

Toshiba Compact LDO regulators

Lineup of high-performance LDO-regulators from 150mA to 1500mA

Toshiba offers a wide variety of high-performance CMOS-based LDO regulators (identified by part numbers starting with TCR) in a variety of small packages with mixed feature sets focusing on noise, current consumption, and drop-out voltage.

• Multifunctional, high-quality LDO regulators

Modern applications require high-quality voltage regulation, power-saving, and safe operation. Therefore, a higher-performance power supply is essential. To meet these requirements, Toshiba's LDO regulator offers ultra-low drop-out, ultra-low current dissipation, high power supply rejection ratio (PSRR), ultra-high speed load transient response, and low inrush current.

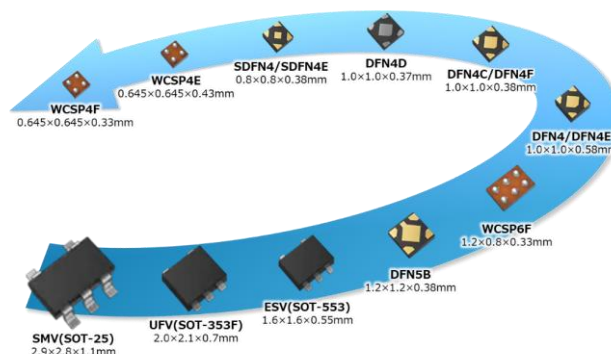
• Wide range of output voltages and currents for various applications











Output voltages are fixed and adjustable, providing a wide range of products with voltages from 0.55V to 5.0V. Output current ranges from a minimum of 150 mA to a maximum of 1500 mA. These devices are packaged in ultra-compact, high-thermal-dissipation WCSP types suitable for high-density mounting, along with industry-standard, easy to handle general-purpose lead types.

• Delivery of high-quality, stable products at plants in Japan and Thailand

Toshiba's LDO regulators are manufactured with high quality and efficiency at production facilities in Japan and Thailand, ensuring quick, stable and reliable supply for any design.

These regulators are well-suited for a wide range of applications, including noise-sensitive cameras, RF power supplies, MCU (CPU) power rails, and mobile devices that demand stringent power-saving performance. We invite you to explore their capabilities in your next design.



Characteristics / Package		VOUT	SOT-25 2.9 x 2.8mm t: 1.1mm 	SOT-553 1.6 x 1.6mm t: 0.55mm 	DFN5B 1.2 x 1.2mm t: 0.38mm 	WCSP6F 1.2 x 0.8mm t: 0.33mm 	DFN4 DFN4E 1.0 x 1.0mm t: 0.58mm 	DFN4C DFN4F 1.0 x 1.0mm t: 0.38mm 	DFN4D 1.0 x 1.0mm t: 0.37mm 	SDFN4 SDFN4E 0.8 x 0.8mm t: 0.38mm 	WCSP4E 0.645 x 0.645mm t: 0.43mm 	WCSP4F 0.645 x 0.645mm t: 0.33mm 
150mA	High voltage ($\leq 36V$) Low Iq	1.8V to 5.0V	TCR1HF series									
200mA	Low Iq	0.8V to 3.6V	TCR2LF series	TCR2LE series						TCR2LN series		
	Low noise High speed transient	1.0V to 5.0V	TCR2EF series	TCR2EE series						TCR2EN series		
300mA	Low Iq	0.8V to 5.0V							TCR3LM series			
	Ultra-Low Iq Bypass mode	0.8V to 5.0V	TCR3UF series				TCR3UM series					TCR3UG series
	Low dropout Wide range input voltage	0.8V to 5.0V							TCR3EM series			
	Low dropout High-speed transient	1.0V to 4.5V	TCR3DF series						TCR3DMxxA series		TCR3DG series	
	Ultra-low noise High-ripple rejection	0.9V to 4.5V						TCR3RM series				
420mA	Low dropout High-speed transient	1.0V to 4.5V									TCR4DG series	
500mA	Bias Rail Type (Nch) Ultra-low dropout High-ripple rejection	0.8V to 3.6V			TCR5BM series							
	High-speed transient Ultra-low noise High-ripple rejection	0.9V to 5.0V							TCR5FM series			TCR5RG series
800mA	Bias-rail Type (Nch) Ultra-low dropout High-ripple rejection	0.8V to 3.6V			TCR8BM series							
1300mA	Bias-rail Type (Nch) Ultra-low dropout High-speed transient High-ripple rejection	Adjustable 0.55V to 3.6V				TCR13AGADJ						
1500mA	Bias-rail Type (Nch) Ultra-low dropout High-speed transient High-ripple rejection	Adjustable 0.65V to 3.6V Fixed 0.6V to 3.6V				TCR15AG series						

Related LINK

- LDO product introduction page [Click](#)
- Product parametric search [Click](#)
- Related application notes [Click](#)
- LDO FAQ [Click](#)
- Online distributor purchase, inventory search page [Click](#)
- Cross Reference Search page [Click](#)

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

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.

Toshiba Electronic Devices & Storage Corporation

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