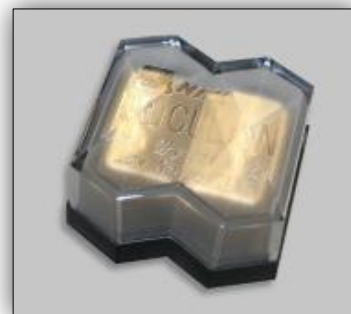


# Ultra-Low-Phase-Noise OCXO【DuCULoN<sup>®</sup>】

## Oven controlled “Dual Crystal Ultra Low Noise” oscillator for master clocks in digital high-end audio products

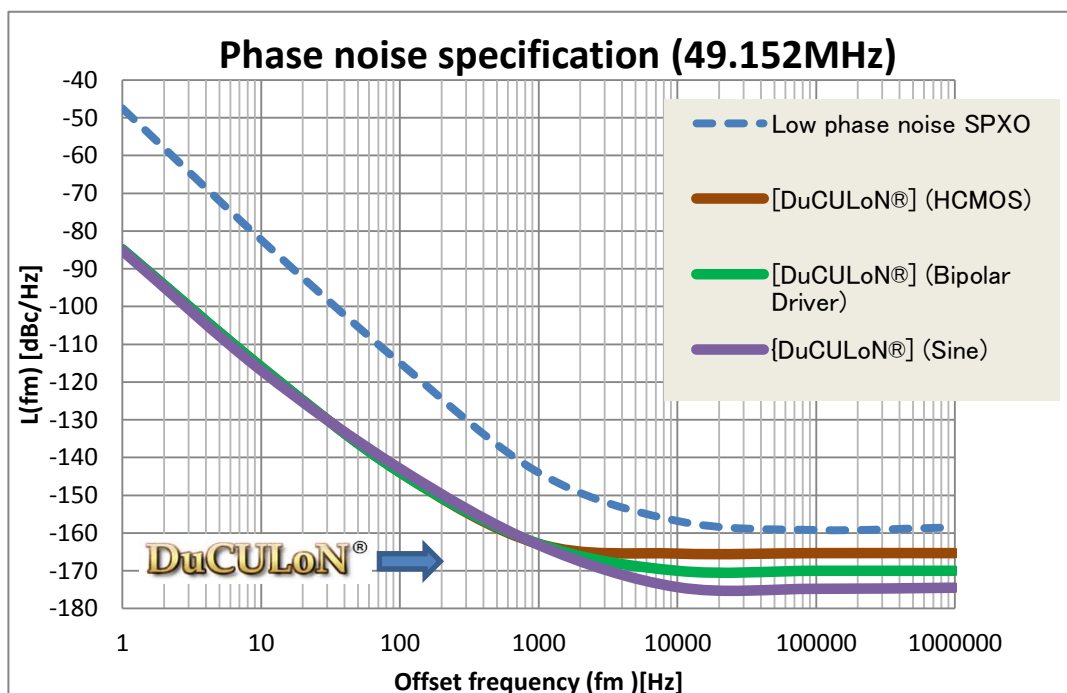
DuCULoN<sup>®</sup>\*1 – an oven-controlled crystal oscillator with ultra-low-phase-noise characteristics that dramatically improves the sound quality of high-resolution digital audio devices.



\*1 : Dual Crystal Ultra Low Noise OCXO – a crystal oscillator module in which dual high-accuracy crystals are used to achieve Ultra-Low-Phase-Noise.

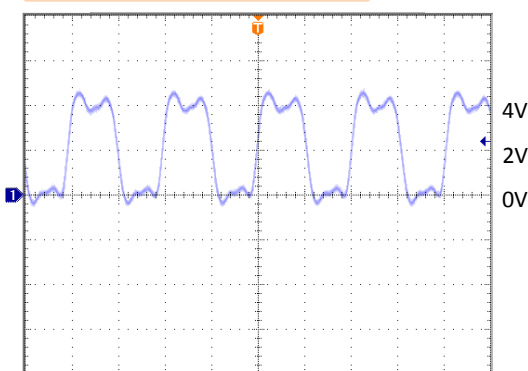
### \* Ultra-low-phase-noise characteristics

Noise floor : -175 dBc/Hz at 10 kHz ( Measurement limit ) ( Sine wave )

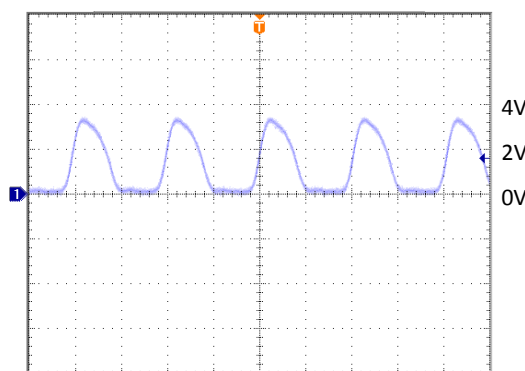


- The "Bipolar Driver Output(Analog Output)" version of DuCULoN<sup>®</sup> reduces phase noise even beyond that of the HCMOS Output version. It also has the ability to drive 3 DACs.
- The power supplies for the oscillation-circuit and the oven-circuit have been separated, for less modulation and noise.

HCMOS Output wave



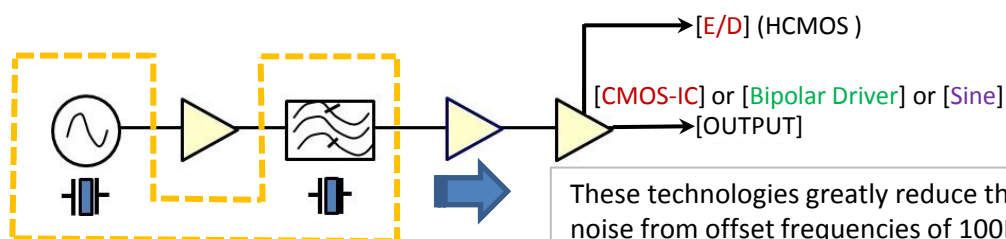
Bipolar Driver Output wave



# Ultra-Low-Phase-Noise OCXO【DuCULoN<sup>®</sup>】

## \* Novel noise reduction technology

\* The technologies incorporated in DuCULoN<sup>®</sup> were developed to reduce noise for satellite communication applications.



## \* Dual structure package

\* Incorporation of a new temperature fluctuation-resistant dual structure package (reduced low-frequency fluctuation noise).

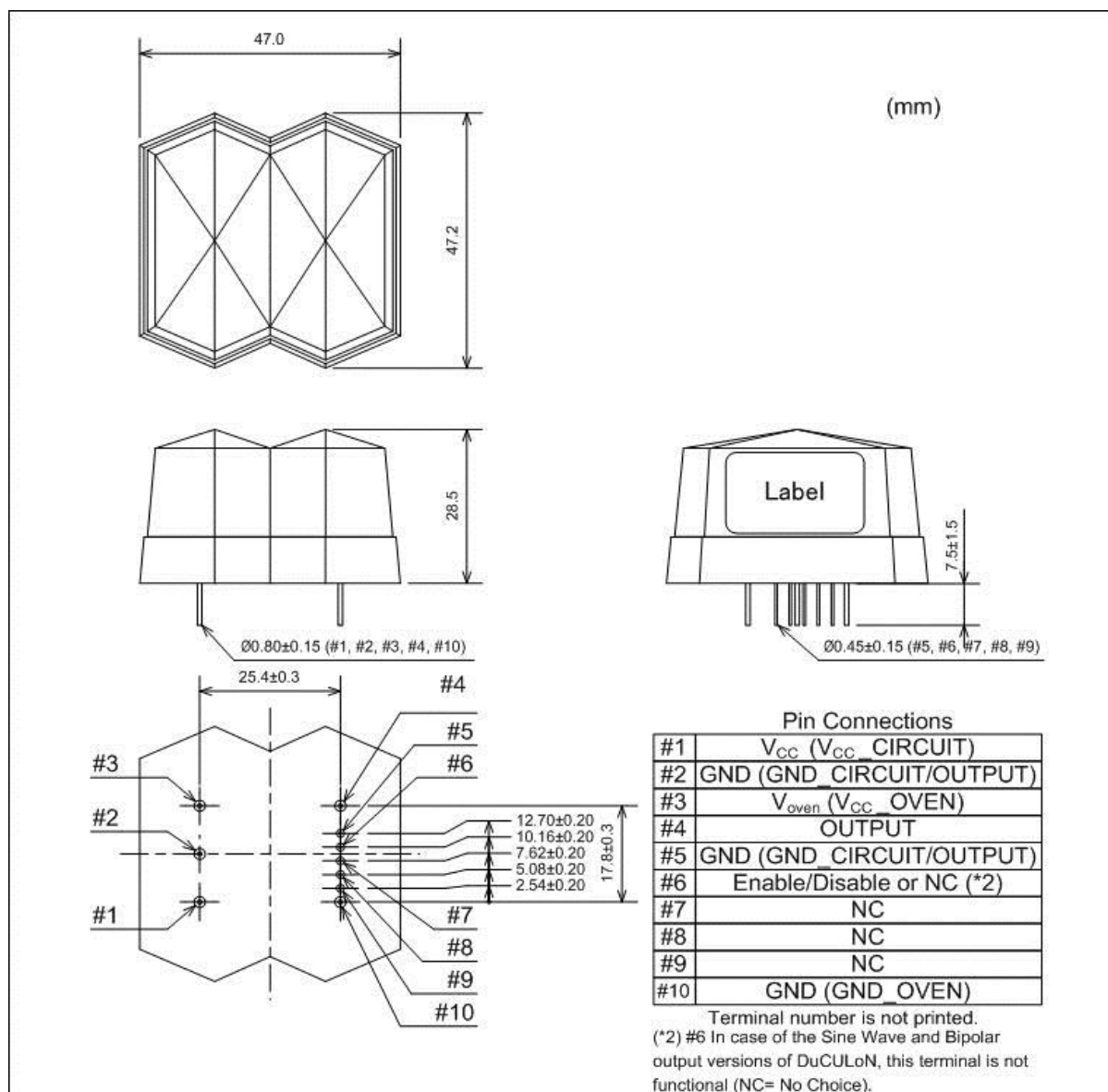
## \* Specifications

Model Name		NH47M47LA		
Nominal Frequency		45.1584MHz、 49.152MHz		
Supply Voltage	V <sub>CC</sub>	+5V +/- 5%		
	V <sub>oven</sub>	+5V +/- 5%		
Current Consumption	I <sub>CC</sub>	Max. 60 mA		
	I <sub>oven</sub>	Max. 740 mA (at Start)		
		Max. 210 mA    (+25°C when Stable)		
Operating Temperature Range		0°C ~ +50 °C		
Overall Frequency Tolerance		Max. $\pm 5 \times 10^{-6}$		
Output (*1)		HCMOS	Sine	Bipolar Driver
Specification Number		NSA3647A	NSA3647B	NSA3647C

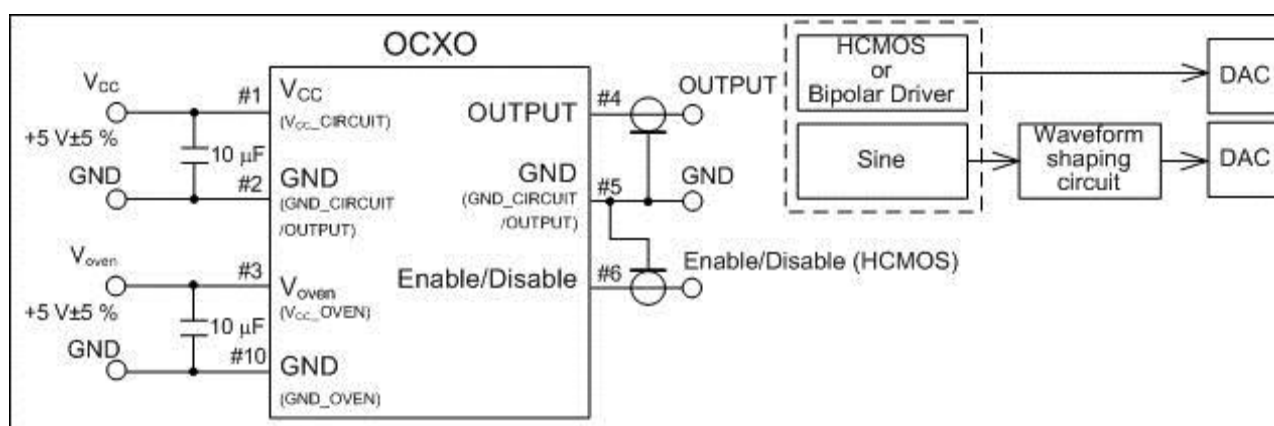
(\*1): Sine (Option)

# Ultra-Low-Phase-Noise OCXO【DuCULoN<sup>®</sup>】

## \* Dimensions



**\* Circuit connection for DuCULoN<sup>®</sup>**



Concerning the Export Trade Control Order of Japan

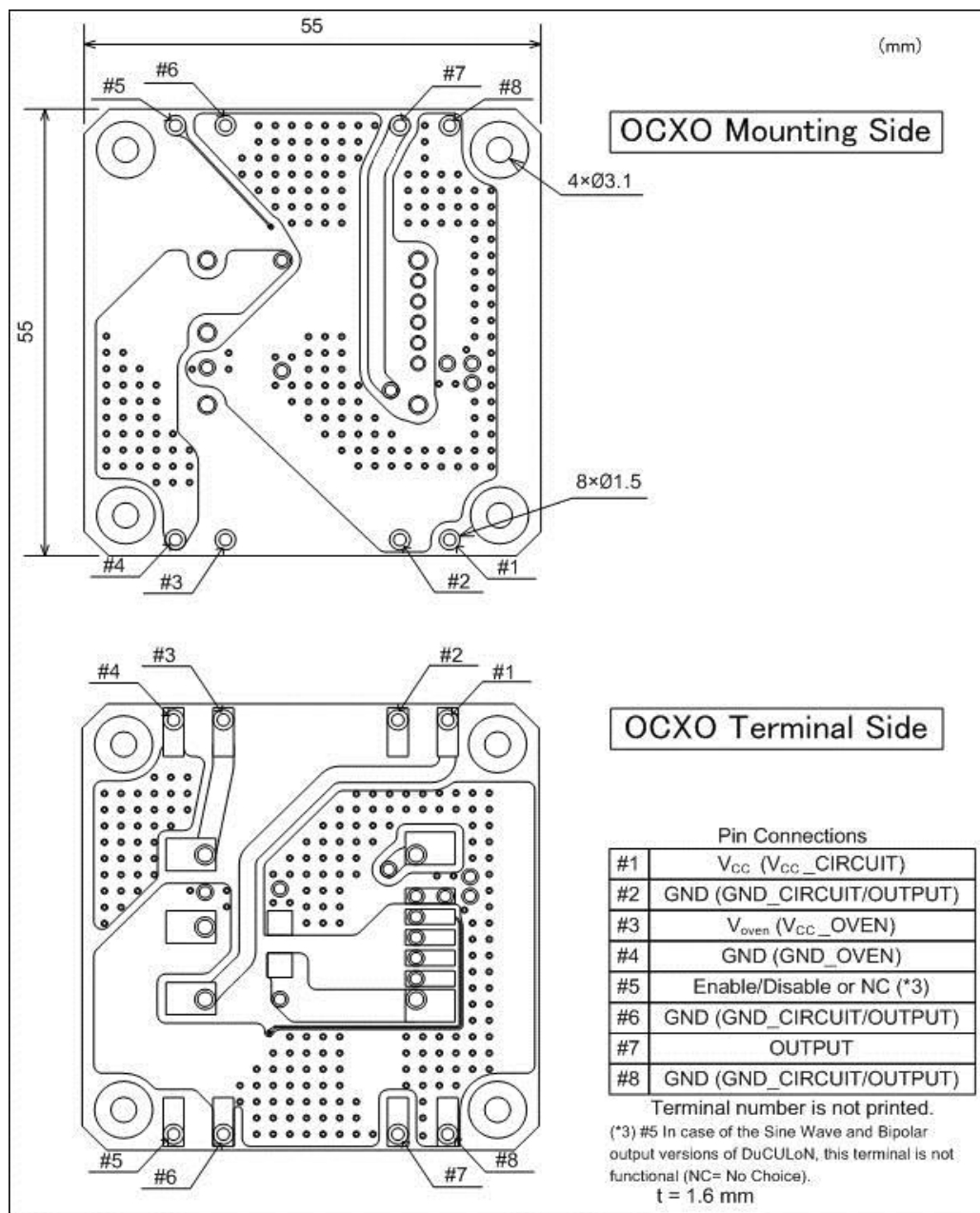
DuCuLoN<sup>®</sup> (Model name: NH47M47LA) is a listed item in the attached list No.1 (Categories 7- item 2) regarding the Export Trade Control Order of Japan.

In case of export from Japan, export licenses are required in advance.

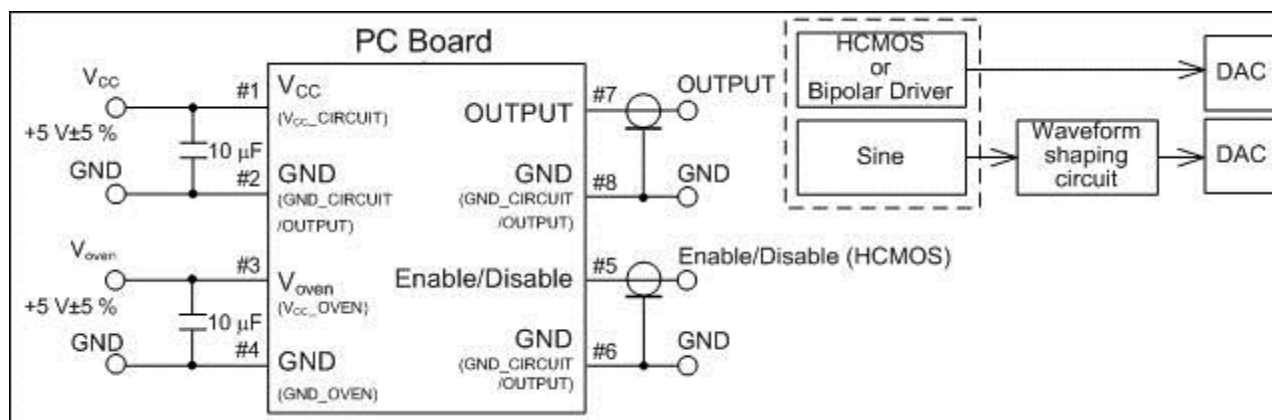
# Ultra-Low-Phase-Noise OCXO【DuCULoN<sup>®</sup>】

## \* Optional PC Board [ Specification Number : NSA3647Z ]

- \* To support immediate usability of DuCULoN<sup>®</sup>, we offer an optional PC board.
- \* Shielded cable is recommended for connections between the OUT PUT, Enable/Disable points and the nearest GND.



## \* Circuit connection for recommended PC board

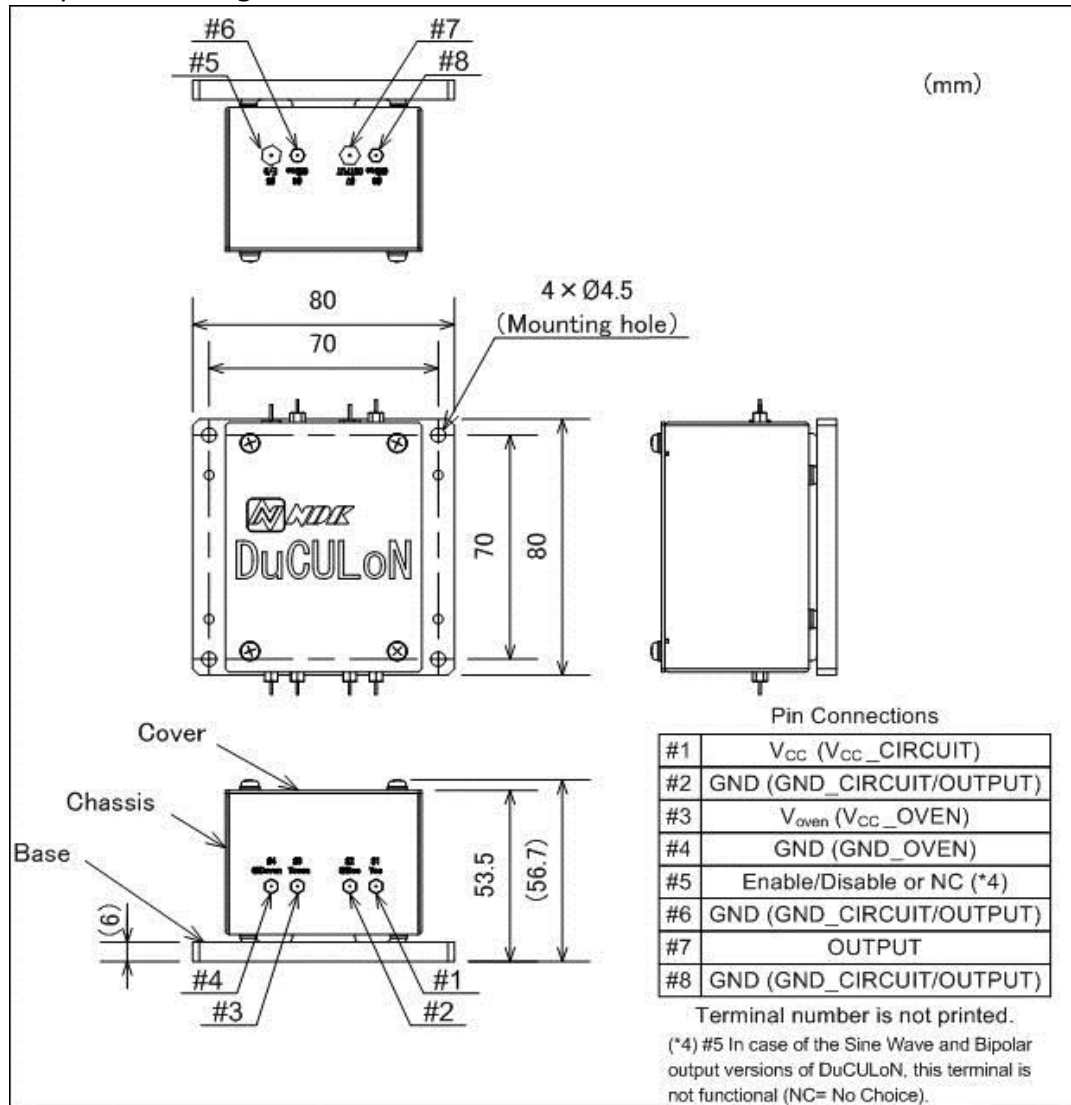


# Ultra-Low-Phase-Noise OCXO【DuCULoN<sup>®</sup>】

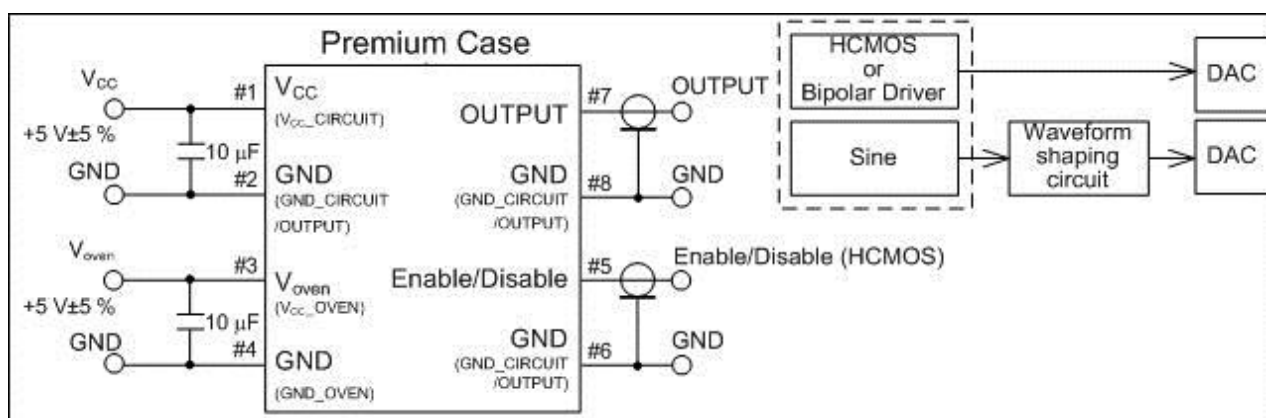
## \* Premium Case option. [ Specification Number : NSA3647Y ]

The optional "Premium Case" minimizes external noise and vibration, thereby allowing the DuCULoN<sup>®</sup> to reach its maximum performance.

- 1) The case is using an electromagnetic shield to cut the noise radiated from the external power supply.
- 2) Between the floor of the case and the DuCULoN<sup>®</sup> placed inside.  
This helps minimizing vibration from external sources.



## \* Circuit connection for Premium Case



\* Please understand some information changes will happen without any notice from this December 2015 information.