**Introduction to IR Receiver Part Numbers**

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**IC**
1 = Mneme IC
3 = Aether IC
5 = Methone IC
9 = Cyllene IC
75 = Aether IC (Heimdall)
77 = Methone IC (Heimdall)
Blank = Methone IC

**Application**
O = remote control
S = sensor
M = repeater or learning

**Mechanical Options**
SS = no modification
xy = bent / cut leads, holder

**BP - Frequency**
30, 33, 36, 38, 40, 56
00 = learning (no BP)

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**IC**
1 = Cast
2 = Mold (Out, V5, GND)
3 = Minimold
4 = Mold (Out, GND, V5)
5 = Heimdall
6 = Belobog
7 = Belocast
8 = Minicast
9 = TVCast, TVCastSMD

**AGC**
0 = fixed gain sensor
1 = most IR codes, short int
2 / 8 = basic noise sup., long int
3 = enhanced noise sup., short int
4 = enhanced noise sup., long int
5 = maximized noise sup., short int
6 = maximized noise sup., long int
P = proximity sensor

**Special Options**
F = narrow optical filter
N = wide optical filter
E = extended storage temperature
P = reflow soldering
H = shield option (Belobog)
V = low voltage
W = wide angle (Heimdall)

**Packaging Options**
Z = ammo pack
BS12 = front orientation
BS21 = back orientation
TT = SMD top view
TR = SMD side view
BK = bulk packing, Mold only
TT1 = Belobog top view
DF1P = Minimold SMD
TR1 = TVCastSMD

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**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.
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 developed 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

![Part Number Diagram](https://example.com/part_number_diagram.png)

**IC**

3, 9

**AGC**

2 = fixed gain (VSOP)
3 = enhanced noise sup., short int

**BP - Frequency**

36, 38, 60 = learning
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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.
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Vishay:

TSOP1100  TSOP1240  TSOP1238  TSOP1130  TSOP1140  TSOP1137  TSOP1133  TSOP1256  TSOP1236  
TSOP1156  TSOP1136  TSOP1138  TSOP1233  TSOP1237  TSOP6237TR  TSOP6237TT  TSOP1230  
TSOP1856  TSOP1738  TSOP1838  TSOP1738  TSOP85438TR  TSOP59240  TSOP59456  TSOP59440  
TSOP59236  TSOP59256  TSOP59436  TSOP59438  TSOP59238