

Notification about the transfer of the semiconductor business

The semiconductor business of Panasonic Corporation was transferred on September 1, 2020 to Nuvoton Technology Corporation (hereinafter referred to as "Nuvoton"). Accordingly, Panasonic Semiconductor Solutions Co., Ltd. became under the umbrella of the Nuvoton Group, with the new name of Nuvoton Technology Corporation Japan (hereinafter referred to as "NTCJ").

In accordance with this transfer, semiconductor products will be handled as NTCJ-made products after September 1, 2020. However, such products will be continuously sold through Panasonic Corporation.

Publisher of this Document is NTCJ.

If you would find description "Panasonic" or "Panasonic semiconductor solutions", please replace it with NTCJ.

※ Except below description page

"Request for your special attention and precautions in using the technical information and semiconductors described in this book"

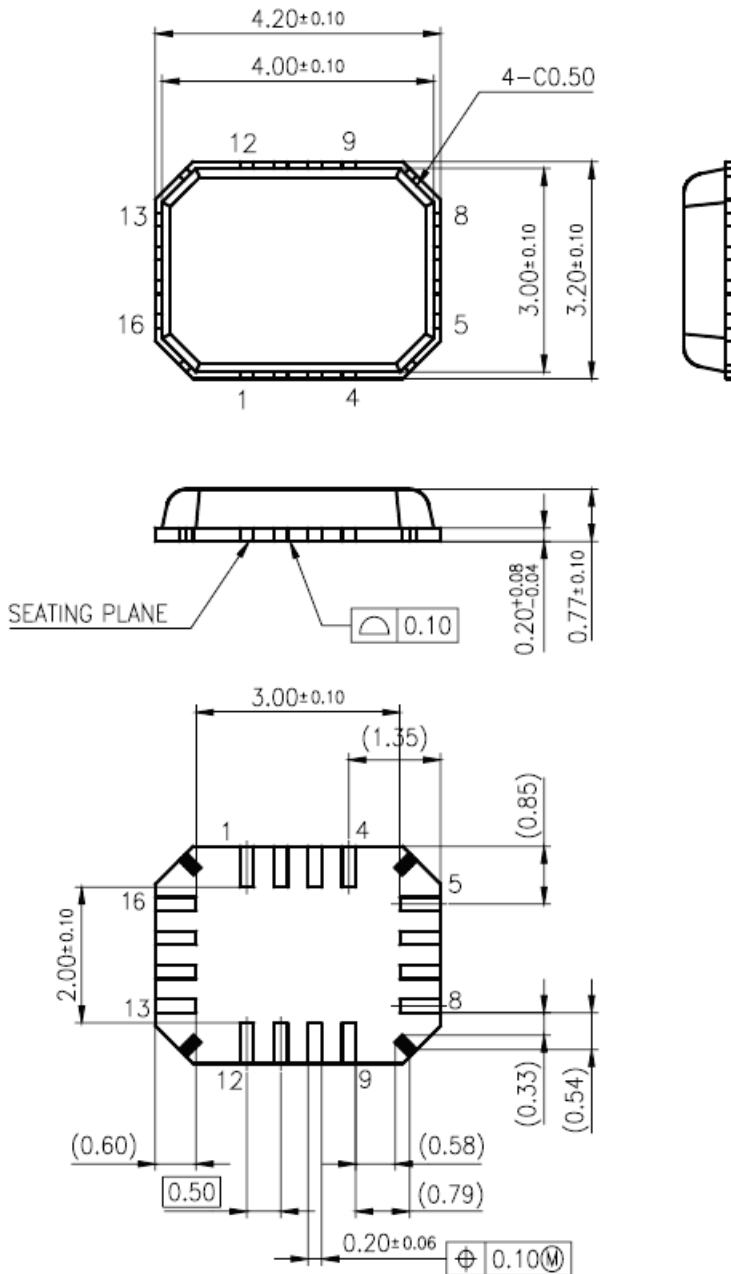
Nuvoton Technology Corporation Japan



1. Outline Drawing

Unit:mm

Package Code : *QFN016-P-0304C

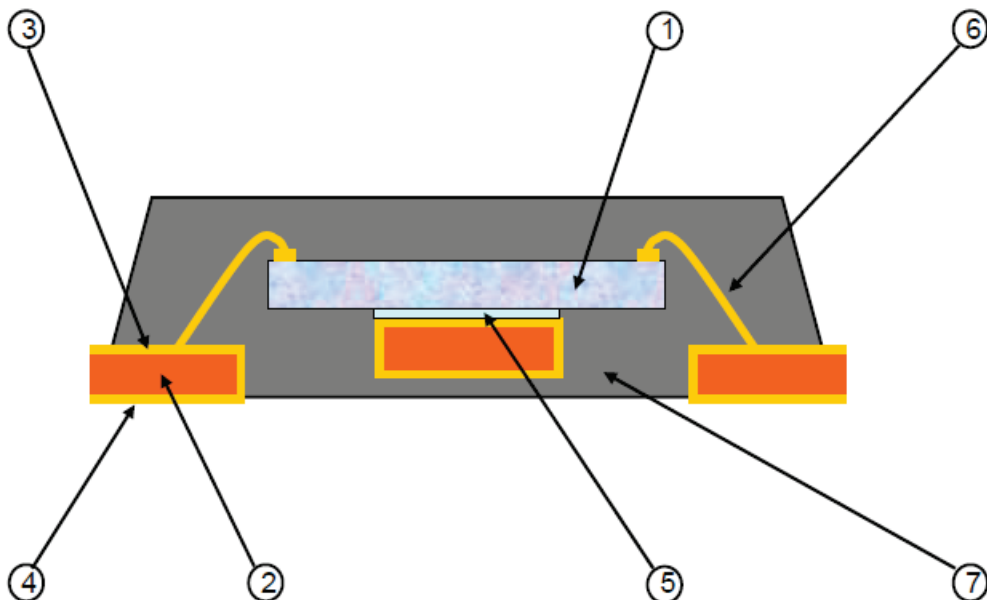


Body Material	: Br / Sb Free Epoxy Resin
Lead Material	: Cu Alloy
Lead Finish Method	: Pd Plating

2. Package Structure (Technical Report : Reference Value)

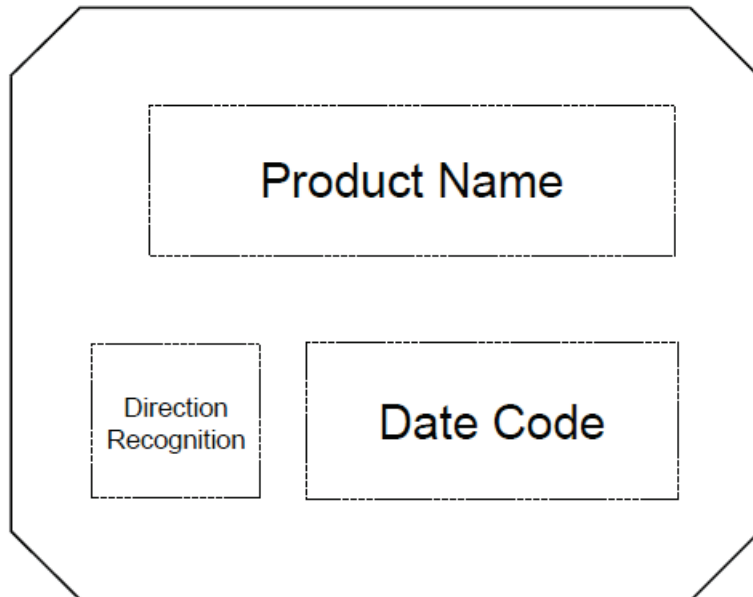
Package Code : *QFN016-P-0304C

Chip Material		Si	①
Leadframe material		Cu alloy	②
Inner lead surface		Pd plating	③
Outer lead surface		Pd plating	④
Die attach	Method	Resin adhesive	⑤
	Material	Adhesive material	
Wirebond	Method	Thermo-compression bonding	⑥
	Material	Au	
Molding	Method	Transfer molding	⑦
	Material	Br/Sb free epoxy resin	
Mass		23.7 mg	



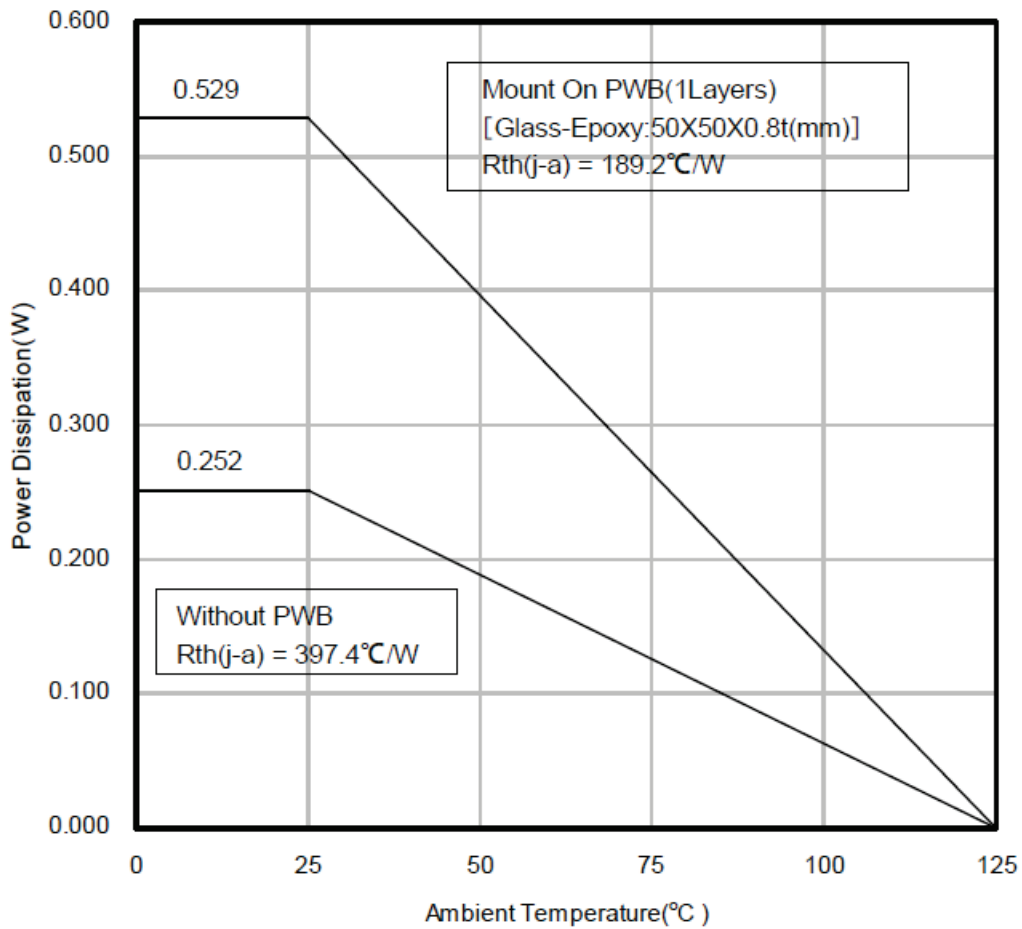
3. Mark Layout

Package Code : *QFN016-P-0304C



4. Power Dissipation (Technical Report)

Package Code : *QFN016-P-0304C



5. Power Dissipation (Supplementary Explanation)

[Experiment environment]

Power Dissipation (Technical Report) is a result in the experiment environment of SEMI standard conformity. (Ambient air temperature (Ta) is 25 degrees C)

[Supplementary information of PWB to be used for measurement]

The supplement of PWB information for Power Dissipation data (Technical Report) are shown below.

Indication	Total Layer	Resin Material
Glass-Epoxy	1-layer	FR-4
4-layer	4-layer	FR-4

[Notes about Power Dissipation (Thermal Resistance)]

Power Dissipation values (Thermal Resistance) depend on the conditions of the surroundings, such as specification of PWB and a mounting condition, and a ambient temperature. (Power Dissipation (Thermal Resistance) is not a fixed value.)

The Power Dissipation value (Technical Report) is the experiment result in specific conditions (evaluation environment of SEMI standard conformity), and keep in mind that Power Dissipation values (Thermal resistance) depend on circumference conditions and also change.

[Definition of each temperature and thermal resistance]

Ta : Ambient air temperature

※The temperature of the air is defined at the position where the convection, radiation, etc. don't affect the temperature value, and it's separated from the heating elements.

Tc : It's the temperature near the center of a package surface. The package surface is defined at the opposite side if the PWB.

Tj : Semiconductor element surface temperature (Junction temperature.)

Rth(j-c) : The thermal resistance (difference of temperature of per 1 Watts) between a semiconductor element junction part and the package surface

Rth(c-a) : The thermal resistance (difference of temperature of per 1 Watts) between the package surface and the ambient air

Rth(j-a) : The thermal resistance (difference of temperature of per 1 Watts) between a semiconductor element junction part and the ambient air

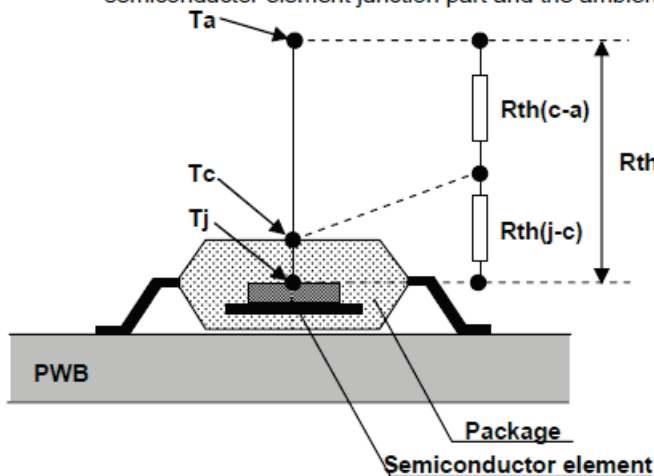


Fig1. Definition image

[Definition formula]

$$T_j = \{R_{th}(j-c) + R_{th}(c-a)\} \times P + T_a$$

$$= R_{th}(j-a) \times P + T_a$$

$$R_{th}(j-c) = \frac{T_j - T_c}{P} \quad (^\circ\text{C/W})$$

$$R_{th}(c-a) = \frac{T_c - T_a}{P} \quad (^\circ\text{C/W})$$

$$R_{th}(j-a) = \frac{T_j - T_a}{P} \quad (^\circ\text{C/W})$$

$$= R_{th}(j-c) + R_{th}(c-a)$$

P: power(W)

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