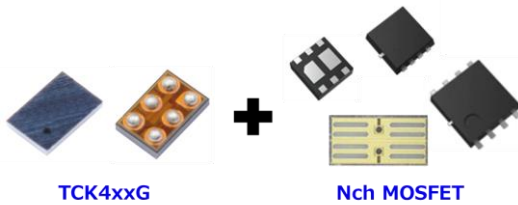


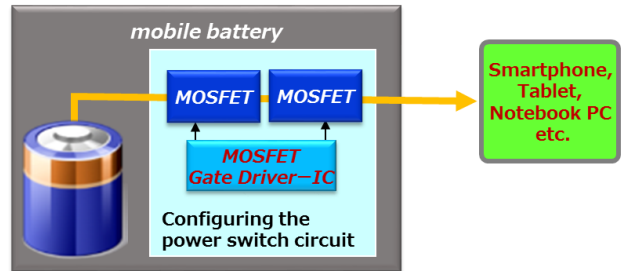
Introduction of Toshiba MOSFET Gate Driver ICs

MOSFET gate driver ICs (TCK4**G series) are gate driver ICs for driving MOSFETs with a built-in boost circuit and protection circuits. Switching circuit can be configured by combining with an external MOSFET suitable for the application.

It is ideal for load switch circuits such as mobile and wearable equipments, and other devices that require high-density mounting, as well as for various power management switch circuits.



Product appearance



Application example of MOSFET Gate Driver ICs

Main characteristics

• Ultra small package

TCK40xG: 1.2x0.8mm (typ.), t: 0.55mm (max) (WCSP6E)

TCK42xG: 1.2x0.8mm (typ.), t: 0.35mm (max) (WCSP6G)

• Wide input voltage

V_{IN} max 40 V, V_{IN_opr} = 2.7 to 28 V (TCK40xG, TCK42xG)

• Stable charge pump gate voltage V_{GATE}

V_{GATE} : 10V/5.6V

...Charge pump gate voltage (TCK42xG) : independent of the input voltage and with little variation at all temperatures

• Over Voltage Lock Out (OVLO) Lineup

V_{IN_OVLO} = 6.31/10.83/14.29/23.26/27.73V (typ.) 5 type lineup (TCK42xG)

• Low standby current

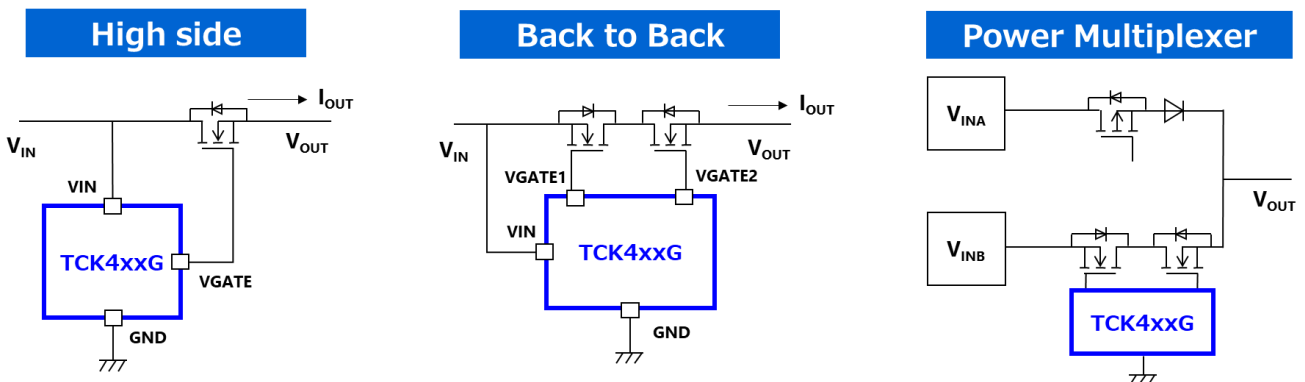
0.9uA max @ 12V stand-by (TCK42xG)

WCSP6E	WCSP6G
Bottom View	Bottom View
1.2x0.8	1.2x0.8

Product page : [Click](#)

Main Usage example (Circuit example)

There are a variety of uses, including single high-side, back-to-back load switches and power multiplexers.



MOSFET Gate Driver ICs Selection Table

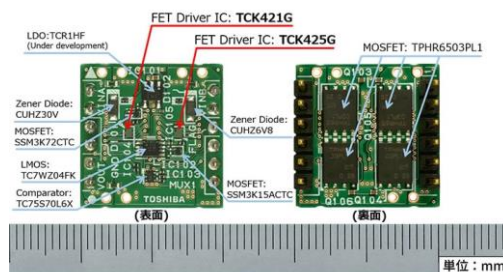
Product Number	TCK401G →	TCK402G →	TCK420G →	TCK421G →	TCK422G →	TCK423G →	TCK424G →	TCK425G →
Stock Check	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online
Maximum input voltage $V_{IN\ max}$	40 V							
Input voltage range $V_{IN\ max}$	2.7 to 28 V							
Gate Drive voltage V_{GATE}	4 to 10 V (V_{IN} dependency)			10 V			5.6 V	
Package	WCSP6E(Link) → (1.2x0.8 mm, t:0.55 mm)			WCSP6G(Link) → (1.2x0.8 mm, t:0.35 mm)				
Overvoltage Lockout Threshold	28 V		27.73 V	23.26 V	14.29 V		10.83 V	6.31 V
Under Voltage Lockout Threshold	2.7 V			2 V				
Usage	Common source (Single Hi-side is OK)			Common drain (Single high side allowed)				

Introduction to Reference Design (Power Multiplexer Circuit Using MOSFET Gate Driver ICs)

Reference designs provide not only circuit diagrams but also pattern diagrams, Gerber data, sample software as reference circuits to advance equipment design quickly. MOSFET gate driver ICs, eFuse ICs, zener diodes and small package MOSFETs selected from Toshiba's diverse lineup are used create ideal diode like characteristics with BBM(Break-Before-Make) and MBB(Make-Before-Break) switching.

Reference Model Description

Circuit	Two-input, one-output power multiplexer
VINA input/ VINB input	5 V/20 V, 5 V/12 V, 9 V/20 V, 5 V/12 V, 12 V/24 V
Output current (maximum)	3 A~5 A



PCB photo example

Reference Design (Power Multiplexer Circuit)

[Click](#)

Related LINK

- Product page : MOSFET Gate Driver ICs
- Parametric search for Nch-MOSFET
- Parametric search for MOSFET gate driver ICs.
- Online distributor purchase, inventory search page

[Click](#)

[Click](#)

[Click](#)

[Click](#)

RESTRICTIONS ON PRODUCT USE

Toshiba Corporation and its subsidiaries and affiliates are collectively referred to as "TOSHIBA".

Hardware, software and systems described in this document are collectively referred to as "Product".

- TOSHIBA reserves the right to make changes to the information in this document and related Product without notice.
- This document and any information herein may not be reproduced without prior written permission from TOSHIBA. Even with TOSHIBA's written permission, reproduction is permissible only if reproduction is without alteration/omission.
- Though TOSHIBA works continually to improve Product's quality and reliability, Product can malfunction or fail. Customers are responsible for complying with safety standards and for providing adequate designs and safeguards for their hardware, software and systems which minimize risk and avoid situations in which a malfunction or failure of Product could cause loss of human life, bodily injury or damage to property, including data loss or corruption. Before customers use the Product, create designs including the Product, or incorporate the Product into their own applications, customers must also refer to and comply with (a) the latest versions of all relevant TOSHIBA information, including without limitation, this document, the specifications, the data sheets and application notes for Product and the precautions and conditions set forth in the "TOSHIBA Semiconductor Reliability Handbook" and (b) the instructions for the application with which the Product will be used with or for. Customers are solely responsible for all aspects of their own product design or applications, including but not limited to (a) determining the appropriateness of the use of this Product in such design or applications; (b) evaluating and determining the applicability of any information contained in this document, or in charts, diagrams, programs, algorithms, sample application circuits, or any other referenced documents; and (c) validating all operating parameters for such designs and applications. TOSHIBA ASSUMES NO LIABILITY FOR CUSTOMERS' PRODUCT DESIGN OR APPLICATIONS.
- PRODUCT IS NEITHER INTENDED NOR WARRANTED FOR USE IN EQUIPMENTS OR SYSTEMS THAT REQUIRE EXTRAORDINARILY HIGH LEVELS OF QUALITY AND/OR RELIABILITY, AND/OR A MALFUNCTION OR FAILURE OF WHICH MAY CAUSE LOSS OF HUMAN LIFE, BODILY INJURY, SERIOUS PROPERTY DAMAGE AND/OR SERIOUS PUBLIC IMPACT ("UNINTENDED USE"). Except for specific applications as expressly stated in this document, Unintended Use includes, without limitation, equipment used in nuclear facilities, equipment used in the aerospace industry, lifesaving and/or life supporting medical equipment, equipment used for automobiles, trains, ships and other transportation, traffic signaling equipment, equipment used to control combustions or explosions, safety devices, elevators and escalators, and devices related to power plant. IF YOU USE PRODUCT FOR UNINTENDED USE, TOSHIBA ASSUMES NO LIABILITY FOR PRODUCT. For details, please contact your TOSHIBA sales representative or contact us via our website.
- Do not disassemble, analyze, reverse-engineer, alter, modify, translate or copy Product, whether in whole or in part.
- Product shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable laws or regulations.
- The information contained herein is presented only as guidance for Product use. No responsibility is assumed by TOSHIBA for any infringement of patents or any other intellectual property rights of third parties that may result from the use of Product. No license to any intellectual property right is granted by this document, whether express or implied, by estoppel or otherwise.
- ABSENT A WRITTEN SIGNED AGREEMENT, EXCEPT AS PROVIDED IN THE RELEVANT TERMS AND CONDITIONS OF SALE FOR PRODUCT, AND TO THE MAXIMUM EXTENT ALLOWABLE BY LAW, TOSHIBA (1) ASSUMES NO LIABILITY WHATSOEVER, INCLUDING WITHOUT LIMITATION, INDIRECT, CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OR LOSS, INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS, LOSS OF OPPORTUNITIES, BUSINESS INTERRUPTION AND LOSS OF DATA, AND (2) DISCLAIMS ANY AND ALL EXPRESS OR IMPLIED WARRANTIES AND CONDITIONS RELATED TO SALE, USE OF PRODUCT, OR INFORMATION, INCLUDING WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY OF INFORMATION, OR NONINFRINGEMENT.
- Do not use or otherwise make available Product or related software or technology for any military purposes, including without limitation, for the design, development, use, stockpiling or manufacturing of nuclear, chemical, or biological weapons or missile technology products (mass destruction weapons). Product and related software and technology may be controlled under the applicable export laws and regulations including, without limitation, the Japanese Foreign Exchange and Foreign Trade Law and the U.S. Export Administration Regulations. Export and re-export of Product or related software or technology are strictly prohibited except in compliance with all applicable export laws and regulations.
- Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. Please use Product in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. TOSHIBA ASSUMES NO LIABILITY FOR DAMAGES OR LOSSES OCCURRING AS A RESULT OF NONCOMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

Company names, product names, and service names may be trademarks of respective companies.

Toshiba Electronic Devices & Storage Corporation

<https://toshiba.semicon-storage.com/>