

Upgrading the ON Semiconductor MC33x64/34x64 Reset IC

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INTRODUCTION

ON Semiconductor recommends the MC33x64 and MC34x64 series as the reset IC choice for microcontrollers. Consequently, they are some of the most commonly used processor supervisors for embedded controller designs. These devices are adequate for certain applications where low power and space are not critical. However, Microchip Technology's TC54 series provides the designer with a smaller, more efficient upgrade.

OPERATING TEMPERATURE

The MC34x64's temperature range is only 0°C to 70°C. For an operating temperature range of -40°C to 85°C, or -40°C to 125°C, the MC33064 or MC33164 must be used, respectively. In comparison, Microchip's entire TC54 series is specified across a -40°C to 85°C operating range, eliminating the need for special part numbers for different operating temperatures.

ACCURACY

The ON Semiconductor reset ICs are offered only in 3V and 5V thresholds, with accuracies of approximately $\pm 3.7\%$ and $\pm 2.4\%$, respectively. The TC54 series offers the designer 0.1V threshold

steps across a 1.1V to 6.0V window for $\pm 2\%$ accuracy, and a 1.5V to 6.0V window for $\pm 1\%$ accuracy, providing the designer more flexibility to tailor the reset threshold to system requirements. In addition, the TC54 provides more design margin with reset accuracy options of $\pm 1\%$ and $\pm 2\%$. Unlike the ON Semiconductor reset IC, the TC54's reset accuracy remains constant, regardless of reset threshold.

POWER

The TC54 stands alone where power is a concern. It consumes only 2 μ A (typical), compared with 390 μ A (typical) for the MC3x064, and 12 μ A (typical) for the MC3x164, making it ideal for micro-power applications.

PACKAGING

The ON Semiconductor reset IC is offered in TO-92, SO-8 and micro-8 packages. The TC54 is available in a TO-92 package (a pin-compatible upgrade), a 3-pin SOT-89, and a 3-pin SOT-23A package which provides a considerable board space savings when compared with the SO-8 or micro-8 packages. For those who need multiple sources, a dual solution footprint surface mount layout can be used, allowing both devices to reside in the same location (see Figure 1).

Table 1 identifies the ON Semiconductor resets and the recommended Microchip Technology upgrade.

ON Semiconductor Solution					Microchip Upgrade				
ON Semi. Part Number	Packages	Reset Accuracy	Min Reset	Max Reset	Microchip Part Number	Packages	Reset Accuracy	Min Reset	Max Reset
MC34164-3	SO-8, TO-92, Micro-8	$\pm 3.7\%$	2.55V	2.80V	TC54VN2702	SOT23A-3, SOT-89-3, TO-92	$\pm 2\%$	2.646V	2.754V
MC34164-5	SO-8, TO-92, Micro-8	$\pm 2.8\%$	4.15V	4.45V	TC54VN4302	SOT23A-3, SOT-89-3, TO-92	$\pm 2\%$	4.214V	4.386V
MC34164-5	SO-8, TO-92, Micro-8	$\pm 2.8\%$	4.15V	4.45V	TC54VN4402	SOT23A-3, SOT-89-3, TO-92	$\pm 2\%$	4.312V	4.488V
MC33064	SO-8, TO-92, Micro-8	$\pm 2.4\%$	4.5V	4.7V	TC54VN4601	SOT23A-3, SOT-89-3, TO-92	$\pm 1\%$	4.554V	4.646V
MC34064	SO-8, TO-92, Micro-8	$\pm 2.4\%$	4.5V	4.7V	TC54VN4602	SOT23A-3, SOT-89-3, TO-92	$\pm 2\%$	4.508V	4.692V

TABLE 1: Microchip processor supervisor upgrades for MC33x64 and MC34x64.

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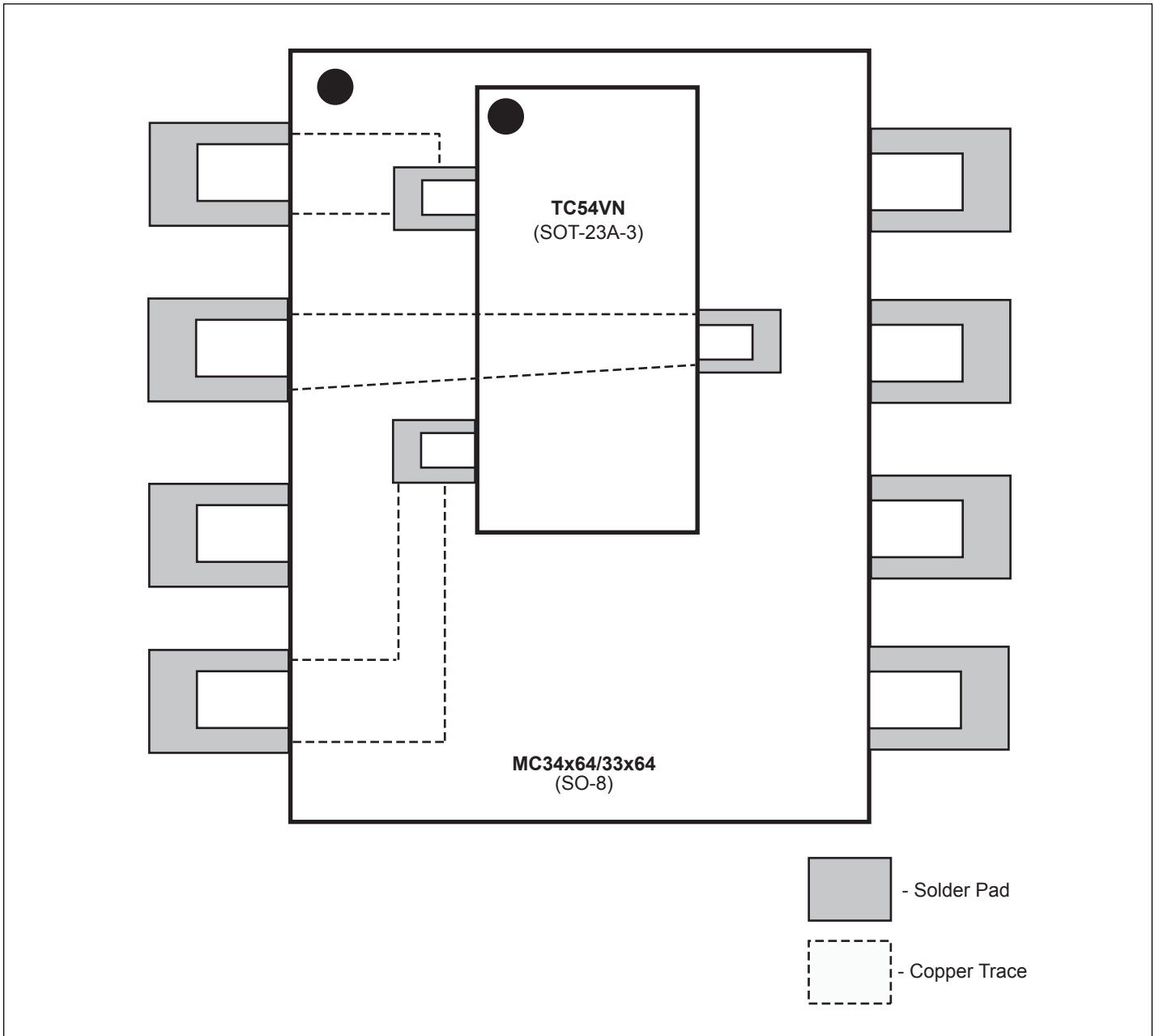


FIGURE 1: TC54VN and MC33x64/34x64 IC placement.

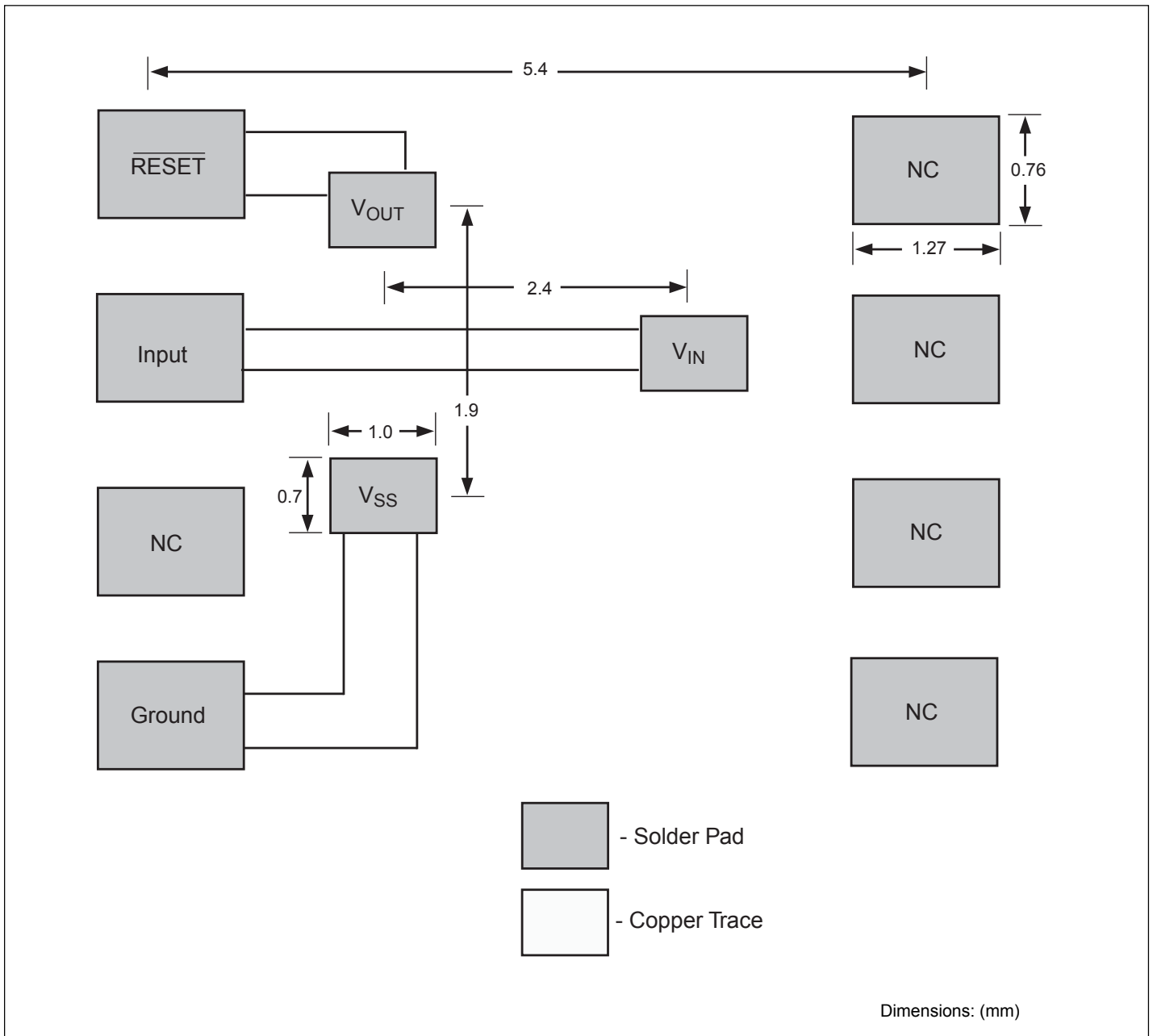


FIGURE 2: TC54VN and MC33x64/34x64 pad layout.

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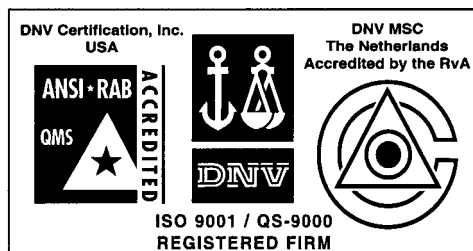
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03/01/02

