

# CONSTITUTION MATERIALS LIST

The RoHS directive, REACH regulation, and other laws and regulations related to the management of environmentally hazardous substances come into effect. When developing products, the global environmental load must be considered. ROHM pursues green procurement and endeavors to increase the detection accuracy of chemicals contained in parts and procured materials while at the same time placing great importance on the internal chemical management system that was built to ensure that no prohibited substances are procured, used, or shipped in order to provide a steady supply of worry-free products.

TR-TO252M-HF-E\_Rev.6

Type	Package Code	ROHM Package	Mass (mg)	Part No.
Transistor	TO-252(DPAK)	TO-252 (Halogen free)	321.7600	-

No	Part Name	Weight (mg)	Substance Name	CAS No	Weight (mg)	Portion vs. Products	Portion vs. Part Name	
1	Mold compound	143.2140	Silica (amorphous)	60676-86-0	124.8110	38.79%	87.15%	
			Epoxy resin	-	10.7411	3.34%	7.50%	
			Phenol-formaldehyde resin	-	7.1607	2.23%	5.00%	
			Carbon black	1333-86-4	0.5012	0.16%	0.35%	
			<i>Subtotal</i>		<i>143.2140</i>	<i>44.51%</i>	<i>100%</i>	
2	Lead frame (Base material)	159.4540	Copper (Cu)	7440-50-8	159.2547	49.49%	99.88%	
			Tin (Sn)	7440-31-5	0.1993	0.06%	0.12%	
			<i>Subtotal</i>		<i>159.4540</i>	<i>49.56%</i>	<i>100%</i>	
3	Lead frame (Surface treatment)	0.1974	Nickel (Ni)	7440-02-0	0.1974	0.06%	100.00%	
			<i>Subtotal</i>		<i>0.1974</i>	<i>0.06%</i>	<i>100%</i>	
4	External plating	5.6291	Tin (Sn)	7440-31-5	5.6291	1.75%	100.00%	
			<i>Subtotal</i>		<i>5.6291</i>	<i>1.75%</i>	<i>100%</i>	
5	Die	2.4863	Silicon (Si)	7440-21-3	2.4261	0.75%	97.58%	
			Nickel (Ni)	7440-02-0	0.0321	0.01%	1.29%	
			Silver (Ag)	7440-22-4	0.0199	0.01%	0.80%	
			Gold (Au)	7440-57-5	0.0082	0.00%	0.33%	
			<i>Subtotal</i>		<i>2.4863</i>	<i>0.77%</i>	<i>100%</i>	
6	Die attach	7.6050	Lead (Pb) *1	7439-92-1	7.2628	2.26%	95.50%	
			Silver (Ag)	7440-22-4	0.1901	0.06%	2.50%	
			Tin (Sn)	7440-31-5	0.1521	0.05%	2.00%	
			<i>Subtotal</i>		<i>7.6050</i>	<i>2.36%</i>	<i>100%</i>	
7	Bonding wire	3.1742	Aluminum (Al)	7429-90-5	3.1742	0.99%	100.00%	
			<i>Subtotal</i>		<i>3.1742</i>	<i>0.99%</i>	<i>100%</i>	
				<i>Total</i>	-	<i>321.7600</i>	<i>100%</i>	-

## Note

\*1 : It is exempted from the RoHS, because of the high melting point solder.

## Disclaimer

- All information in this document is furnished for exploratory or indicative purposes only.
- This information provides estimates of the average weights and content of component materials. and does not include impurities or metals diffused in the silicon.
- ROHM strives for the accuracy of the information, however, ROHM does not give any representations or warranties as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.
- ROHM may make changes to information published in this document at any time and without notice.

## Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.  
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.
- 7) The Products specified in this document are not designed to be radiation tolerant.
- 8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 11) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrant that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 12) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting from non-compliance with any applicable laws or regulations.
- 13) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 14) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.



Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available, please contact us.

## ROHM Customer Support System

<http://www.rohm.com/contact/>