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Semiconductor Company
Discrete Semiconductor Div.
Discrete Semiconductor Q&R
Engineering Dept.
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Introduction of Halogen-Free Resin* for Discrete Semiconductor Devices

Dear Valuable Customer,

This is to inform you that the encapsulating resin used for Toshiba discrete semiconductor devices will be replaced with the one that bromine (Br) and antimony (Sb) are not used as a flame-retardant and an auxiliary flame-retardant, respectively. Attached please find the subject device categories and change schedule.

We value your loyal patronage and look forward to continue providing you with our semiconductor devices.

[1] Subject devices : Some categories of Toshiba discrete semiconductor devices.
(Subject packages/ device categories: See Attachments 1 and 2.)
Note) The change covers all the domestic and overseas manufactured devices.) *Some through-hole packages, etc. may be excluded.

[2] Content of change : It will be changed to the encapsulating resin that bromine (Br) and antimony (Sb) are not used as a flame-retardant and an auxiliary flame-retardant, respectively. But, the flame retardancy stays the same with that of the conventional one (i.e. equivalent to UL 94V-0).

*Toshiba Corporation, Semiconductor Company, Discrete Semiconductor Division defines the “Halogen-free resin” as the following:
A “halogen-free resin” is made of resin materials not using bromine (Br), chlorine (Cl), and antimony (Sb). (Cl has not been used to start with.)

[3] Reason of change : Environmental measure.

[4] Plan of change : The change will take place per package in order from December 2007.
(See Attachments 1 and 2.)

[5] Others :

(1) There is no change (in dies, manufacturing sites, and processes, etc.) other than the resin in use.

(2) Should you have questions or problems, please contact until around the end of August.

(3) The change for devices manufactured overseas (outside of Japan) is expected to be introduced in order sometime after April 2008, after the expansion to domestic sites (in Japan) has been completed.

Attachment 1

1. Change schedule of encapsulating resin

* For a list of the subject devices per package, please see Attachment 2.

Package	Date of Change
SC2	Dec. 2007
CST2	Dec. 2007
CST3	Dec. 2007
CST4	Dec. 2007
CST6	Dec. 2007
CST8	Dec. 2007
fSC	Dec. 2007
USC	Dec. 2007
ESC	Dec. 2007
sESC	Dec. 2007
US8	Apr. 2008
SM8	Apr. 2008
TESM2	Dec. 2007
TESM3	Dec. 2007
fSM	Dec. 2007
TESM	Apr. 2008
VESM	Apr. 2008
VESM2	Apr. 2008

Package	Date of Change
ESV	Apr. 2008
fSV	Dec. 2007
fS6	Jul. 2008
UFV	Dec. 2007
UF6	Dec. 2007
ES6	Dec. 2007
US6	Apr. 2008
SMV	Jan. 2008
NSV	Jan. 2008
TSM	Jan. 2008
UFM	Apr. 2008
NES6	Apr. 2008
NSM	Apr. 2008
USV	Dec. 2007
S-Mini	Jan. 2008
USM	Dec. 2007
SSM	Dec. 2007

Package	Date of Change
SOP8	1H'08
SOP-8Adv	1H'08
TSSOP-8	1H'08
TSSOP-8Adv	1H'08
NewPw-Mold	1H'08
PS-8	1H'08
VS-6	1H'08
VS-8	1H'08
DP	2H'08
Pw-Mini	2H'08
S-FLAT	2H'08
M-FLAT	2H'08
US-FLAT	2H'08
HM-FLAT	2H'08

1H'08: From Jun. 2008
2H'08: From Oct. 2008

The above change schedule is for devices manufactured domestically (in Japan). For devices manufactured overseas (outside of Japan), a change is advanced in an order from the “USC&SSM package” which is planning the overall change in April, 2008.

2. A package that bromine and antimony are not used in the encapsulating resin from the beginning of the development

STP2

3. Packages that the change is under consideration

USQ, SMQ, TESQ, ESM, SM6, and fS6T

4. Reliability data for halogen-free resin devices

As a representative, the reliability data of a diode device (JDP2S05FS) will be attached.
Please make an inquiry separately for the reliability data of individual devices.

5. Comparison of compositions with the conventional resin

The ratio of compositions may differ from device to device. Please make an inquiry separately for details.