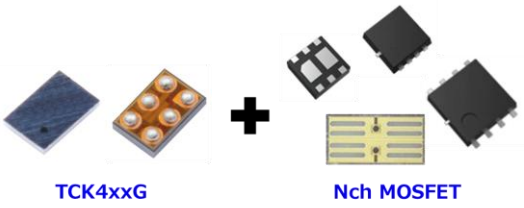
TOSHIBA

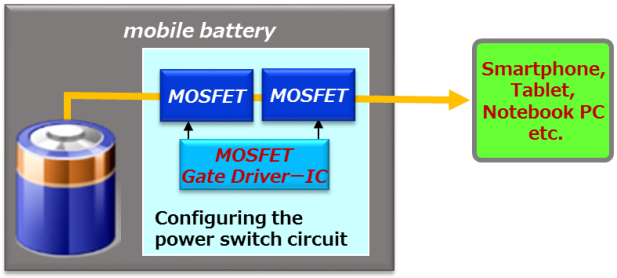
Mini catalog

Introduction of Toshiba MOSFET Gate Driver ICs

Toshiba's TCK4**G series MOSFET gate driver ICs are equipped with an integrated boost circuit and multiple protection features, designed to efficiently drive external MOSFETs that have been selected to meet the needs of the circuit. These drivers are suitable for load switch applications in compact devices such as mobile and wearable electronics, as well as for a wide range of power management switching solutions requiring high-density mounting.

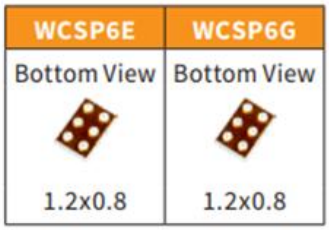


Product appearance



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)

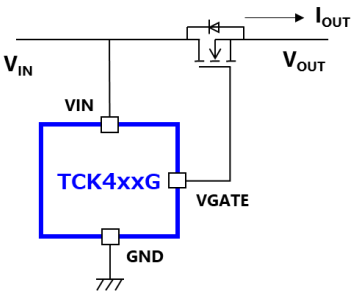
- **Wide input voltage**
  V_{IN} max 40 V, V_{IN_opr}=2.7 to 28 V(TCK40xG、TCK42xG)
- **Stable charge pump gate voltage V_{GATE}**
  V_{GATE}: 10V/5.6V
  ・・・Charge pump gate voltage (TCK42xG) : independent of the input voltage and with minimal variation at the operating temperature range.
- **Over Voltage Lock Out(OVLO) Lineup**
  VIN_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)

Product page : Click

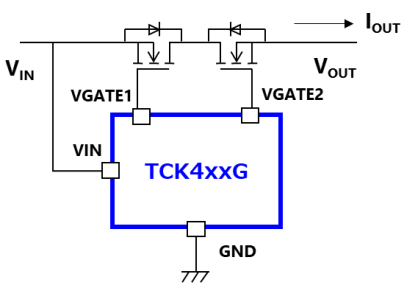
Typical Use Cases

They support a wide range of applications, including single high-side switches, back-to-back load switches, and power multiplexing configurations.

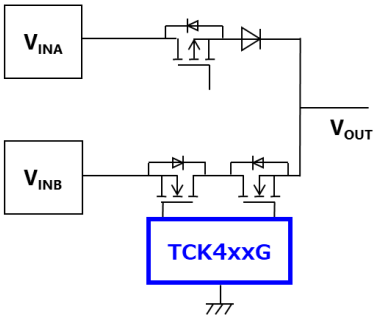
High side



Back to Back



Power Multiplexer



MOSFET Gate Driver ICs Selection Table

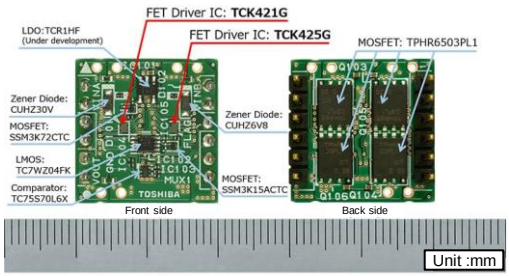
Product Number	TCK401G →	TCK402G →	TCK420G →	TCK421G →	TCK422G →	TCK423G →	TCK424G →	TCK425G →
Stock Check	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online	Buy Online
Maximum input voltage V_{IN} max	40 V							
Input voltage range V_{IN} max	2.7 to 28 V							
Gate Drive 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	Over 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)					

Reference Design – Power Multiplexer Circuit Using MOSFET Gate Driver ICs

Reference designs include circuit schematics, PCB layout diagrams, Gerber files, and sample software. These resources help accelerate equipment development by providing ready-to-use design materials. Using Toshiba's broad lineup of components—such as MOSFET gate driver ICs, eFuse ICs, Zener diodes, and compact-package MOSFETs—designers can build reference circuits that emulate ideal diode characteristics. These circuits support both BBM (Break-Before-Make) and MBB (Make-Before-Break) switching for efficient and reliable power path control.

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 to 5 A



PCB photo example

Reference Design (Power Multiplexer Circuit) Click

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