

Toshiba Launches 30V N-Channel Common-Drain MOSFET Suitable for Devices with USB and for Protecting Battery Packs

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KAWASAKI, Japan--(BUSINESS WIRE)-- **Toshiba Electronic Devices & Storage Corporation** ("Toshiba") has launched "**SSM10N961L**," a low on-resistance, 30V N-channel common-drain MOSFET, suitable for devices with USB and for protecting battery packs. Shipments start today.

Toshiba: SSM10N961L, a 30V N-channel common-drain MOSFET in a new, small, thin package. (Graphic: Business Wire)

Until now, Toshiba's line-up of N-channel common-drain MOSFETs has focused on 12V

products, mainly for use in protecting the lithium-ion battery packs of smartphones. The release of a 30V product realizes a wider selection of applications requiring voltages higher than 12V, such as load switching for the power lines of USB charging devices, and the protection of lithium-ion battery packs in laptop PCs and tablets.

Realizing a bi-directional switch with a low drain-source on-resistance ($R_{DS(ON)}$) has required two MOSFETs, either 3.3×3.3mm or 2×2 mm, with low $R_{DS(ON)}$. Toshiba's new product uses a new, small, thin package **TCSPAG-341501** (3.37mm×1.47mm (typ.), t=0.11mm (typ.)), and features low source-source on-resistance ($R_{SS(ON)}$) of 9.9mΩ (typ.) in a single package common-drain configuration

USB Power Delivery (USB PD) that supports a power supply ranging 15W (5V / 3A) to a maximum of 240W (48V / 5A) was developed for devices requiring high power supply. USB PD specifies a role swap function for swapping the power supply and receiving side, and requires devices with USB charging to support bi-directional power supply, so that both sides can supply and receive power. The new product is an N-channel common-drain MOSFET that supports bi-directional power supply, and that has a small mounting area.

Combining the product with a driver IC in Toshiba's **TCK42xG series** forms a load switching circuit with a backflow prevention function or a power multiplexer circuit that can switch operations between Make-Before-Break (MBB) and Break-Before-Make (BBM). Toshiba has today released a **reference design for a power multiplexer circuit (using common-drain MOSFETs)** based on this product combination. Use of the reference design will help to reduce product design and development times.

Toshiba will continue to expand its product line-up and improve characteristics, to raise design flexibility.

Applications

- Smartphones
- Laptop PCs
- Tablets, etc.

Features

- High source-source voltage rating: $V_{SSS}=30V$
- Low on-resistance: $R_{SS(ON)}=9.9m\Omega$ (typ.) ($V_{GS}=10V$)
- Common-drain connection structure for bi-directional conduction
- Small and thin type TCSPAG-341501 package: 3.37mm×1.47mm (typ.), t=0.11mm (typ.)

Main Specifications

(Unless otherwise specified, Ta=25°C)

Part number				SSM10N961L	
Polarity				N-channel×2	
Internal connection				Common-drain	
Absolute maximum ratings	Source-source voltage VSSS (V)			30	
	Gate-source voltage VGSS (V)			±20	
	Source current (DC) IS (A)[1]			9.0	
	Source current (DC) IS (A)[2]			14.0	
Electrical characteristics	Source-source breakdown voltage V(BR)SSS (V)		VGS=0V	min	30
	Source-source on-resistance RSS(ON) (mΩ)		VGS=10V	typ.	9.9
			VGS=4.5V	typ.	13.6
Package	Name			TCSPAG-341501	
	Size (mm)			typ.	3.37×1.47, t=0.11
Sample Check & Availability					Buy Online

Notes:

[1] Device mounted on a 25mm×27.5mm, t=1.6mm, Cu Pad: 18μm, 407mm², FR4 glass epoxy board

[2] Device mounted on a 25mm×27.5mm, t=1.6mm, Cu Pad: 70μm, 687.5mm², FR4 glass epoxy board

Follow the link below for more on the new product.

SSM10N961L

Follow the link below for more on Toshiba's MOSFETs.

MOSFETs

Follow the links below for more on Toshiba's solution proposals using the new product.

Application

Smart Watch

Action Camera

Tablet Device

To check availability of the new product at online distributors, visit:

SSM10N961L

Buy Online

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* Information in this document, including product prices and specifications, content of services and contact information, is current on the date of the announcement but is subject to change without prior notice.

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The company's 21,500 employees around the world share a determination to maximize product value, and promote close collaboration with customers in the co-creation of value and new markets. With annual sales approaching 800-billion yen (US\$6.1 billion), Toshiba Electronic Devices & Storage Corporation looks forward to building and to contributing to a better future for people everywhere.

Find out more at <https://toshiba.semicon-storage.com/ap-en/top.html>

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