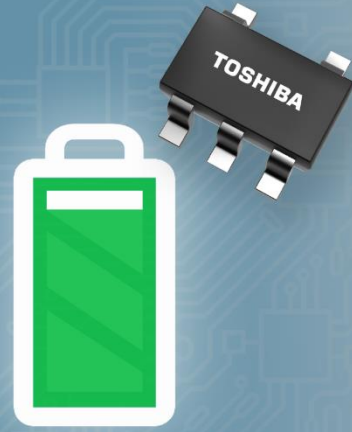


# Load-Switch ICs



## Low Loss & Long Life Operation With Low Quiescent Current

Toshiba load-switch ICs offer a low on-resistance for high efficiency switching results, important for power saving and thermal management. The low quiescent current improves long life operation of battery powered systems. Auto discharge, slew-rate control, overcurrent protection and thermal shutdown features enable an intelligent switching system design.

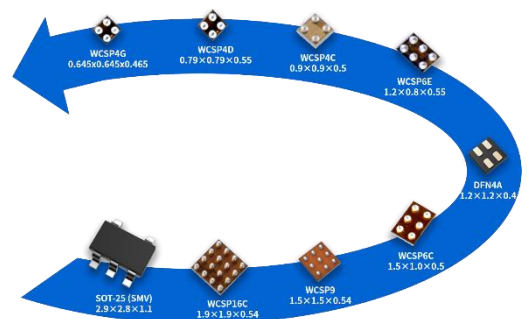
### Applications

- Battery-powered systems
- IoT chipset
- Wi-Fi modules
- RF systems
- Sensor systems
- Wearables
- Healthcare
- Power sequencing

Features	Advantages	Benefits
<ul style="list-style-type: none"> <li>• Ultra-low quiescent current</li> <li>• Ultra-low on resistance</li> <li>• Ultra-low standby plus switch-leakage current</li> <li>• Two power supply switching</li> <li>• Thermal shutdown</li> <li>• Overcurrent and voltage protection</li> <li>• True reverse current blocking</li> <li>• Wide package range</li> </ul>	<ul style="list-style-type: none"> <li>• Long battery life</li> <li>• Low power loss</li> <li>• Reduced height and volume constrains</li> <li>• Self-protection against overvoltage, current and temperature</li> <li>• Noise reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Very high efficiency</li> <li>• Improved thermal management</li> <li>• Smart operation</li> <li>• Improved safety</li> <li>• Long battery life operation</li> <li>• Reduced product weight</li> <li>• Less EMI</li> </ul>

### Overview of package size

The package options for Toshiba's load-switch ICs range from the smallest 0.42mm<sup>2</sup> WCSP4G package up to the largest SOT-25. The best thermal performance is achieved using the WCSP6E package which requires less than 1mm<sup>2</sup>. Due to the low heights of WCSP and DFN packages, these load-switch ICs are particularly suitable for applications which require very flat package types.



# Product line-up for load-switch ICs

## Low voltage operation / Low quiescent current / Low on-resistance

Series	Input Voltage (Min)	Input Voltage (Max)	Output Current (Max)	Package	Quiescent Current (ON State) (Typ.)	VOUT Rise Time (Typ.)	On-State Resistance (Typ.) VIN=5V	On-State Resistance (Typ.) VIN=3.3V	On-State Resistance (Typ.) VIN=1.8V	On-State Resistance (Typ.) VIN=1.2V	Reverse Current Blocking	Auto-Discharge	Over-Curent protection	Thermal Shutdown	Under-Voltage Lockout	Over-Current Limiter
TCK22921G	1.1V	5.5V	1.54A	WCSP6E	0.1µA	4.5µs	25mΩ		52mΩ	104mΩ	•	•				
TCK22922G	1.1V	5.5V	3.0A	WCSP6E	1.4µA	666µs	25mΩ		52mΩ	104mΩ	•	•				
TCK22923G	1.1V	5.5V	3.0A	WCSP6E	1.4µA	1364µs	25mΩ		52mΩ	104mΩ	•	•				
TCK22925G	1.1V	5.5V	1.11A	WCSP6E	1.4µA	3380µs	25mΩ		52mΩ	104mΩ	•	•				
TCK22971G	1.1V	5.5V	2.0A	WCSP6E	0.1µA	4.5µs	25mΩ		52mΩ	104mΩ	•					
TCK22972G	1.1V	5.5V	2.0A	WCSP6E	1.4µA	666µs	25mΩ		52mΩ	104mΩ	•					
TCK22973G	1.1V	5.5V	2.0A	WCSP6E	1.4µA	1364µs	25mΩ		52mΩ	104mΩ	•					
TCK22974G	1.1V	5.5V	2.0A	WCSP6E	1.4µA	3380µs	25mΩ		52mΩ	104mΩ	•					
<b>NEW</b> TCK22975G	1.1V	5.5V	0.4A	WCSP6E	1.4µA	666µs	25mΩ		52mΩ	104mΩ	•					

## Low voltage operation / Low on-resistance

Series	Input Voltage (Min)	Input Voltage (Max)	Output Current (Max)	Package	Quiescent Current (ON State) (Typ.)	VOUT Rise Time (Typ.)	On-State Resistance (Typ.) VIN=5V	On-State Resistance (Typ.) VIN=3.3V	On-State Resistance (Typ.) VIN=1.8V	On-State Resistance (Typ.) VIN=1.2V	Reverse Current Blocking	Auto-Discharge	Inrush-Current Reduction	Thermal Shutdown	Under-Voltage Lockout	Over-Current Limiter
TCK1024G	1.4V	5.5V	1.54A	WCSP6E	25µA	50µs	31mΩ		70mΩ		•	•		•	•	•
TCK111G	1.1V	5.5V	3.0A	WCSP6C	69µA	500µs	8.3mΩ		8.4mΩ		•		•	•		
TCK112G	1.1V	5.5V	3.0A	WCSP6C	69µA	500µs	8.3mΩ		8.4mΩ		•	•	•	•		
TCK2065G	1.4V	5.5V	1.11A	WCSP6E	25µA	50µs	31mΩ		70mΩ		•	•		•	•	•
TCK206G	0.75V	3.6V	2.0A	WCSP4C	22µA	240µs		18.1mΩ		18.2mΩ	•					
<b>NEW</b> TCK207AN	0.75V	3.6V	2.0A	DFN4A	22µA	240µs		21.5mΩ		21.5mΩ	•	•				
TCK207G	0.75V	3.6V	2.0A	WCSP4C	22µA	240µs		18.1mΩ		18.2mΩ	•	•				
TCK208G	0.75V	3.6V	2.0A	WCSP4C	22µA	240µs		18.1mΩ		18.2mΩ	•	•				
TCK22891G	1.1V	5.5V	0.4A	WCSP6E	25µA	50µs	31mΩ		70mΩ	141mΩ		•		•	•	•
TCK22892G	1.4V	5.5V	0.74A	WCSP6E	25µA	50µs	31mΩ		70mΩ			•		•	•	•
TCK22893G	1.4V	5.5V	1.11A	WCSP6E	25µA	50µs	31mΩ		70mΩ			•		•	•	•
TCK22894G	1.4V	5.5V	1.54A	WCSP6E	25µA	50µs	31mΩ		70mΩ			•		•	•	•
TCK22910G	1.1V	5.5V	2.0A	WCSP6E	11µA	1400µs	31mΩ		70mΩ		•			•	•	
TCK22911G	1.1V	5.5V	2.0A	WCSP6E	11µA	1400µs	31mΩ		70mΩ		•	•		•	•	
TCK22912G	1.1V	5.5V	2.0A	WCSP6E	11µA	1400µs	31mΩ		70mΩ		•			•	•	
TCK22913G	1.1V	5.5V	2.0A	WCSP6E	11µA	1400µs	31mΩ		70mΩ		•	•		•	•	
TCK22946G	1.1V	5.5V	0.4A	WCSP6E	25µA	50µs	31mΩ		70mΩ		•	•		•	•	•
TCK22951G	1.4V	5.5V	0.74A	WCSP6E	25µA	50µs	31mΩ		70mΩ		•	•		•	•	•

## Low voltage operation / Low quiescent current

Series	Input Voltage (Min)	Input Voltage (Max)	Output Current (Max)	Package	Quiescent Current (ON State) (Typ.)	VOUT Rise Time (Typ.)	On-State Resistance (Typ.) VIN=5V	On-State Resistance (Typ.) VIN=3.3V	On-State Resistance (Typ.) VIN=1.8V	On-State Resistance (Typ.) VIN=1.2V	Reverse Current Blocking	Auto-Discharge	Inrush-Current Reduction	Thermal Shutdown	Under-Voltage Lockout	Over-Current Limiter
TCK106AF	1.1V	5.5V	1.0A	SOT-25	0.11µA	130µs	63mΩ		101mΩ	175mΩ			•			
TCK106AG	1.1V	5.5V	1.0A	WCSP4D	0.11µA	130µs	34mΩ		71mΩ	139mΩ			•			
TCK107AF	1.1V	5.5V	1.0A	SOT-25	0.11µA	130µs	63mΩ		101mΩ	175mΩ		•				
TCK107AG	1.1V	5.5V	1.0A	WCSP4D	0.11µA	130µs	34mΩ		71mΩ	139mΩ		•				
TCK108AF	1.1V	5.5V	1.0A	SOT-25	0.11µA	130µs	63mΩ		101mΩ	175mΩ		•				
TCK108AG	1.1V	5.5V	1.0A	WCSP4D	0.11µA	130µs	34mΩ		71mΩ	139mΩ		•				
<b>NEW</b> TCK127BG	1.0V	5.5V	1.0A	WCSP4G	0.08nA	363µs	46mΩ		106mΩ	210mΩ		•				

## Wide input voltage range

Series	Input Voltage (Min)	Input Voltage (Max)	Output Current (Max)	Package	Quiescent Current (ON State) (Typ.)	VOUT Rise Time (Typ.)	On-State Resistance (Typ.) VIN=4.5V	On-State Resistance (Typ.) VIN=3.3V	On-State Resistance (Typ.) VIN=1.8V	External MOSFET-Gate Drive	Reverse Current Blocking	Flag Indication	Inrush-Current Reduction	Thermal Shutdown	Under-Voltage Lockout	Over-Voltage Lockout
TCK301G	2.3V	28V	3.0A	WCSP9	130µA	2000µs	73mΩ				•	•	•	•	•	•
TCK302G	2.3V	28V	3.0A	WCSP9	130µA	2000µs	73mΩ				•	•	•	•	•	•
TCK303G	2.3V	28V	3.0A	WCSP9	130µA	2000µs	73mΩ				•	•	•	•	•	•
TCK304G	2.3V	28V	3.0A	WCSP9	130µA	2000µs	73mΩ				•	•	•	•	•	•
TCK305G	2.3V	28V	3.0A	WCSP9	130µA	2000µs	73mΩ				•	•	•	•	•	•
TCK321G	2.3V	36V	2.0A	WCSP16C	140µA	2000µs	98mΩ				•	•	•	•	•	•
TCK322G	2.3V	36V	2.0A	WCSP16C	140µA	2000µs	98mΩ				•	•	•	•	•	•
TCK323G	2.3V	36V	2.0A	WCSP16C	140µA	2000µs	98mΩ				•	•	•	•	•	•

## MOSFET driver with wide input voltage range

Series	Input Voltage (Min)	Input Voltage (Max)	Gate Charge Pump Voltage	Package	Quiescent Current (ON state) (Typ.)	Stand-by Current (OFF state) (Typ.) @ VIN	Slew-rate Control	External MOSFET-Gate Drive	Reverse Current Blocking	Inrush-Current Reduction	Output Discharge	Under-voltage lockout	Over-voltage lockout
TCK401G	2.7V	28V	4-10V	WCSP6E	121µA	3.0µA@5V, 5.9µA@9V, 8.0µA@12V, 13.8µA@20V	•	•	•	•	•	•	•
TCK402G	2.7V	28V	4-10V	WCSP6E	121µA	3.0µA@5V, 5.9µA@9V, 8.0µA@12V, 13.8µA@20V	•	•	•	•	•	•	•
<b>NEW</b> TCK421G	2.7V	28V	10V	WCSP6G	130µA	0.14µA@2.7V, 0.42µA@9V, 0.52µA@12V, 0.8µA@20V	•	•	•	•	•	•	•