

## MiCS-VZ-89TE - Power-on Self-Test

Parameter	Criteria	Failed Diagnostic Indicator
Sensor Resistance Range	Range Check	PWM < 5 % at Power ON
Sensor Operating Power	Range Check	PWM < 5 % at Power ON

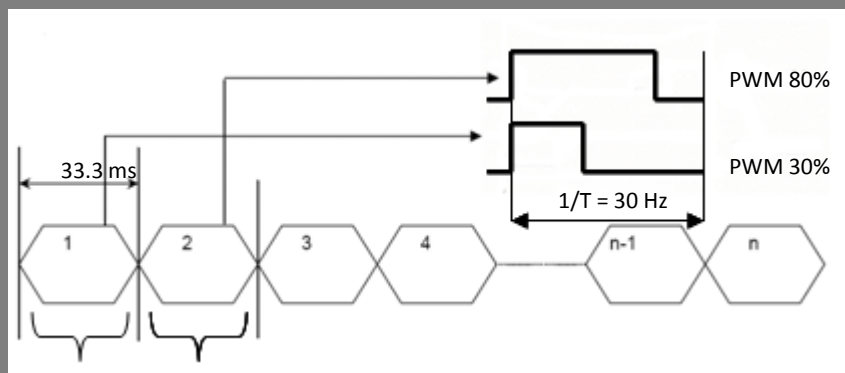
## MiCS-VZ-89TE – PWM Output

After Power-on self-test (2 seconds), the device will provide either a single “Failed Diagnostic Level” in case of sensor failure of the sensor or PWM multiplexed output indicating “CO<sub>2</sub> equivalent Level” and “VOC\_isobutylene equivalent Level” referred to the isobutylene sensitivity unit.

A simple manner to test the reactivity and sensitivity of gas sensor is to expose to alcohol bottleneck for example

CO <sub>2</sub> equ [ppm]	PWM Output [%]
400	55
1027	70.7
1654	86.4
2000	95

VOC (isobutylene) [ppb]	PWM Output [%]
0	5
200	13
500	25
1000	45



tVOC from 5% to 45%  
CO<sub>2</sub> equ from 55% to 95%

## MiCS-VZ-89TE Output

Out of this initial period, the device will have the I2C data CO2 equivalent [ppm] and tVOC equivalent referred to the isobutylene sensitivity unit [ppb].

D1: Data\_byte\_1: tVOC: [13...242] -> tVOC [ppb] = (D1-13) \* (1000/229)

D2: Data\_byte\_2: CO2\_equ: [13...242] -> CO2\_equ [ppm] = (D2 -13) \* (1600/229) + 400

D3: Data\_byte\_3: RS first byte(MSB) -> Resistor value [ $\Omega$ ] =  $10 * (D5 + (256 * D4) + (65536 * D3))$

D4: Data\_byte\_4: RS second byte

D5: Data\_byte\_5: RS third byte(LSB)

D6: Status

D7: CRC