

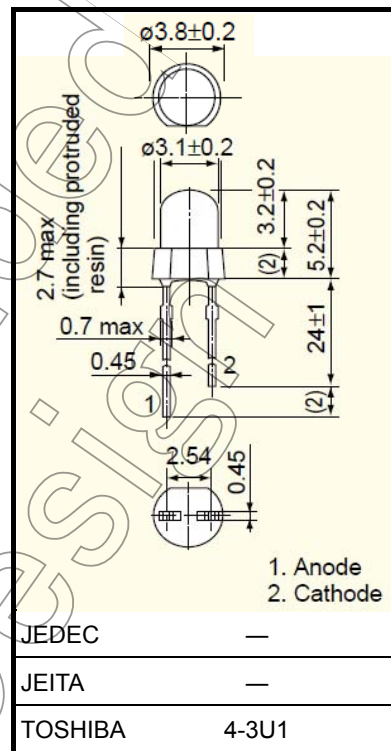
TOSHIBA InGaAlP LED

TLRME68CG(F), TLYE68CG(F), TLGE68CG(F), TLFGE68CG(F)

○ LED Lamps for mounting on through-hole PCB using an automatic insertion machine

Unit: mm

- 3mm package wide viewing angle
- Can be mounted on a PCB using an automatic insertion machine (please refer to mounting Precautions Using an Automatic Insertion Machine)
- InGaAlP
- Emitted colors: red, yellow and green
- Colored, Transparent lens
- Applications: Various types of information panels, indicators for amusement equipment and panel backlighting illumination sources



JEDEC	—
JEITA	—
TOSHIBA	4-3U1

Weight: 0.15 g(Typ.)

Lineup

Product Name	Color	Material
TLRME68CG(F)	Red	InGaAlP
TLYE68CG(F)	Yellow	
TLGE68CG(F)	Green	
TLFGE68CG(F)	Green	

Absolute Maximum Ratings (Ta = 25°C)

Product Name	Forward Current IF (mA)	Reverse Voltage VR (V)	Power Dissipation PD (mW)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
TLRME68CG(F)	50	4	120	-40~100	-40~120
TLYE68CG(F)	50	4	120		
TLGE68CG(F)	50	4	120		
TLFGE68CG(F)	50	4	120		

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical and Optical Characteristics (Ta = 25°C)

Product Name	Typ. Emission Wavelength				Luminous Intensity I _V			Forward Voltage V _F			Reverse Current I _R	
	λ _d	λ _p	Δλ	I _F	Min	Typ.	I _F	Typ.	Max	I _F	Max	V _R
TLRME68CG(F)	626	(636)	23	20	85	260	20	1.9	2.4	20	50	4
TLYE68CG(F)	587	(590)	17	20	85	300	20	2.0	2.4	20	50	4
TLGE68CG(F)	571	(574)	17	20	47.6	110	20	2.0	2.4	20	50	4
TLFGE68CG(F)	565	(568)	15	20	27.2	70	20	2.0	2.4	20	50	4
Unit	nm			mA	mcd		mA	V		mA	μA	V

Precautions

- These LED lamps made of InGaAlP will also emit some IR light. If a photodetector is located near an LED lamp, please ensure that it will not be affected by this IR light.
- Manual soldering should be performed within 3 s at a maximum temperature of 300°C or 5 s at a maximum temperature of 260°C.
- When forming the leads, bend each lead without applying any forming stress. Soldering must be performed after the leads have been formed.

Mounting Precautions Using an Automatic Insertion Machine

- (1) These newly designed LED lamps are intended for mounting on both through-hole PCBs by means of an automatic mounting machine. Compared to conventional φ3-mm LED lamps, they are less prone to the effects of stress during automatic mounting (such as mechanical stress within the package resin transmitted via the leads). This reduced mechanical stress results in a lower incidence of damage to the package resin and lower emission failure rates. If one of these lamps is subjected to excessive stress, however, the resin part may break or the lamp may be damaged in such a way that it will not emit light. Please take the following precautions when mounting these devices.

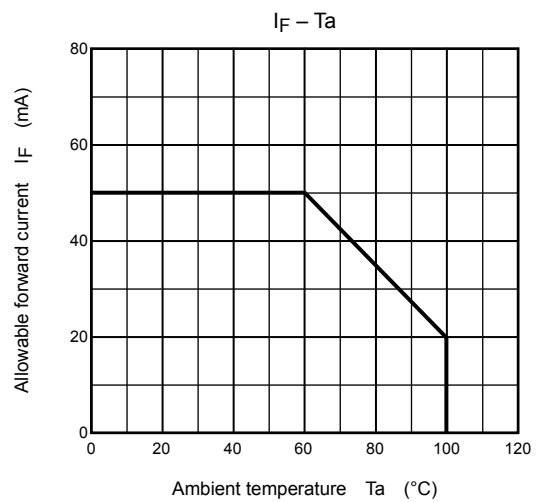
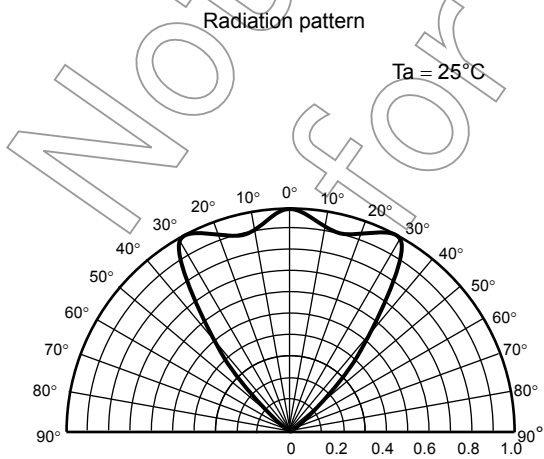
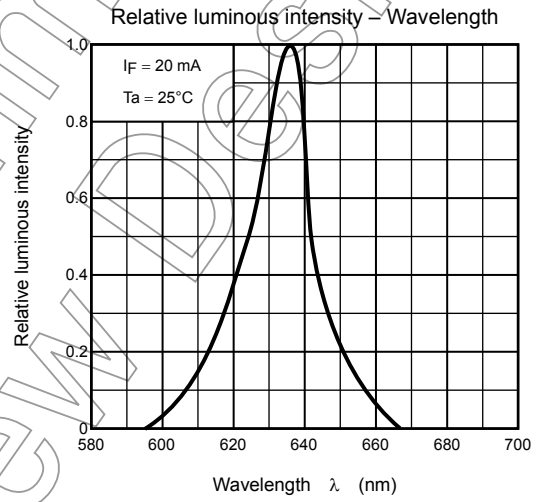
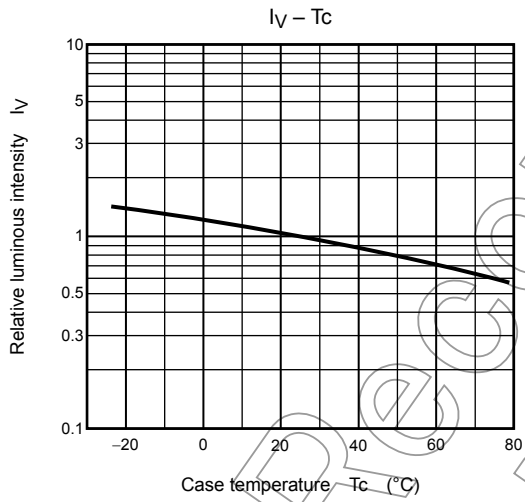
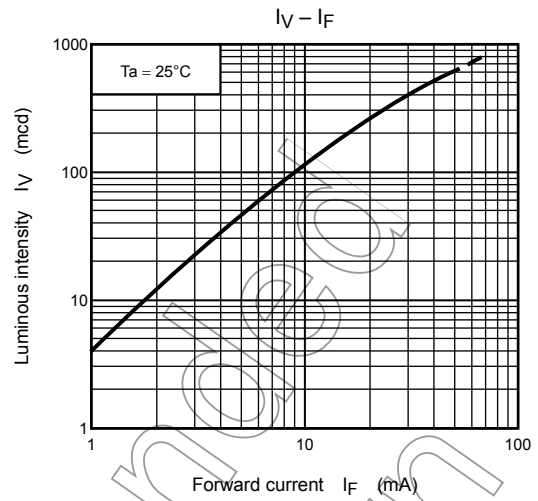
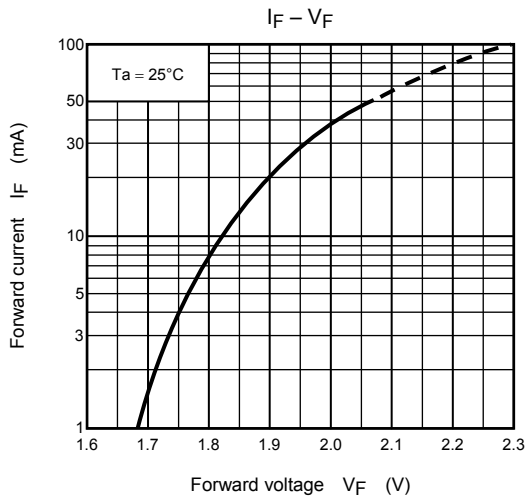
- Toshiba recommends the use of a 0.9-mm PCB hole diameter. However, this recommendation is subject to the type of automatic mounting machine used, the board material and the way in which the board material has been processed. Please evaluate the mounting process carefully before actually using the automatic mounting machine to mount these LED lamps. The use of PCB holes with a diameter larger than 0.9 mm may result in increased stress when soldering is performed (depending on the lead cutting shape and the clinching method), and devices may easily be malfunction.
- The insertion pressure and clinching angle must both be minimized so as to minimize the lead-cutting stress and clinch stress applied to the LED lamps.
- Soldering Conditions

	Preheating	Soldering Flow
Temperature	120~150°C	No more than 260°C
Time	Within 60 seconds	Within 5 seconds

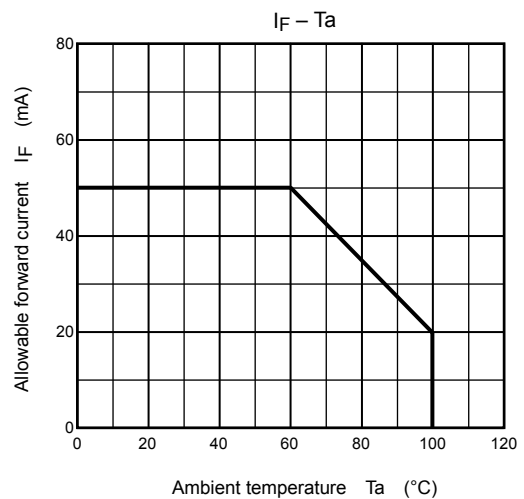
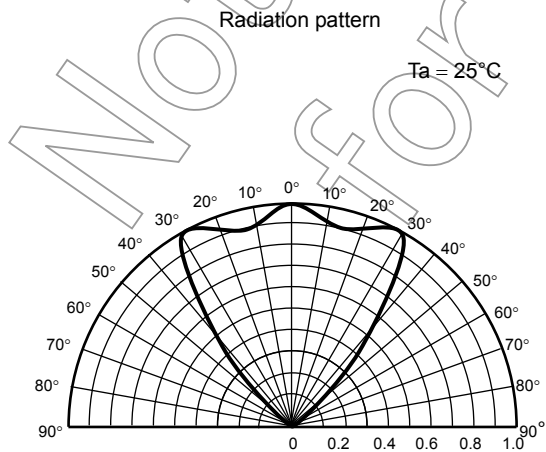
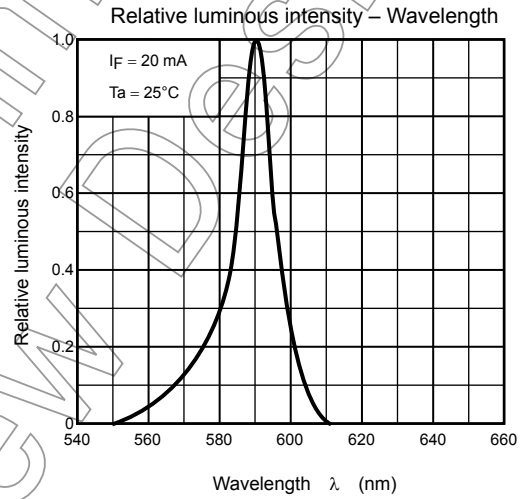
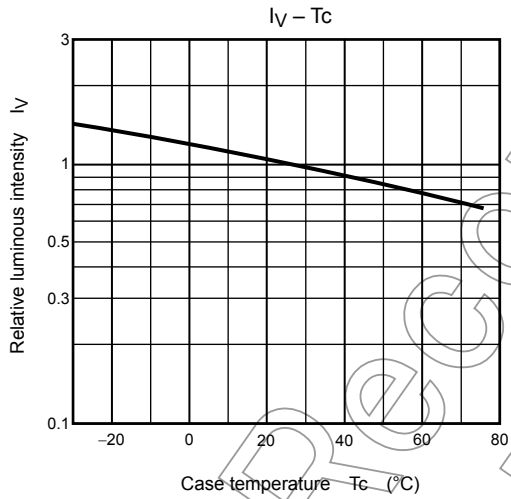
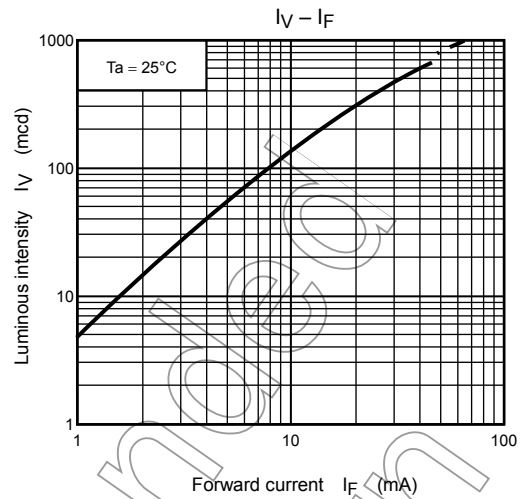
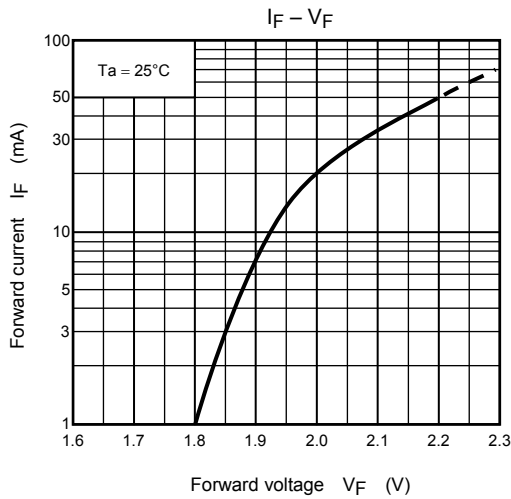
- (2) Precautions when using Panasert radial-Taping automatic mounting machine:
Two-lead LED lamps are suitable for mounting using an anvil due to its movable-blade structure. When using three-lead type, please take the following precautions.
- Synchronize the strokes of the two movable blades to one another as closely as possible.
 - Adjust the timings of the movable blades so as to minimize the difference between them. In addition, do not set the anvil in such a way that the anvil's center blade will pull the leads, as this will result in excessive mechanical stress to the LED lamps, which might damage them.
 - Avoid any blade which is defective or which shows signs of excessive wear.

* For using other than Panasert, please refer to the specifications for the automatic mounting machine which is to be used.

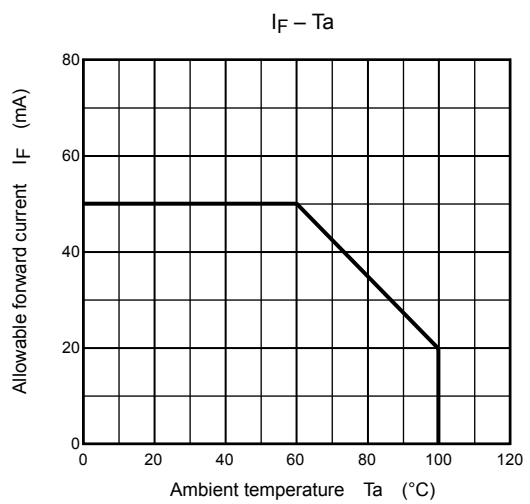
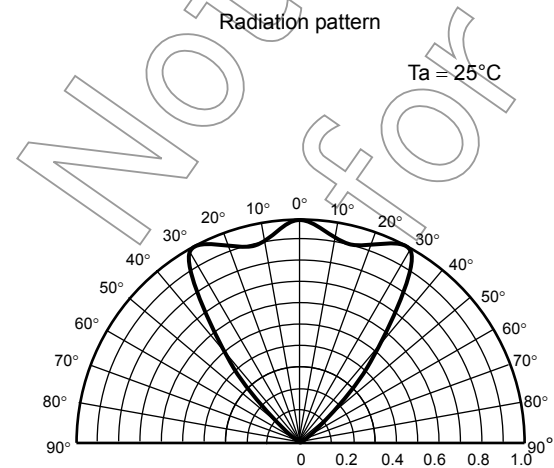
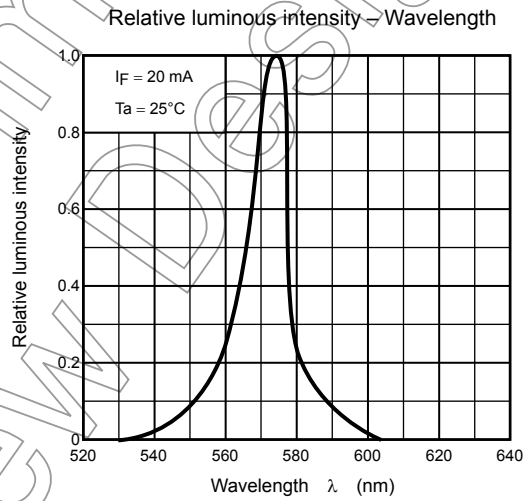
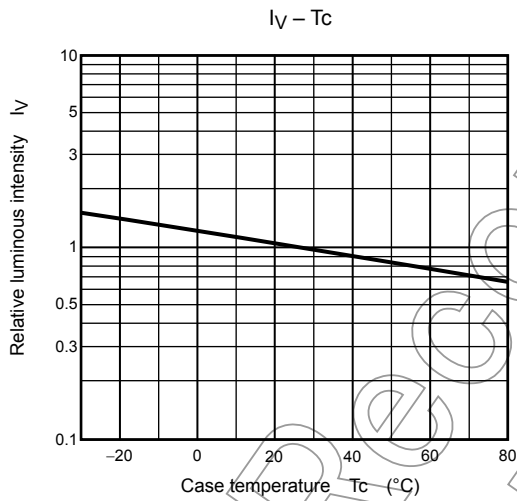
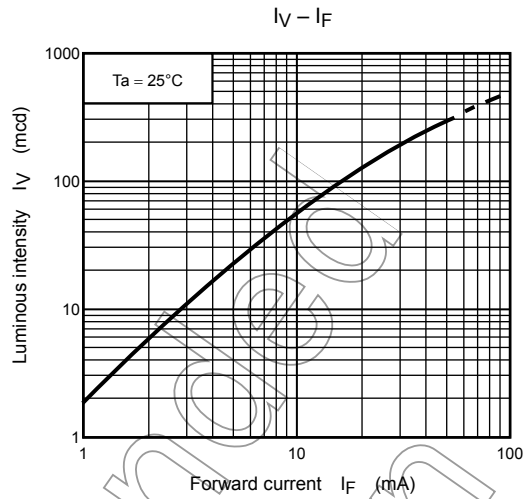
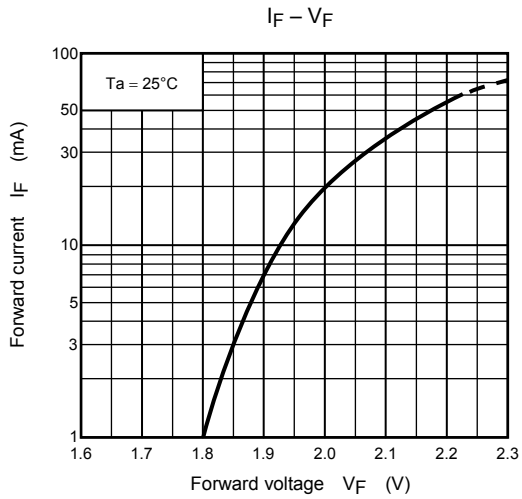
TLRME68CG(F)



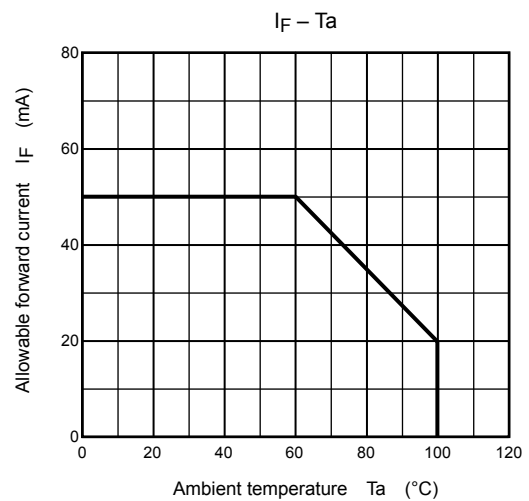
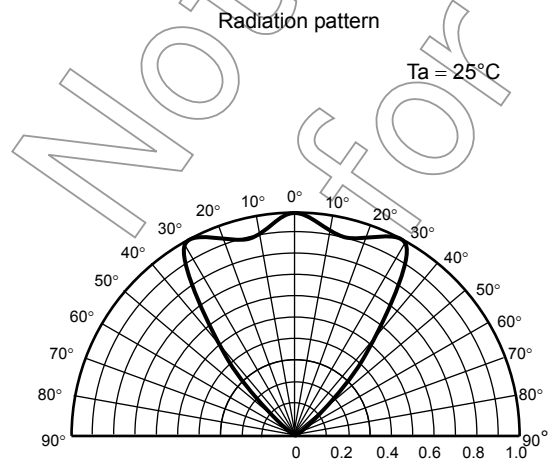
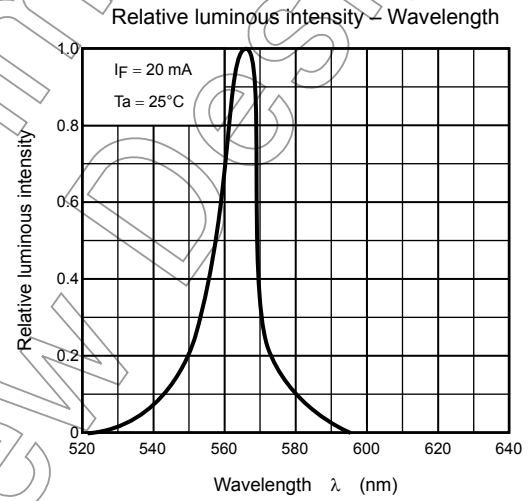
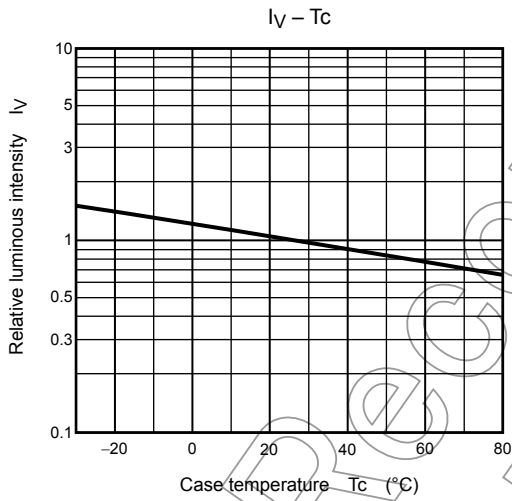
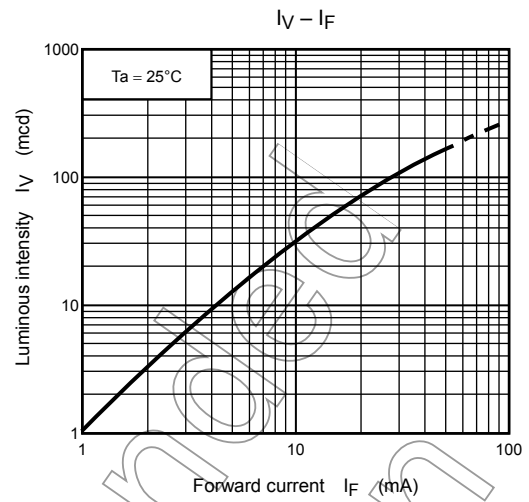
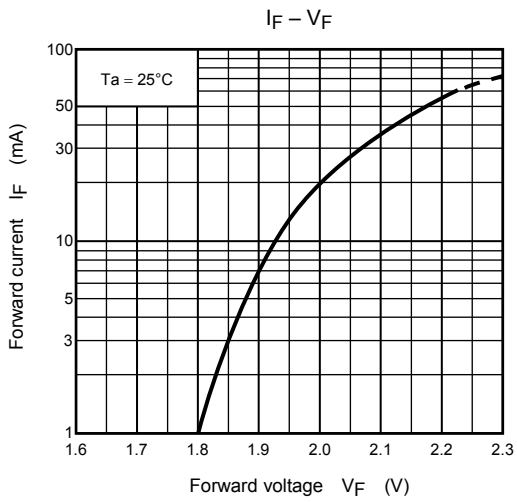
TLYE68CG(F)



TLGE68CG(F)



TLFGE68CG(F)



RESTRICTIONS ON PRODUCT USE

- Toshiba Corporation, and its subsidiaries and affiliates (collectively "TOSHIBA"), reserve the right to make changes to the information in this document, and related hardware, software and systems (collectively "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 creating and producing designs and using, 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 that 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 intended for use in general electronics applications (e.g., computers, personal equipment, office equipment, measuring equipment, industrial robots and home electronics appliances) or for specific applications as expressly stated in this document. Product is neither intended nor warranted for use in equipment 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 or serious public impact ("Unintended Use"). Unintended Use includes, without limitation, equipment used in nuclear facilities, equipment used in the aerospace industry, 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, devices related to electric power, and equipment used in finance-related fields. Do not use Product for Unintended Use unless specifically permitted in this document.
- 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.**
- GaAs (Gallium Arsenide) is used in Product. GaAs is harmful to humans if consumed or absorbed, whether in the form of dust or vapor. Handle with care and do not break, cut, crush, grind, dissolve chemically or otherwise expose GaAs in Product.
- 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 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.