Infrared Remote Control Receivers | Application Note

# Introduction to IR Receiver Part Numbers

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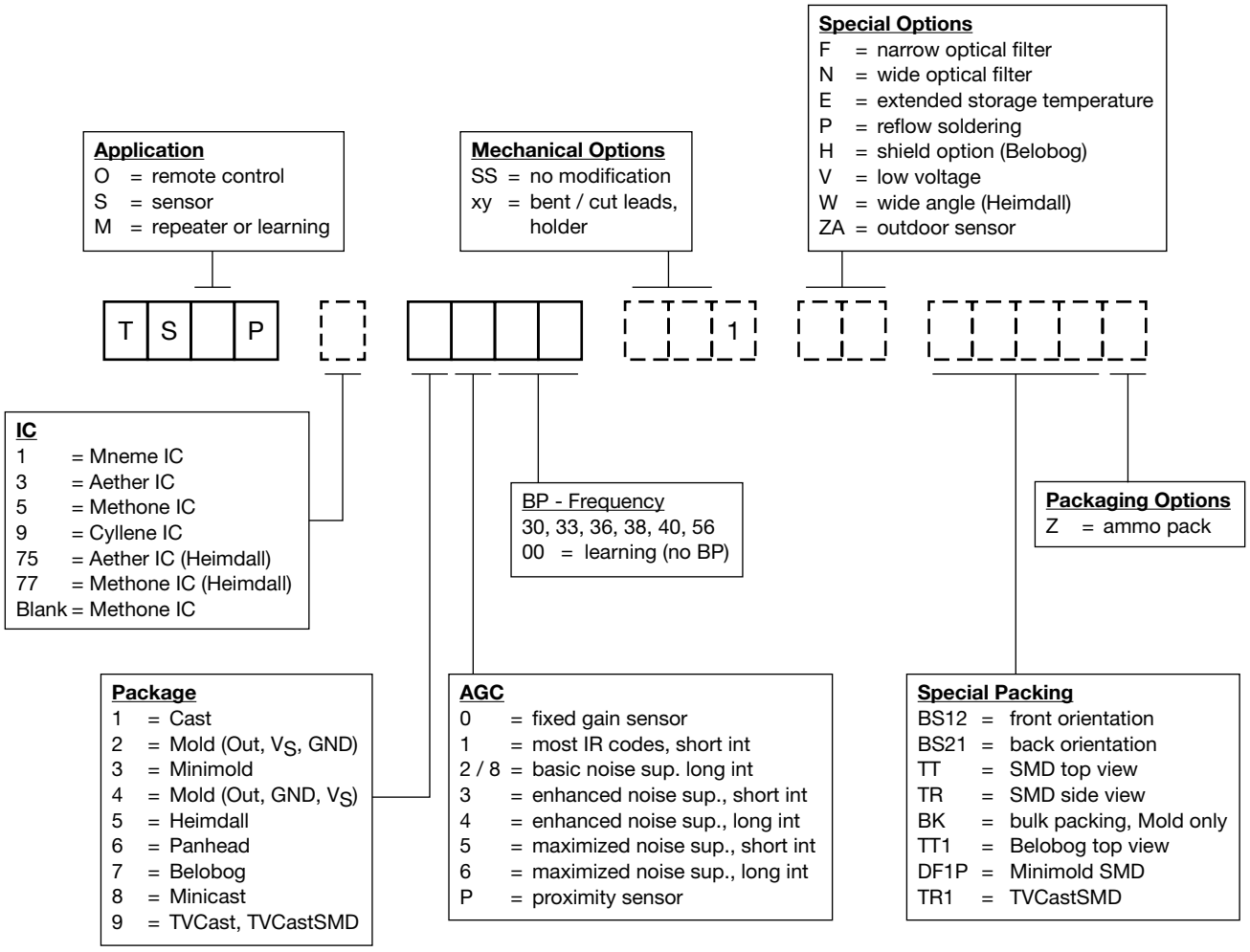


Fig. 1

## SHORT INTRODUCTION TO PART NUMBERS

The performance of Vishay IR receivers is characterized by the type of microchip (IC) employed, the package, the automatic gain control (AGC), and the band-pass frequency. These features are included in the part number nomenclature, as illustrated above. The preamble TSxP already indicates which application the receiver is appropriate for: remote control, sensor applications, or repeater and learning applications.

After the preamble, a number with five digits specifies the receiver. Further extensions assign special mechanical and package options.

APPLICATION NOTE

# Introduction to IR Receiver Part Numbers

## IC

The first digit after the preamble is reserved for the IC. Please note that “5” or a blank digit both indicate a Methone IC. A blank digit means that in this case the part number consists of four digits only. Furthermore, the Heimdall represents an anomaly in the package naming scheme. For Heimdall with Aether IC, the first digit deviates and for Heimdall with Methone IC, the first two digits deviate from the normal scheme. For example, a receiver with Methone IC, Heimdall package, AGC4, and 38 kHz band-pass frequency would be referred to as TSOP77438 instead of TSOP55438 which would be the expected part number.

The microchip contains logic circuits that are employed to distinguish between noise and signal. Consequently, the choice of the IC has impact on the dark sensitivity of the receiver as well as the robustness against different disturbance sources like fluorescent lamps or Wi-Fi. Mneme and Cyllene are newly develloped ICs with enhanced sensitivity and best-of-class noise suppression.

## PACKAGE

The second digit specifies the type of receiver package. A choice can be made between SMD (Minimold DF1P, Heimdall, Panhead, Belobog, TVCastSMD), pin-in-paste (Minimold P1xTR) and through-hole assembly (Minicast, Mold, Minimold, TVCast, Cast). The Mold package is available with two different pinnings and therefore employs two different numbers. Both the Minimold and the TVCast packages are unique in that both packages allow for both SMD and through-hole assembly. In the case of SMD assembly, the latter is called TVCastSMD, and the SMD versions of both packages must be ordered in tape and reel.

## AGC

The third digit defines the automatic gain control (AGC). The AGC controls which data formats are accepted and which disturbance sources are suppressed by the receiver. The odd-numbered AGCs (1, 3, 5) are designed for short-burst reception, defined as six or more carrier cycles per burst, and the even-numbered AGCs (2 / 8, 4, 6) are designed for long bursts, which accept a minimum burst length of 10 cycles to 19 cycles per burst. The higher the AGC number, the more robust will be the disturbance noise suppression characteristics, but also the number of codes interpreted as noise will increase. It is essential that the designer test the intended remote control code in the worst-case disturbed ambient to determine the optimal AGC. AGC0 represents the absence of an AGC, or fixed gain. AGC0 parts are mainly used in presence, beam-break, or proximity sensor applications where it is desired that the gain of the device stays constant.

For further information, please refer to: www.vishay.com/doc?49860, www.vishay.com/doc?82666

## BAND PASS FREQUENCY

Vishay IR receivers apply a band-pass filter that is tuned to a specific modulation frequency in the kHz regime, which enables them to pick up a weak signal even under extremely noisy environmental conditions. The band-pass filter’s Q-factor is low, so modulation frequencies outside the center frequency will often be received, but at a lower sensitivity. The last two digits indicate the band-pass frequency in kHz.

## PART NUMBER NOMENCLATURE FOR IR RECEIVER CHIP PACKAGE

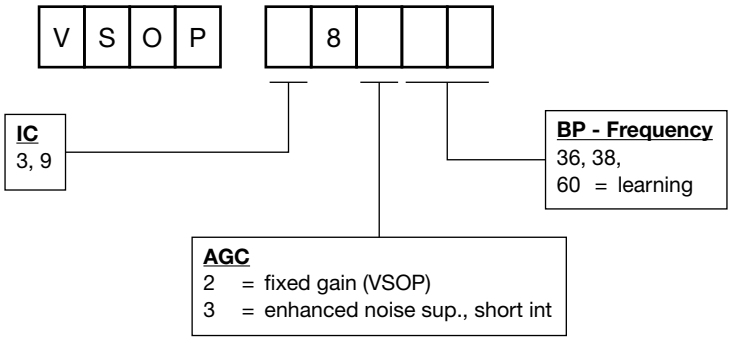


Fig. 2

# Introduction to IR Receiver Part Numbers

## VSOP

The VSOP products are chip packages for IR receivers, which require an external photodiode. The external photodiode should typically contain an IR filter to eliminate wavelengths shorter than 940 nm, although operation without this filter is conceivable for exotic applications, e.g. underwater where blue light is better propagated.

The nomenclature is similar to the TSxP receivers.