TOSHIBA

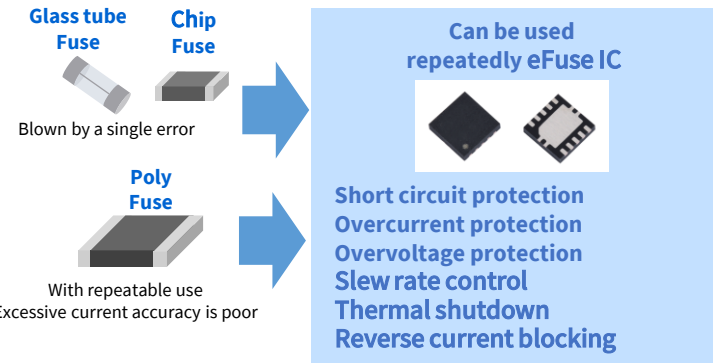
Mini catalog

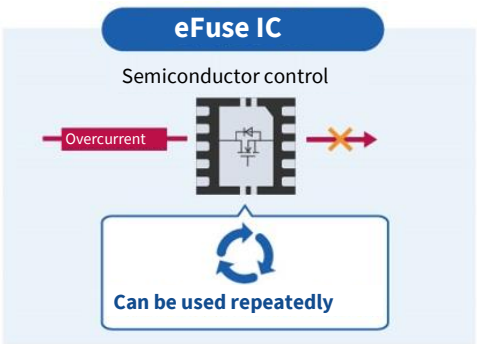
eFuse IC for robust power supply protection

Toshiba eFuse IC incorporates high-performance, high-accuracy protective functions in a single package, which contributes to shorter designing times and robust protection of power supply lines.

Outline of TOSHIBA eFuse IC

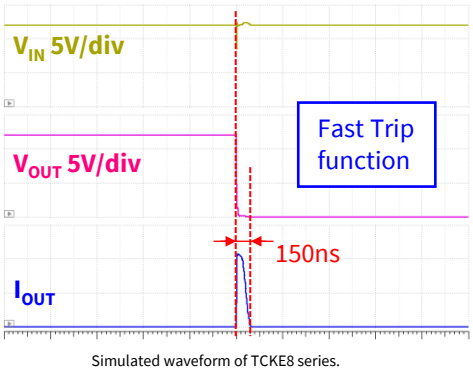
An eFuse IC is a semiconductor device with a fuse function designed to protect an electronic circuit from overcurrent conditions. The Toshiba eFuse IC has a lot of built-in protective functions and provide many advantages over physical fuses.





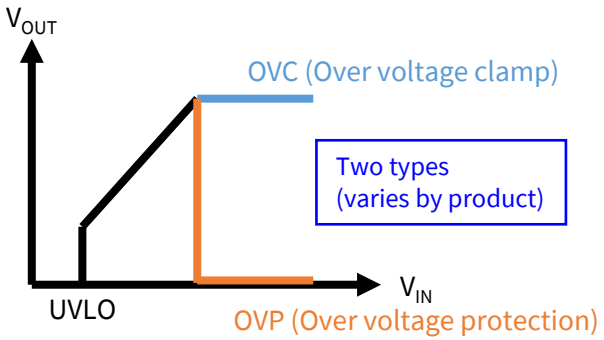
Main Protective Functions

Short circuit protection operation



Simulated waveform of TCKE8 series.

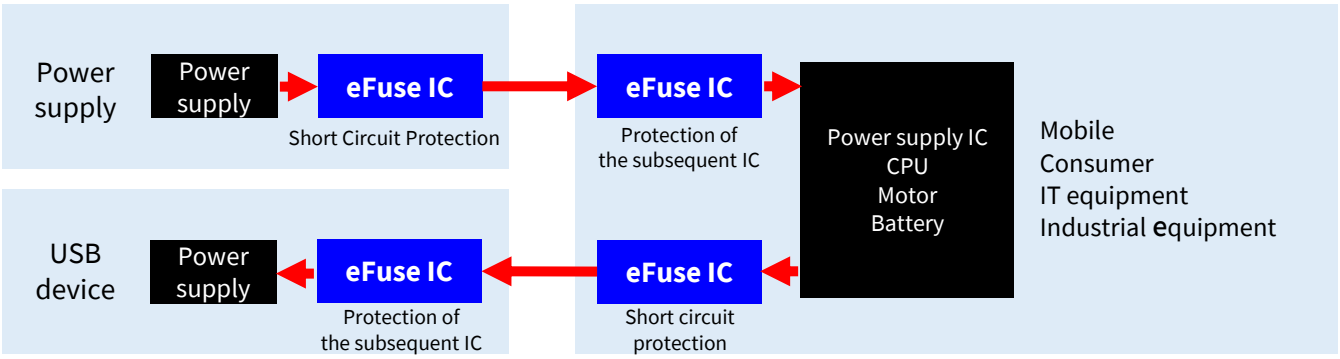
Overvoltage protection (OVC, OVP)



Application note Click

eFuse IC Applications diagram

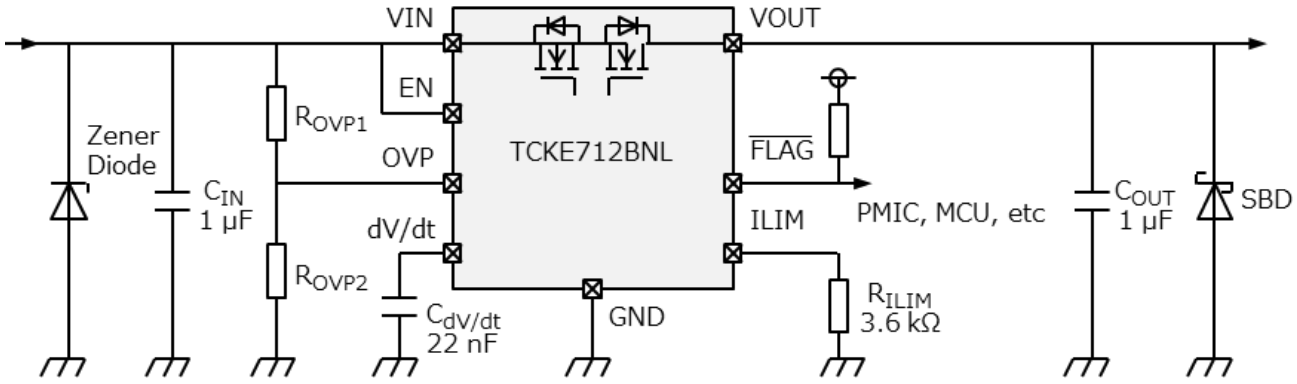
It can be used for all applications requiring functions such as short circuit protection, overcurrent protection, overvoltage protection, slew rate control, reverse current blocking, and thermal shutdown.



2025-05-30

Example of power supply line combining eFuse IC with Zener diode and Schottky Barrier Diodes(SBD)

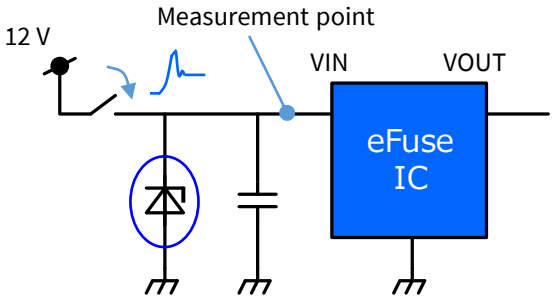
The eFuse IC has built-in overvoltage, overcurrent, and short circuit protection functions, but more robust power supply lines can be built by adding external components. If a Zener diode is connected between the input terminal and the GND terminal of eFuse IC, it provides a more robust protection against surges. In addition, the output may become a negative voltage due to the protective operation of eFuse IC, but the negative voltage can be reduced by connecting SBD.

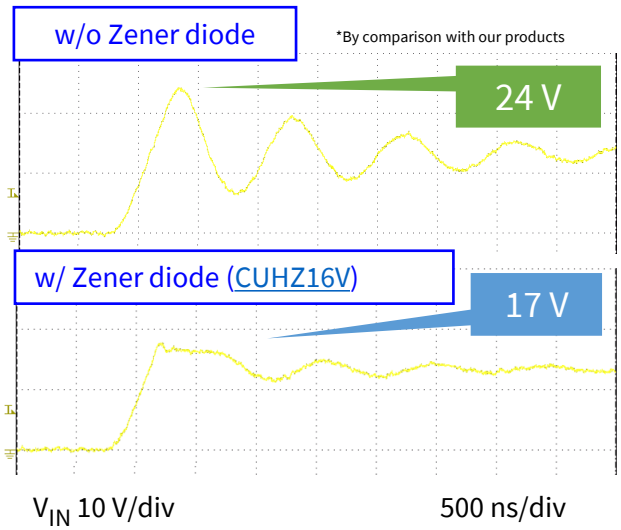


NOTE :Select Zener diodes and SBDs considering the maximum rating of eFuse IC.

Hot swap protection with Zener diode

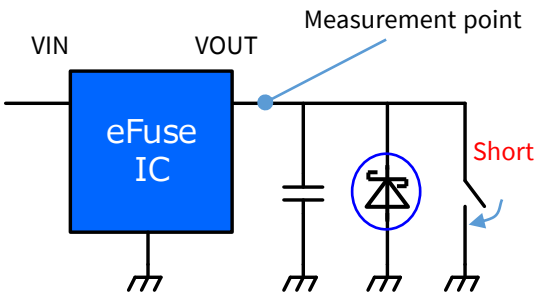
Overvoltage occurs when Hot swap. The Zener diodes can easily protect internal circuits.

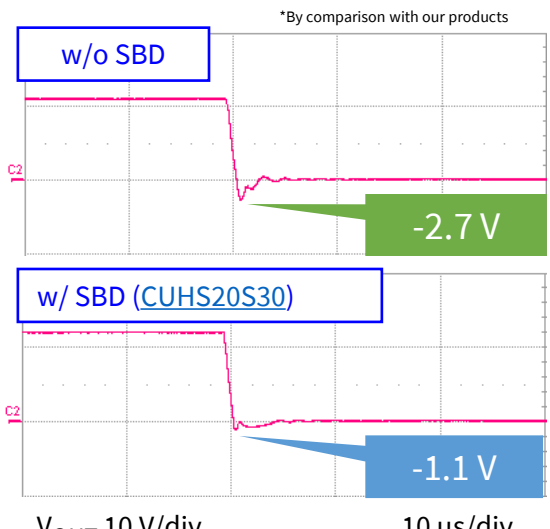




Negative voltage protection with SBD

A large negative voltage occurs the output side when the current path is cut off. The SBD can reduce negative voltage.





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•eFuse IC selection table

			Electrical Characteristics /Switching Characteristics					Additional function									Certification	
Product name	Package	Size (mm)	V_{IN} /V (Min)	V_{IN} /V (Max)	I_{OUT} /A (DC)	R_{ON} /mΩ (typ)	I_Q /mA (typ)	Control Active	SRC	OAD	RCB	OVC/OVP	OCL	TSD	Recovery	Extra	IEC 62368-1 G9	Purchase
TCKE800NA	WSON10B	3×3	4.4	18	5	28	0.49	High	Adjustable	Y	Option (OFF)	N	0.5A-5A Adjustable	Y	Auto-retry	-	Y	Buy Online
TCKE805NA	WSON10B	3×3	4.4	18	5	28	0.46	High	Adjustable	Y	Option (OFF)	6.04V OVC	0.5A-5A Adjustable	Y	Auto-retry	-	Y	Buy Online
TCKE812NA	WSON10B	3×3	4.4	18	5	28	0.49	High	Adjustable	Y	Option (OFF)	15.1V OVC	0.5A-5A Adjustable	Y	Auto-retry	-	Y	Buy Online
TCKE800NL	WSON10B	3×3	4.4	18	5	28	0.49	High	Adjustable	Y	Option (OFF)	N	0.5A-5A Adjustable	Y	Latched	-	Y	Buy Online
TCKE805NL	WSON10B	3×3	4.4	18	5	28	0.46	High	Adjustable	Y	Option (OFF)	6.04V OVC	0.5A-5A Adjustable	Y	Latched	-	Y	Buy Online
TCKE812NL	WSON10B	3×3	4.4	18	5	28	0.49	High	Adjustable	Y	Option (OFF)	15.1V OVC	0.5A-5A Adjustable	Y	Latched	-	Y	Buy Online
TCKE712BNL	WSON10	3×3	4.4	13.2	3.65	53	0.69	High	Adjustable	N	Y (OFF)	Adjustable OVP	0.51A-3.65A Adjustable	Y	Latched	FLAG	Y	Buy Online
TCKE903NA	WSON8	2×2	2.7	23	4	34	0.18	High	Adjustable	Y	N	3.87V OVC	0.5A—4A Adjustable	Y	Auto-retry	FLAG	Under planning	Buy Online
TCKE903NL	WSON8	2×2	2.7	23	4	34	0.18	High	Adjustable	Y	N	3.87V OVC	0.5A—4A Adjustable	Y	Latched	FLAG	Under planning	Buy Online
TCKE905ANA	WSON8	2×2	2.7	23	4	34	0.18	High	Adjustable	Y	N	5.7V OVC	0.5A—4A Adjustable	Y	Auto-retry	FLAG	Under planning	Buy Online
TCKE905NL	WSON8	2×2	2.7	23	4	34	0.18	High	Adjustable	Y	N	5.7V OVC	0.5A—4A Adjustable	Y	Latched	FLAG	Under planning	Buy Online
TCKE912NA	WSON8	2×2	2.7	23	4	34	0.185	High	Adjustable	Y	N	13.7V OVC	0.5A—4A Adjustable	Y	Auto-retry	FLAG	Under planning	Buy Online
TCKE912NL	WSON8	2×2	2.7	23	4	34	0.185	High	Adjustable	Y	N	13.7V OVC	0.5A—4A Adjustable	Y	Latched	FLAG	Under planning	Buy Online
TCKE920NA	WSON8	2×2	2.7	23	4	34	0.19	High	Adjustable	Y	N	22.2V OVC	0.5A—4A Adjustable	Y	Auto-retry	FLAG	Under planning	Buy Online
TCKE920NL	WSON8	2×2	2.7	23	4	34	0.19	High	Adjustable	Y	N	22.2V OVC	0.5A—4A Adjustable	Y	Latched	FLAG	Under planning	Buy Online
TCKE903QNA	WSON8	2×2	3.0	23	4	34	0.18	High	Adjustable	Y	N	3.87V OVC	0.5A—4A Adjustable	Y	Auto-retry	QOD	Under planning	Buy Online
TCKE905QNA	WSON8	2×2	3.0	23	4	34	0.18	High	Adjustable	Y	N	5.7V OVC	0.5A—4A Adjustable	Y	Auto-retry	QOD	Under planning	Buy Online

SRC: Slew rate control, OAD: Output auto-discharge, RCB: Reverse current blocking, OVC: Overvoltage clamp, OVP: Overvoltage protection (shutdown), OCL: Overcurrent limit, TSD: Thermal shutdown, QOD: Quick output discharge

WSON10B	WSON10	WSON8
Bottom View	Bottom View	Bottom View
		
3.0 x 3.0	3.0 x 3.0	2.0 x 2.0

Related LINK

- Introduction to eFuse IC Products — Click
- Application note — Click
- Frequently Asked Questions for eFuse IC (FAQ) — Click
- Online distributor purchase, inventory search page — Click
- Cross-reference search — Click
- eFuse IC feature articles — Click
- Introduction to Zener diode products — Click
- Introduction to Schottky Barrier Diodes(SBD) products — Click

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