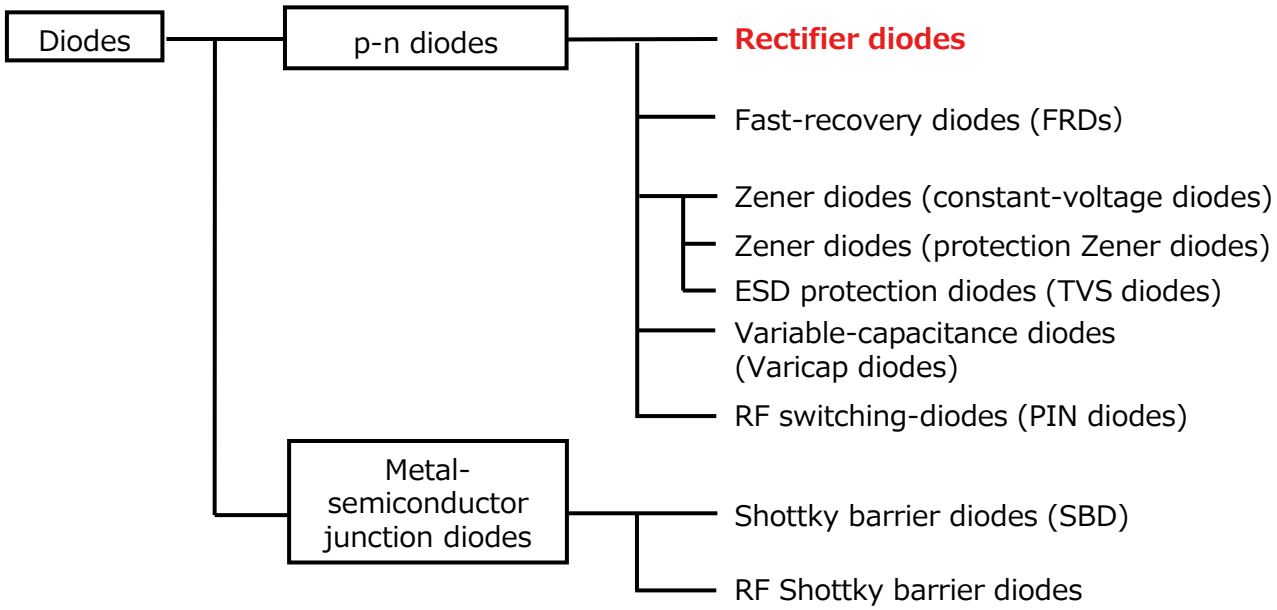


High-quality, safe and secure delivery at plants in Japan and Thailand

Our diode products are mainly surface-mount type small packages. High-quality, stable production at plants in Japan and Thailand enables safe and safety delivery. We will respond quickly and seriously to sudden delivery problems as well.

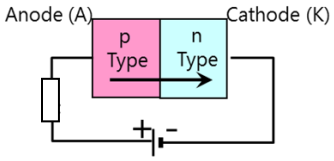
Diode overview

A diode is a two-terminal semiconductor device with one PN junction or an alternate junction. Roughly speaking, they are classified as shown in the figure below. It is divided into rectifier diode, constant voltage diode, etc. according to structure and application, and it is widely used. This document mainly introduces switching diodes used as rectifier diodes.

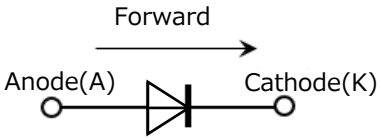


Basic structure and operation of the switching diode

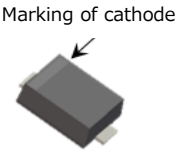
It has the property that current flows (in the forward direction) and current does not flow (in the reverse direction) according to the direction of the applied voltage. This function changes the alternating current (AC) voltage to direct current (DC). The electrode terminals are called the anode (Anode: A) and cathode (Cathode: K), and current flows when the anode electrode has a positive potential.



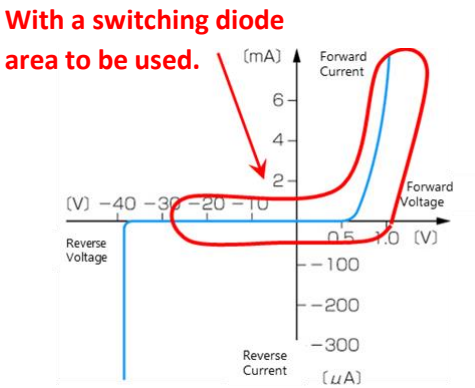
Schematic diagram of a diode



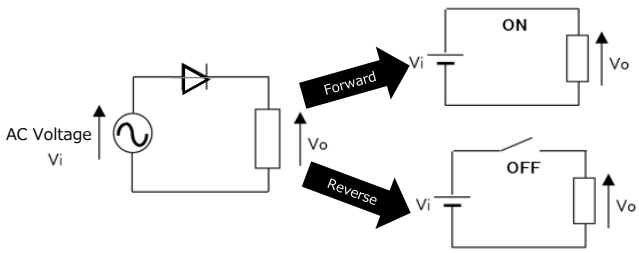
Symbol mark on the diode



Example of a switching diode package

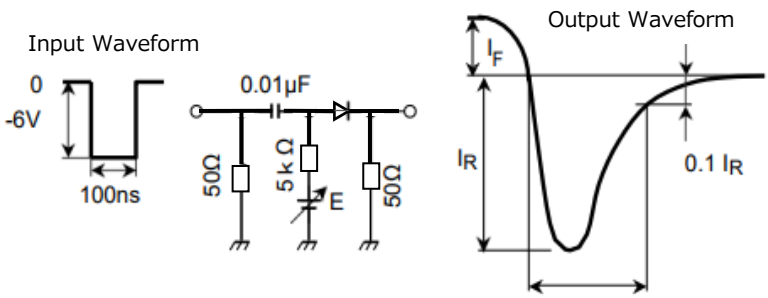


Current vs. Voltage Characteristics of Switching Diodes



Forward and reverse voltage operation

Even if a forward current IF is applied to the diode and a reverse voltage VR is applied to the diode, P. While the minority carriers stored in the junction remain, the reverse direction is low impedance and a large reverse current IR flows. This is done. The time from this cutoff until 10 % of the reverse current IR is recovered is called the reverse recovery time trr, which represents the switching time of the diode. An example of the measurement circuit is shown in the figure below. The switching diode has a short reverse recovery time (trr) and superior switching characteristics compared to other diodes. It also has a smaller reverse current IR compared to other diodes. We offer a wide range of products for each package and rating. We would be happy if you could select the best product for your customer from the selection table of the following switching diodes.



Forward and reverse voltage operation

TOSHIBA

・Switching diode selection table

[Single product]

Part Number	VR (Max) (V)	IO (Max) (A)	Internal connection	Pins	Package (Toshiba)	AEC-Q101	Package dimensions (mm)	Buy Online
1SS387CT	80	0.1	Single	2	CST2		1.0 x 0.6 x 0.38	Buy Online
1SS307E	80	0.1	Single	2	ESC	Qualified*	1.6 x 0.8 x 0.6	Buy Online
1SS387	80	0.1	Single	2	ESC	Qualified*	1.6 x 0.8 x 0.6	Buy Online
1SS403E	200	0.1	Single	2	ESC		1.6 x 0.8 x 0.6	Buy Online
BAS516	100	0.25	Single	2	ESC		1.6 x 0.8 x 0.6	Buy Online
1N4148WT	100	0.25	Single	2	ESC		1.6 x 0.8 x 0.6	Buy Online
1SS187	80	0.1	Single	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS190	80	0.1	Single	3	S-Mini		2.9 x 2.5 x 1.1	Buy Online
1SS193	80	0.1	Single	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS196	80	0.1	Single	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS250	200	0.1	Single	3	S-Mini		2.9 x 2.5 x 1.1	Buy Online
1SS307	30	0.1	Single	3	S-Mini		2.9 x 2.5 x 1.1	Buy Online
1SS427	80	0.1	Single	2	SOD-923		1.0 x 0.6 x 0.4	Buy Online
TBAS16	80	0.215	Single	3	SOT23		2.9 x 2.4 x 0.9	Buy Online
1SS352	80	0.1	Single	2	USC	Qualified*	2.5 x 1.25 x 0.9	Buy Online
1SS403	200	0.1	Single	2	USC	Qualified*	2.5 x 1.25 x 0.9	Buy Online
BAS316	100	0.25	Single	2	USC		2.5 x 1.25 x 0.9	Buy Online
1N4148WS	100	0.25	Single	2	USC		2.5 x 1.25 x 0.9	Buy Online
1SS370	200	0.1	Single	3	USM		2.0 x 2.1 x 0.9	Buy Online
1SS397	400	0.1	Single	3	USM		2.0 x 2.1 x 0.9	Buy Online

*: For detail information, please contact to our sales.

[2in1 product]

Part Number	VR (Max) (V)	IO (Max) (A)	Internal connection	Pins	Package (Toshiba)	AEC-Q101	Package dimensions (mm)	Buy Online
1SS181	80	0.1	Anode common	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS184	80	0.1	Cathode common	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS226	80	0.1	Series	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS300	80	0.1	Anode common	3	USM	Qualified*	2.0 x 2.1 x 0.9	Buy Online
1SS301	80	0.1	Cathode common	3	USM	Qualified*	2.0 x 2.1 x 0.9	Buy Online
1SS302A	80	0.1	Series	3	USM	Qualified*	2.0 x 2.1 x 0.9	Buy Online
1SS360	80	0.1	Anode common	3	SSM	Qualified*	1.6 x 1.6 x 0.7	Buy Online
1SS361CT	80	0.1	Cathode common	3	CST3		1.0 x 0.6 x 0.38	Buy Online
1SS361FV	80	0.1	Cathode common	3	VESM	Qualified*	1.2 x 1.2 x 0.5	Buy Online
1SS361	80	0.1	Cathode common	3	SSM	Qualified*	1.6 x 1.6 x 0.7	Buy Online
1SS362FV	80	0.1	Series	3	VESM	Qualified*	1.2 x 1.2 x 0.5	Buy Online
1SS362	80	0.08	Series	3	SSM		1.6 x 1.6 x 0.7	Buy Online
1SS379	80	0.1	Series	3	S-Mini	Qualified*	2.9 x 2.5 x 1.1	Buy Online
1SS398	400	0.1	Series	3	S-Mini		2.9 x 2.5 x 1.1	Buy Online
BAV70	100	0.215	Cathode common	3	SOT23		2.9 x 2.4 x 0.9	Buy Online
BAV99W	100	0.15	Series	3	USM		2.0 x 2.1 x 0.9	Buy Online

BAV99	100	0.215	Series	3	SOT23		2.9 x 2.4 x 0.9	Buy Online
TBAV70	80	0.215	Cathode common	3	SOT23		2.9 x 2.4 x 0.9	Buy Online
TBAV99	80	0.1	Series	3	SOT23		2.9 x 2.4 x 0.9	Buy Online
TBAW56	80	0.215	Anode common	3	SOT23		2.9 x 2.4 x 0.9	Buy Online
HN2D01JE	80	0.1	Independent	5	ESV		1.6 x 1.6 x 0.55	Buy Online
HN1D05FE	400	0.1	Independent	6	ES6		1.6 x 1.6 x 0.55	Buy Online

*: For detail information, please contact to our sales.

[3in1 product]

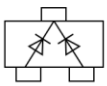
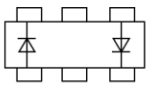
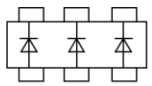
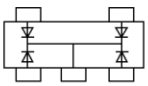
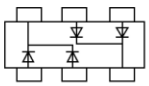
Part Number	VR (Max) (V)	IO (Max) (A)	Internal connection	Pins	Package (Toshiba)	AEC-Q101	Package dimensions (mm)	Buy Online
HN2D01FU	80	0.08	Independent	6	US6	Qualified*	2.0 x 2.1 x 0.9	Buy Online
HN2D01F	80	0.08	Independent	6	SM6		2.9 x 2.8 x 1.1	Buy Online
HN2D02FU	80	0.08	Independent	6	US6	Qualified*	2.0 x 2.1 x 0.9	Buy Online
HN2D03F	400	0.1	Independent	6	SM6		2.9 x 2.8 x 1.1	Buy Online

*: For detail information, please contact to our sales.

[4in1 product]

Part Number	VR (Max) (V)	IO (Max) (A)	Internal connection	Pins	Package (Toshiba)	AEC-Q101	Package dimensions (mm)	Buy Online
1SS308	80	0.1	Anode common	5	SMV		2.9 x 2.8 x 1.1	Buy Online
1SS309	80	0.1	Cathode common	5	SMV		2.9 x 2.8 x 1.1	Buy Online
HN1D01FE	80	0.1	Anode common	6	ES6		1.6 x 1.6 x 0.55	Buy Online
HN1D01FU	80	0.1	Anode common	6	US6	Qualified*	2.0 x 2.1 x 0.9	Buy Online
HN1D01F	80	0.1	Anode common	6	SM6		2.9 x 2.8 x 1.1	Buy Online
HN1D02FE	80	0.1	Cathode common	6	ES6		1.6 x 1.6 x 0.55	Buy Online
HN1D02FU	80	0.1	Cathode common	6	US6	Qualified*	2.0 x 2.1 x 0.9	Buy Online
HN1D02F	80	0.1	Cathode common	6	SM6		2.9 x 2.8 x 1.1	Buy Online
HN1D03FU	80	0.1	Cathode common +Anode common	6	US6	Qualified*	2.0 x 2.1 x 0.9	Buy Online
HN1D03F	80	0.1	Cathode common +Anode common	6	SM6		2.9 x 2.8 x 1.1	Buy Online
HN4D01JU	80	0.1	Anode common	5	USV		2.0 x 2.1 x 0.9	Buy Online
HN4D02JU	80	0.1	Cathode common	5	USV		2.0 x 2.1 x 0.9	Buy Online

*: For detail information, please contact to our sales.

	Single(1in1)	2in1		3in1	4in1	
Connection example		 Ex.: Cathode common	 Ex.: Separate	 Ex.: Separate	  Ex.: Cathode common	
other connection	-	Series Anode common	-	-	Series Anode common	

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