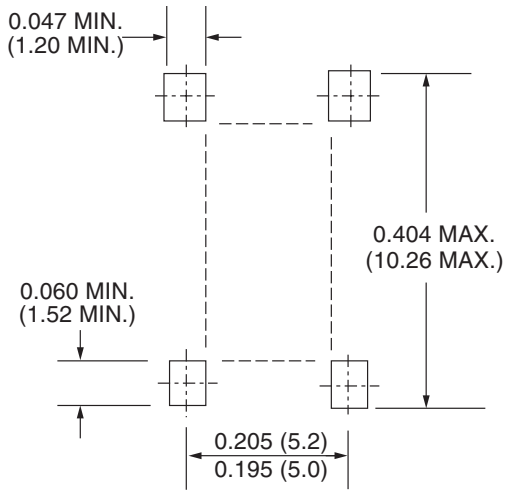
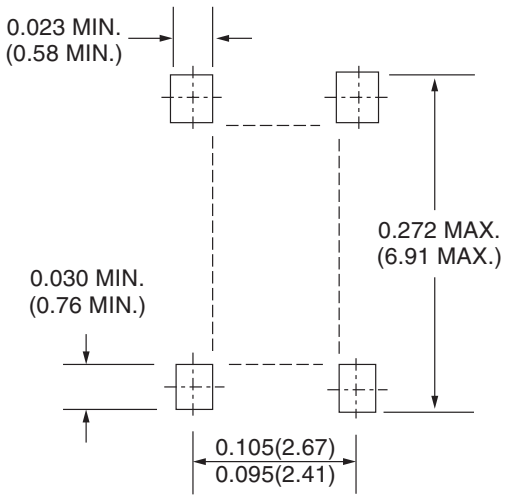
Pad Layouts/Soldering Process

VISHAY GENERAL SEMICONDUCTOR RECOMMENDED MINIMUM MOUNTING PAD LAYOUT SIZES FOR THE SURFACE MOUNT RECTIFIER

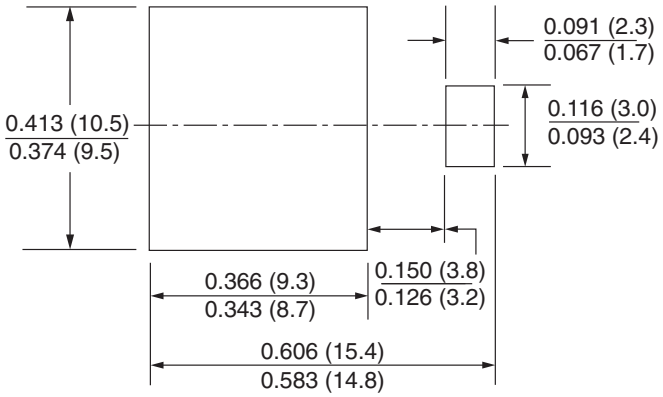
DFS BRIDGE



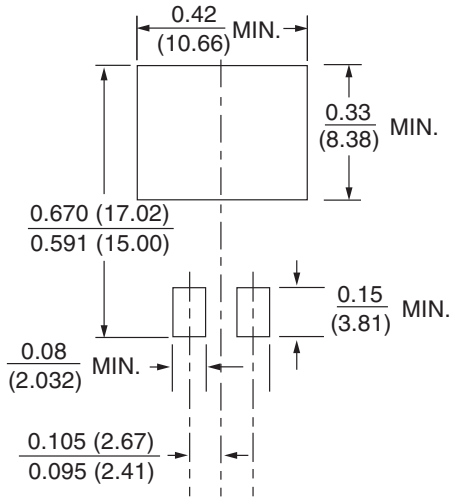
MBS BRIDGE



DO-218

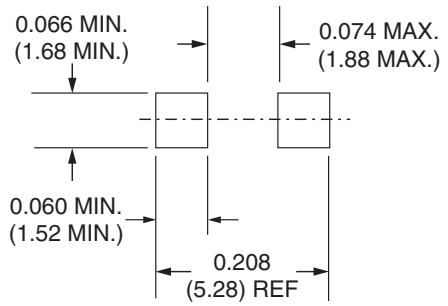


TO-263

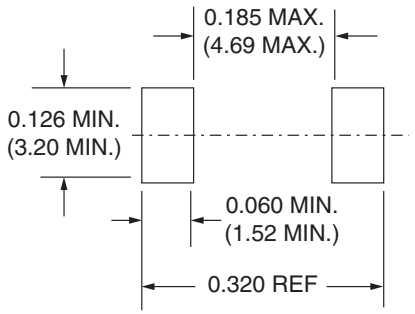


All dimensions in inches (millimeters)

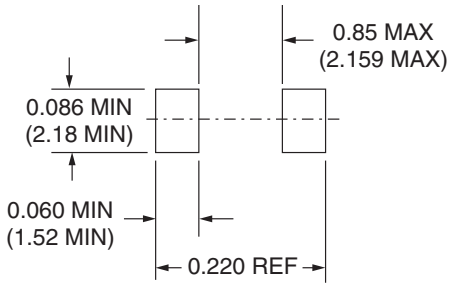
DO-214AC/DO-214BA



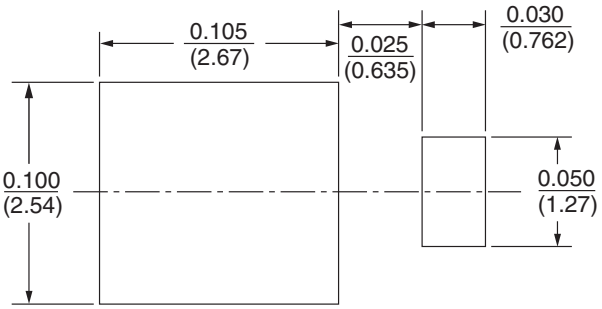
SMC/DO-214AB



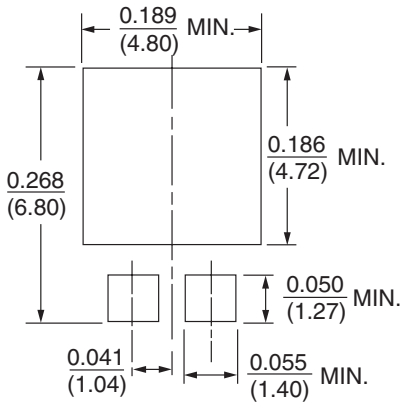
SMB/DO-214AA



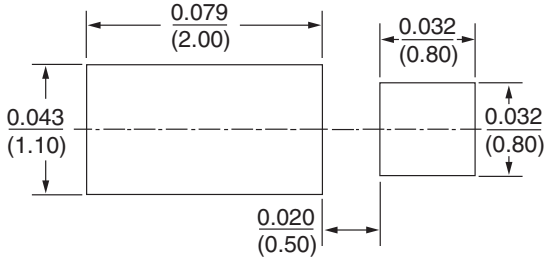
DO-220AA (SMP)



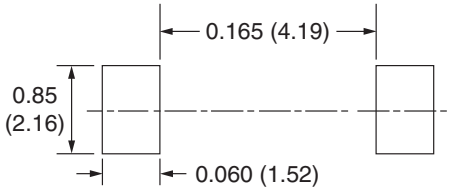
TO-277A (SMPC)



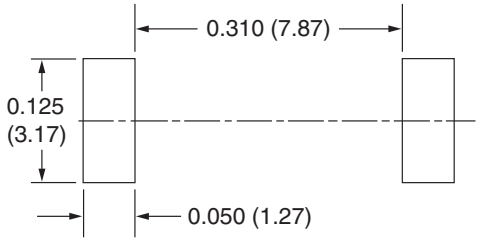
MicroSMP



DO-215AA (SMBG)

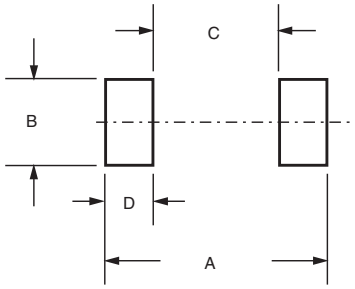


DO-215AB (SMCG)



All dimensions in inches (millimeters)

DO-213AA (GL34)/DO-213AB (GL-41)



DIMENSIONS in inches (millimeters)		
	DO-213AA (GL34)	**DO-213AB (GL41)**
A	0.177 (4.5) REF	0.236 (6.0) REF
B	0.079 (2.0) MIN.	0.118 (3.0) MIN.
C	0.079 (2.0) MAX.	0.138 (3.5) MAX.
D	0.050 (1.25) MIN.	0.050 (1.25) MIN.

VISHAY GENERAL SEMICONDUCTOR RECOMMENDED SOLDERING PROCESS FOR SURFACE MOUNTED AND AXIAL-LEADED COMPONENTS

Wave soldering has the highest solder temperature and heat transfer rates that are imposed by small resin molded parts like transistors, integrated circuits and surface mount components. The profile has a short dwell time in the solder pot and a preheat to minimize thermal shock for ceramic components and temperature problems with resin molded parts. A typical temperature profile using 63/67 alloy solder is shown below.

Wave Soldering Notes

The profile illustrated above depends ultimately on the type of flux used with the solder paste. The peak temperature for this process should not exceed 265 °C for PC-board mounting.

Fig. 1 - Sn-Pb Wave Soldering Profile

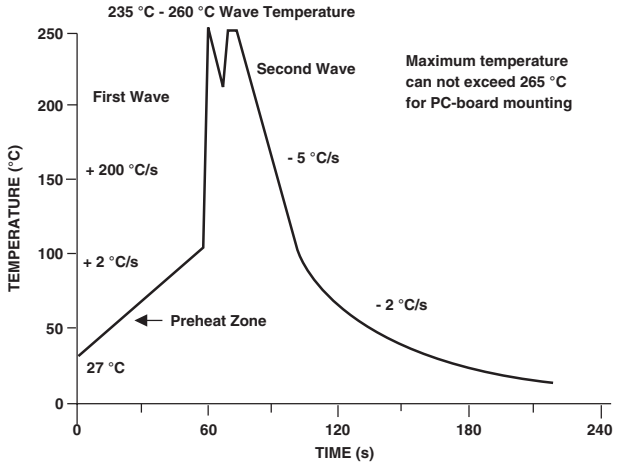
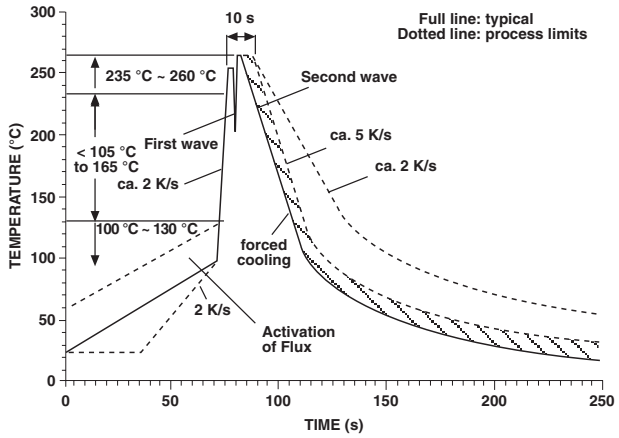
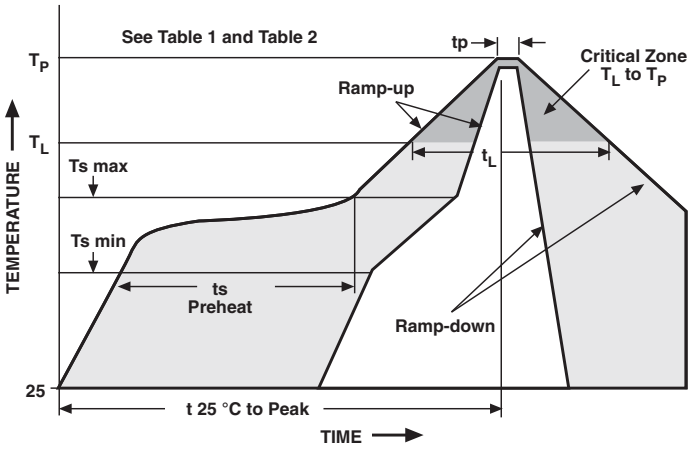


Fig. 2 - Lead (Pb)-free Wave Soldering Profile



REFLOW PROFILE



CLASSIFICATION REFLOW PROFILE		
PROFILE FEATURE	**Sn-Pb EUTECTIC ASSEMBLY**	**LEAD (Pb)-FREE ASSEMBLY**
Average ramp-up rate (Ts max to TP)	3 °C/second maximum	3 °C/second maximum
Preheat - Temperature Minimum (Tsmin) - Temperature Maximum (Tsmax) - Time (min to max) (ts)	 100 °C 150 °C 60 - 120 seconds	 150 °C 200 °C 60 - 180 seconds
Time maintained above: - Temperature (T_L) - Time (t_L)	 183 °C 60 - 150 seconds	 217 °C 60 - 150 seconds
Peak Temperature	(Table 1)	(Table 2)
Time within 5 °C to actual peak temperature (tp)	10 - 30 seconds	20 - 40 seconds
Ramp-down rate	6 °C/second maximum	6 °C/second maximum
Time 25 °C to peak temperature	6 minutes maximum	8 minutes maximum

Note:

All temperatures refer to topside of the package, measured on the package body surface

TABLE 1 - Sn-Pb EUTECTIC PROCESS PACKAGE PEAK REFLOW TEMPERATURES

PACKAGE THICKNESS	VOLUME mm^3 < 350	VOLUME mm^3 ≥ 350
< 2.5 mm	240 + 0/- 5 °C	225 + 0/- 5 °C
≥ 2.5 mm	225 + 0/- 5 °C	225 + 0/- 5 °C

TABLE 2 - LEAD (Pb)-FREE PROCESS PACKAGE CLASSIFICATION REFLOW TEMPERATURE

PACKAGE THICKNESS	VOLUME mm^3 < 350	VOLUME mm^3 350 - 2000	VOLUME mm^3 > 2000
< 1.6 mm	260 + 0 °C*	260 + 0 °C*	260 + 0 °C*
< 1.6 mm - 2.5 mm	260 + 0 °C*	250 + 0 °C*	245 + 0 °C*
≥ 2.5 mm	250 + 0 °C*	245 + 0 °C*	245 + 0 °C*

* Tolerance: The device manufacturer/supplierer shall assure process compatibility up to and including the stated classification temperature at the rated MSL level.

Notes:

1. Package volume excludes external terminals (balls, bumps, lands, leads) and/or non-integral heat sinks.

2. The maximum component temperature reached during reflow depends on package thickness and volume. The use of convection reflow processes reduces the thermal gradients between packages. However, thermal gradients due to differences in thermal mass of SMD packages may still exist.