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Hello friends, I hope you all are having fun. In today's tutorial, we will have a look at Series Clippers & their types in detail, we will also implement the simulations of Series Clippers in Proteus software. In the next article, we will discuss the next two types of Clippers i.e. Shunt Clippers & Dual Clippers. Today, We are going to learn: What is a Clipper? What are the types of Clippers? Series Clippers Simulations in Proteus. So, let's get started: What is a Clipper??? Clipper (also known as Limiter) is an electronic circuit, which clips or limits the amplitude(positive, negative or both) of an AC source wave. Diodes are normally used for designing Clippers and such circuits are normally referred as Diode Clipping Circuits (Diode Limiting Circuits). Here's an example of a Diode Clipping Circuit, where we are clipping the positive amplitude of the AC pulse: As you can see in the above figure, we are clipping the positive side but if we want to clip the negative side, we just need to reverse the diode polarity. Clippers are normally used for protection purposes i.e. if there are some voltage spikes then clip it to secure home appliances. Half wave Rectifier is also a type of clipper as it clips one side of the AC pulse to 0V. Now, let's have a look at different types of clippers: Types of Clippers In the previous section, we have had a complete understanding of what is clipper. Now let's have a look at three different types of Clippers: Series Clippers. Positive. Positive with bias. Negative. Negative with bias. Shunt Clippers. Positive. Positive with bias. Negative. Negative with bias. Dual (Combination) Clippers. As today's topic is about Series Clippers, so let's implement them in Proteus ISIS: Series Clippers Simulation in Proteus First of all, we need to open the Proteus ISIS software to design our circuit. Select the following components from the "Pick Components" section: Diode Resistor Vsine source Battery So, first of all, let's place our AC source Vsine and GND in the proteus workspace.Double-click on the Vsine source and change the value of amplitude and frequency to 11V and 1000Hz respectively. Our power source is ready, now let's design different types of Series Clippers in proteus: 1. Positive Series Clippers in Proteus ISIS In Positive Series Clipper, the positive half cycle of the wave is clipped(removed). In the positive clipper circuit, the arrowhead of the diode points towards the input source.So, let's design the circuit as shown in the below figure: As we can see in the above figure, diode D is connected in series with the load resistor and is pointing towards the AC source.Double-click at the resistor and change its value from 10k ohm to 500 ohms. We'll also add the DC voltmeter to show the difference between biased and unbiased circuitWe've connected terminal A of the oscilloscope with the AC Source(Vsine) and terminal B is placed after the diode.This is the time to pop the play button and set values of the oscilloscope according to the below table: Components Values Channel A 20V Channel B 20V Time 0.2ms-1 If everything goes fine, we will get the required output as shown in the figure: In the above figure, the Yellow curve is showing the input voltage, while the blue line is the output voltage(after the diode) received by the load resistor.We can clearly see that the positive side of the AC source waveform is now clipped and that's why it's called Positive Series Clipper. 2. Positive with Negative Bias Series Clipper The Positive Series Clipper removes the positive side of the curve completely but what if we want to clip only 25% of the positive side? In that case, we use positive with Negative Bias Series Clipper. It's circuit is shown in the below figure: As we can see in the above figure, we have added an extra element called Battery.The rest of the circuit is same as that of the Positive Series Clipper i.e. the diode is pointing towards the current source and is in series with the resistor.The volt meter is giving us -5V, where the 5V is coming from the added battery and the negative sign shows that the circuit is negative bias. The output for the circuit on the oscilloscope is shown below: As you can see in the above figure, the output curve is slightly clipped at the top. If we reduce the battery voltage, the clipping of the curve increase and at 0V the complete positive part will be clipped out(same as Positive Series Clipper).If you want a clipper with a positive bias, simply change the direction of the battery. Connect the negative terminal of the battery with the negative side of the diode. It's a task, post your results in the comments. 3. Negative Series Clipper in Proteus In a Negative Series Clipper, the negative half cycle of the wave is clipped(removed). In negative clipper circuits, the arrowhead of the diode points towards the load resistor.Here's the circuit diagram of the Negative Series Clipper: The circuit is the same as that of the Positive Series Clipper with a slight difference in the direction of the diode.The output of the oscilloscope for the series circuit of negative clippers shows us that the negative side of the wave is clipped: 4. Negative with negative bias Series Clippers As we discussed, the whole negative part of the signal gets clipped in the Negative Series Clipper. So, in order to clip a certain amount of negative side, we need to add a new battery source and this model is called Negative with Negative Bias Series Clipper. It's circuit diagram is shown in the below figure: As we can see in the above figure, the diode is pointing towards the load resistor. We have connected the negative terminal of the battery with the positive side of the diode. Here are the results from the oscilloscope: So, that was all for today. In this article, we studied the series clipper and its types, along with their simulations in Proteus software. I hope you have enjoyed today's lecture. Let me know your feedback/queries in the comments. Have fun!!! Home Blog Forum Proteus Libraries Free PCB PCB Assembly Skip to content Whether a newbie or a professional, if you are looking for the best electronic circuit projects, as per your specific needs, you have reached the right destination.Here, I will not only provide you with your favorite circuit projects, but also provide an active online support for solving all your queries and doubts related to electronics.In this website I will help you to understand the various engineering concepts as much as possible, through a 24/7 online support (through comments).I will also help you to design and build customized electronic circuits, as per your desired specifications.So, if you have any circuit related questions, please do not hesitate to ask them.... the comment box is right under the posts..An electronic project is basically a circuit project built using a handful of passive and active electronic parts, by soldering them on a printed circuit broad or PCB.The passive components are those components which do not have semiconductor material inside them such as resistors, capacitors, inductors, etc. These are called passive components because these components are not able to actively work with electricity or electrons.On the other hand active components are those components which are internally built using semiconductor material. These components include all types of diodes, transistors, and integrated circuits.These are called active components because the semiconductor material inside these components are able to actively work with electricity or electrons. For example diodes can rectify an AC, transistor can amplify current and voltage, whereas ICs can do similar tasks which are even more complex.Some of the best electronic circuit projects you can learn from this website are provided below:Making an EGS002 Equivalent Board using ArduinoBQ24295 Smart Battery Charger IC with Boost + OTGINA219 Current Sensor Circuit Diagram and DatasheetACS712 Current Sensor Circuit Diagrams and DatasheetTrue MPPT Solar Controller Circuit using IC 555Learn how to build a pure sine wave inverter circuit using Arduino and very basic coding.Learn how each IC 555 pinout works and understand basic IC 555 oscillator and timer circuits and their calculations.Arduino Programming: Learn Arduino programming from the scratch. Basic Arduino coding tutorial and Arduino projects for all Arduino enthusiasts.GSM Projects: Best GSM electronic projects for cars, vehicles, and home automation. Learn how to use GSM modules for controlling a desired application. ARDUINO PROJECTS: It's a system in which the IC can be programmed to implement a set of specified electronic operations. Some very useful microcontroller automation projects with program codes can be found here. IC 555 CIRCUITS: Easy to build IC 555 based circuits for leisure and fun. This device may look trivial and limited to hobby projects, but the fact is there hasn't been a single substitute for this IC in the past 40 years... BATTERY CHARGER CIRCUITS: If circuit is the brain, battery is the heart of any gadget. But these devices need controlled charging and discharging. Simple to the most enhanced battery charger projects for home and industry. 50 Top Arduino DIY projects for students, engineers, professionals and manufacturers POWER SUPPLY CIRCUITS: Fixed type and variable voltage and current power supply circuits are given here... best circuit projects suited for workbench testing. AMPLIFIER PROJECTS: Projects to amplify small music inputs from ipod, cellphone or an SD card to get 100s of watts on loudspeaker. Boom your surrounding with the help of these projects. AUTOMOBILE ELECTRONICS: Not satisfied with the default enhancements provided by your car manufacturer? No problems, these handy looking electronic projects can be used for enhancing your vehicles aesthetic looks even further. STRING LIGHTS: Festive season is near, make these stunning lighting projects for your home and office. String lights, chaser lights, sequential lights, flashing lights, music lights...all under one roof. LED PROJECTS: Fascinated with the power of LED lights? There's actually a lot more you can do with these simple DIY LED projects explained here. ELECTRONIC PROJECTS: Electronic parts may look simple externally but internally they may be much more complex. Learn everything you wanted to know about these devices. SEMICONDUCTOR THEORIES: Semiconductors are the soul of electronics. Learn their complex working through easy to understand projects. TUTORIALS: Building electronic circuits can be impossible unless you have all the necessary tutorials in hand with you. Here's a great opportunity to learn and gain expertise. FREE ENERGY CIRCUITS: Free energy projects may look controversial and unrealistic, but a few proven results do make them very intriguing... HEATER CONTROL: Heaters demand huge power which require precise control for better efficiency. These projects accomplish the need perfectly. HOME ELECTRICAL: It is actually possible to enhance your home with customized electronics. Electronic projects when integrated with home electrical can do wonders. INDUSTRIAL PROJECTS: Today factories and industries are not just about heavy iron machinery, rather these are controlled with precise electronics. More such electronic circuit projects are shortlisted here. INVERTER CIRCUITS: These projects will convert any high current DC to 220V AC. Learn from the scratch how to build these awesome power generating gadgets. LASER CIRCUITS: Lasers are popularly used for disco lighting but did you know these can be also applied for security applications? METERS AND TESTERS: Although digital multimeters today is sufficient for most electronic troubleshooting, having a set of hand built testers can make the job even easier... MOTOR CONTROL PROJECTS: Whether for home or industry, motors are indispensable. However, these require to be controlled for accuracy and power saving. More related projects can be found here. SOLAR CONTROLLERS: Sun generates trillions of mega watts every second. Harnessing this gigantic power house into electricity can be implemented with some simple electronic concepts described here. REMOTE CONTROL CIRCUITS: Controlling a device from distance remotely can be a lot of fun, which additionally saves the user's precious time and effort. A few cool projects presented here, are specially designed for the same.Timer Projects: A small timer which can switch a load ON or OFF after a preset delay can be a very useful device for a specified application. Many such hand-picked delay timer projects can be read here.Transmitter Circuits: Wireless communication system may sound complex to build, but actually it is the among the easiest projects a hobbyist can possibly try. Communicating remotely through a homemade walkie-Talkie can be extreme fun.Water Level Controllers: Water is perhaps the most vital element on this planet for all living creatures. Controlling water not only prevents water spillage, it also helps to save this precious resource from getting unnecessarily wasted. Many related electronic projects for this are described here. Share copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Protective electronic circuitThis article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.Find sources:"Clipper"electronicsnews newspapers books scholar JSTOR (December 2009) (Learn how and when to remove this message)Voltage clipping limits the voltage to a device without affecting the rest of the waveformIn electronics, a clipper is a circuit designed to prevent a signal from exceeding a predetermined reference voltage level. A clipper does not distort the remaining part of the applied waveform. Clipping circuits are used to select, for purposes of transmission, that part of a signal waveform which lies above or below the predetermined reference voltage level.Clipping may be achieved either at one level or two levels. A clipper circuit can remove certain portions of an arbitrary waveform near the positive or negative peaks or both. Clipping changes the shape of the waveform and alters its spectral components.A clipping circuit consists of linear elements like resistors and non-linear elements like diodes or transistors, but it does not contain energy-storage elements like capacitors. Clipping circuits are also called slicers or amplitude selectors.[1]Positive peak clipper circuitA simple diode clipper can be made with a diode and a resistor. This will remove either the positive, or the negative half of the waveform depending on the direction the diode is connected. The simple circuit clips at zero voltage (or to be more precise, at the small forward voltage of the forward biased diode) but the clipping voltage can be set to any desired value with the addition of a reference voltage. The diagram illustrates a positive reference voltage but the reference can be positive or negative for both positive and negative clipping giving four possible configurations in all.The simplest circuit for the voltage reference is a resistor potential divider connected between the voltage rails. This can be improved by replacing the lower resistor with a zener diode with a breakdown voltage equal to the required reference voltage. The zener acts as a voltage regulator stabilising the reference voltage against supply and load variations.Two shunt diode clipper circuitIn the example circuit on the right, two zener diodes are used to clip the voltage VIN. The voltage in either direction is limited to the reverse breakdown voltage plus the forward voltage drop across one zener diode.For very small values of clipping voltage on low-level signals the I-V curve of the diode can result in clipping onset that is not very sharp. Precision clippers can be made by placing the clipping device in the feedback circuit of an operational amplifier in a manner similar to precision rectifiers.Clippers may be classified into two types based on the positioning of the diode.[2]Series clippers, where the diode is in series with the load resistance, andShunt clippers, where the diode is shunted across the load resistance.The diode capacitance affects the operation of the clipper at high frequency and influences the choice between the above two types. High frequency signals are attenuated in the shunt clipper as the diode capacitance provides an alternative path to output current. In the series clipper, clipping effectiveness is reduced for the same reason as the high frequency current passes through without being sufficiently blocked.Clippers may be classified based on the orientation of the diode. The orientation decides which half cycle is affected by the clipping action.The clipping action can be made to happen at an arbitrary level by using a biasing element (potential source) in series with the diode. In the following diagrams the green plot is the input voltage, the orange plot is the output voltage, and the blue plot is the clipping level voltage.Positive peak clipping at a positive voltage. When ui > UBdiode is conductingand uo = UB.Positive peak clipping at a negative voltage. In this circuit, a short circuit output will result in a large current being driven through the diode by UB and may damage it.Negative peak clipping at a negative voltage. When ui < UBdiode is conductingand uo = UB.Negative peak clipping at a positive voltage. In this circuit, a short circuit output will result in a large current being driven through the diode by UB and may damage it.The signal can be clipped to between two levels by using both types of diode clippers in combination.[3]When ui > UB1D1 is conductingand uo = UB1. When ui < UB2D2 is conductingand uo = UB2.Main article: Clamper (electronics)A clamper circuit is not a clipper, but the simple diode version has a similar topology to a clipper with the exception that the resistor is replaced with a capacitor. The clamper circuit fixes either the positive or negative peaks at a fixed voltage (determined by the biasing voltage) rather than clipping them off.Amplitude gateClipping (signal processing)Orifice plate which can function as a mechanical clipper for acoustic signals.LimiterRectifier^ Graf, Rudolf F. (1999-08-11). Modern Dictionary of Electronics. Newnes. ISBN9780080511986.^ Salivahanan, Electronic devices and circuits. 2nd Edition. Tata McGraw Hill, 2008, Page 555, ISBN0-07-066049-2^ Rao K Venkata, Pulse And Digital Circuits, Pearson, 2010, page 163, ISBN978-81-317-2135-3Robert L. Boylestad, Electronic devices and circuit Theory. 8th Edition. Eastern Economy Edition, 2002, Page 83, ISBN81-203-2064-6An overview of Clipping Circuits, Circuits TodayRetrieved from " are many electronic circuits that are used for signal transmission. It can be an amplifier or modulator or it might be anything related to the signal strength enhancement. These devices are known for accepting the signal at a certain defined range of voltages. If the signal applied has an amplitude value greater than that of the range described this results in distortion or it may destroy the components present in the circuit. There is another problem related to signals that are their levels. The circuit levels are always maintained on the positive side. But the sinusoidal waves and the audio signals consist of both positive as well as negative cycles. Then in such cases, the levels of the signals must be shifted then operated on the electronic circuitry. For this processing of comprising the signals to defined ranges and signal levels, the clippers and clampers are used.What are Clippers and Clampers?Clippers and clampers can be defined as clippers that are used to protect the electronic circuits by applying the AC input signals to the described voltage range. It will remove either the positive half or the negative or both the positive and the negative halves of the AC by considering the requirement of the defined voltage range. Without any alteration, the shape of the applied signal in any electronic circuit, the DC level can be shifted as desired by the clamper circuits. This is done by using a capacitor in the circuits. So clippers and clampers play an essential role in electronic circuits. Working of Clipper CircuitA clipper circuitry consists of linear elements known as resistors and non-linear elements such as diodes. But it doesnt consist of any energy storage device such as a capacitor. One of the best examples of the clipper is a half-wave rectifier. In this, either the positive or negative half of the AC cycle is allowed to pass through the circuit.These clippers are often limiting the voltages, currents, and amplitudes. Further, these are commonly referred to as slicers. Types of Clippers and ClampersThe different types of clippers and clampers are discussed below.Types of ClippersClippers are generally classified into three major categories.Series ClippersShunt ClippersDual ClippersSeries ClippersFurther, these series type clippers are categorized as positive as well as negative clippers. Series Positive ClipperThe positive cycle of the signal is clipped in the type of clipper. This circuit consists of a diode-connected in such a way that the arrow is pointing towards the input. It is connected along with series to the output load. The resistor is considered as load.Series Positive ClippersFor the positive duration of the cycle, the connected diode will be reversely biased resulting in no current flow is evident. Hence the positive cycle is eliminated from the circuit. But when the negative cycle is supplied the diode-connected is maintained in forwarding bias mode. This results in the flow of the negative cycle of the diode. Series Positive Clippers with Negative Referenceseries clipper is connected with a voltage of negative reference along with a resistor. For the positive duration of the cycle, the value of output generated at the resistor is basing on the negative value of the reference voltage. For the negative duration of the cycle, the amount of output is generated if the voltage is greater than the negative reference.Further, if the positive reference of voltage is connected along with the resistor then the positive duration of the cycle makes the circuit to generate the output as the reference voltage. For the negative duration of the cycle, the exact signal of input is generated at the resistor.Series Negative ClippersWhen the positive duration of the cycle is applied the diode will be in forward bias and the positive cycle of the signal is allowed to pass. During the negative duration of the cycle, the signal is blocked as the diode remains reverse biased. As the negative part of the signal is clipped it is known as a negative clipper.Series Negative ClippersSeries Negative Clipper with the Positive ReferenceIn this type of circuit, a positive reference voltage is an additional component present along with a resistor. For the positive duration of the cycle, the diode tends to conduct due to the voltage at the anode exceeds the voltage value at the cathode. Hence the voltage at the cathode becomes equal to the voltage of reference and output has appeared at the resistor.If the same circuit is applied with a value of negative reference so that the voltage at the cathode of the diode will be a negative one. So, for the positive duration, the complete positive cycle has appeared as it is at the output but for the negative duration, the input can appear at the output until the value of the input is lesser than the negative voltage of reference.Shunt ClippersIn this type of circuit, the diode should be connected to the load in a parallel manner. The principle of operating is the opposite of the series clippers.Shunt Positive ClippersThis type of clipper allows the applied input signal to pass to the load when the diode remains to reverse biased and the signals are blocked when the diode gets forward biased.Shunt Positive ClippersShunt Positive Clippers with Positive BiasFor the positive duration of the cycle, the diode tends to conduct and the output has appeared as the positive value of reference voltage and for the negative cycle, the value of output generated is the same as that of the applied input signal.Shunt Positive Clippers with Negative BiasThe positive duration of the cycle basing on the negative voltage of reference connected in terms of series along the diode will be the output. But for the negative cycle, the connected diode will conduct until the value of the input voltage will be greater than the value of the negative voltage of reference.Shunt Negative ClippersFor the positive duration of the cycle, the exact input signal can be obtained as the output and for the negative duration of the cycle, there is no output generated.Shunt Negative ClippersShunt Negative Clipper with Positive BiasA positive voltage of reference is connected to the diode in series. For the positive cycle, the value of output can be generated as the applied input but for the negative duration of the cycle, the positive value of the reference will be generated as the output.Shunt Negative Clipper with Negative BiasThe functionality of the circuit is the same but the only difference is a negative voltage of reference is connected in terms of series to the diode.Clamper CircuitThe clampers are also known as DC Restorers. Basing on the amount that is defined by the voltage source the applied input signal can be shifted.Working of Clamper CircuitA clamper circuit consists of an independent voltage source, a resistor, a capacitor, and a diode. The capacitors and the resistors present in the circuit maintains the DC level altered at the output obtained. If the positive component of dc is added to the input signal then the signal gets pushed towards the positive side. similarly, if the negative component of dc is added the signal gets shifted towards the negative side.Please refer to this link to know more about Clipper Circuit MCQsPlease refer to this link to know more about Clamper Circuit MCQsTypes of ClampersClamper circuits are of three types. They are positive, negative, and biased clampers.Positive ClampersA positive clamper has the source of voltage, resistor, capacitor, and a diode-connected parallel with the load. If the diode follows the reverse biasing mode the applied input signal is passed on to the load otherwise the signal gets blocked if the diode remains in forward biasing mode. In the positive clampers for the positive duration of the cycle, the connected diode is reverse biased and for the negative duration of the cycle, the connected diode will be forward biased.Positive ClamperNegative ClampersThe circuit of negative clampers is arranged in such a way that for the positive duration of the cycle the polarity of the diode makes it to be in forward biased and for the negative duration, it will be reverse-biased so that the signal can appear at the output.Negative ClamperApplications of Clippers and ClampersThe applications of clippers are:To generate and shape the waveforms, clippers are used.Power supply units consist of clipping circuits.FM transmitters to remove the excess amount of ripples clipping circuits are used.To protect the transistors from the transients the diodes are connected in a parallel manner with the load that is inductive by nature.The applications of clampers are:To remove the distortions and to identify the polarity of circuits the clampers are used.To improve the Reverse Recovery Time clamping circuits are used.To mold the waveforms to the desired shape and the ranges clampers are used.SONAR systems and the testing equipment consists of clamping circuits.Please refer to this link to know more about Clamper Circuit MCQs.Thus, this is all about an overview of clippers and clampers circuits. These circuits are used to shape the signals into desired forms. These circuits are simple in terms of design by using basic diodes. A clipping circuit consists of a diode followed by a resistor whereas an additional component called a capacitor is present in clampers. Can you describe the other way of construction of clippers and clampers other than diodes? Clipper circuits are a type of electronic circuit that is used to reduce the amplitude of an analog signal. Clipper circuits help limit distortion and noise in digital signals by clipping off any sudden waveform peaks above or below a certain threshold level.Clipper circuits use a combination of resistors and diodes in order to modify a signal by clipping, or flattening, the top or bottom (or both) of a waveform. There are also clipper circuits based on Zener diodes, which are used to clip both sides of a waveform simultaneously.In this article, well discuss what clippers are and how they work. We will also cover the different types of clippers so you know which one is right for your application. Finally, we will discuss some tips on using clipper circuits properly so you get the best performance possible!What Are Clipper circuits?Clipper circuits are a type of electrical circuit that is used to limit the amplitude of a signal delivered to an output. Clipper circuits can be used in both digital and analog applications.There are many different types of clipper circuits but they are all based on the similar principle of using a diode to provide a reference voltage drop. In this way, when current flows through the diode, a reference voltage across the diode is established. But when current is shorted around the diode, the current is only limited by the resistor, allowing the waveform to pass unclipped.Types of Clipper CircuitsClippers can be classified in several ways:Shunt (parallel) vs. series clippers.Unbiased vs. biased clippers.Diode vs. Zener diode clippers.Defines whether the diode is in parallel or series with the load.Performance of the clipper circuit can be affected by the frequency of the AC signal used. High frequency signals tend to be attenuated by the diode capacitance in the clipper, giving the clipper attributes similar to a low-pass filter.Similarly, the series clipper can function like a high-pass filter as high frequencies can travel through the diode without being sufficiently blocked, thereby reducing the effectiveness.Shunt clippers also offer the additional dual/combination clipper circuit configuration in which both the positive and negative half-cycles of the waveform are clipper. This functionality is not possible with a series configuration, as two opposing diodes in series would effectively block all current in both directions.Defines whether a voltage source is used to change the clipped voltage level.Biasing a clipper significantly improves the usefulness of clipper circuits, because it allows us to define clipping levels instead of being limited to clipping to either zero (in the case of series clippers) or the diode forward voltage (in the case of parallel clippers).Defines whether or not a standard diode or a Zener diode is used.The use of Zener diodes allows us to achieve an effect similar to that of biased clippers but without requiring the complexity, cost, and additional power consumption of a voltage source. Like a biasing voltage source, Zener diodes are used to customize clipping levels.Zener diode clippers rely on the fact that Zener diodes can be produced with many Zener voltage (Vz) levels, and it is relatively easy to find Zener diodes with a particular Zener voltage level.Positive Shunt Diode ClipperA positive diode clipper limits the output of the positive half-cycle of the input waveform. This type of clipper is also known as a shunt or parallel-positive type of clipper.In a positive diode clipper, the diode is forward biased (anode more positive than cathode) during the positive half cycle of the sinusoidal input waveform.The diode conducts during this time, and the output voltage is a clipped version of input signal. During the positive half-cycle, the diode is forward biased and produces an output voltage equal to the forward voltage of the diode Vf (.7 volts for a silicon diode or .3 volts for a germanium diode).The diode is reverse biased during negative half-cycle, and does not conduct in this case (i). Instead, the current passes directly through the load, allowing the full waveform to pass.Positive Series Diode ClipperLike the positive shunt clipper, the positive series clipper clips the positive half of the waveform.Unlike the positive shunt clipper, the positive half-cycle is completely clipped since the diode is reverse biased.The negative half-cycle also passes a slightly weaker (i.e. more positive/less negative) signal as the maximum voltage is reduced by the diode forward voltage Vf.Thus the output is zero (0) for the positive half-cycle and Vf Vp for the negative half-cycle.Negative Shunt Diode ClipperA negative diode clipper circuit clips the negative half-cycle of an input source. It operates in the opposite fashion as a positive diode clipper. This type of clipper is also known as a shunt or parallel-negative type of clipper.In a negative diode clipper, the diode is forward biased (anode more positive than cathode) during the negative half cycle of the input waveform.During the negative cycle, the diode conducts, and the current flows through it to ground. The voltage drop across this conducting path is equal in magnitude but opposite polarity (i) from that of a positive clipper circuit.The output waveform has been clipped at -Vf (-.7 volts) during negative half-cycles because the voltage across the diode is held constant by the forward voltage of the diode.Negative Series Diode ClipperThe negative series clipper performs the opposite action as the positive series clipper.Like the negative shunt clipper, it clips the negative half-cycle of the waveform.The positive half-cycle features a voltage output that is limited by the forward voltage of the diode, Vf.Thus the output for the positive half-cycle is Vp Vf, and the output for the negative half-cycle is zero (0).Combination (Dual) Shunt Diode ClipperA combination diode clipper uses two diodes in parallel, with one functioning as a positive clipper and the other functioning as a negative clipper.The output voltage of this clipper is a waveform that is clipped during both the positive and negative half-cycles.If silicon diodes are used, the positive voltage will be limited to +.7 volts, and the negative voltage will be limited to -.7 volts.Biased Diode ClippersBiasing a diode clipper circuit allows us to design circuits that can clip at specific voltages instead of being limited by the forward voltage of the diode(s).In order to achieve this, a bias voltage of Vbias is added in series with the diode. This can be accomplished by adding a voltage source like a battery.The addition of Vbias makes it more difficult to forward bias the diode, with the new voltage required now being equal to Vf (diode forward voltage)+ Vbias.Positive Biased Shunt Diode ClipperA positive biased diode clipper circuit is designed to clip the positive half-cycle of the waveform at a voltage of +Vbias.This is because the diode will not become forward biased until the total voltage level reaches Vforward + Vbias. Under this level, the diode remains reverse biased and the signal experiences a short circuit through the load.The complete negative half-cycle is also allowed to pass because the diode remains reverse biased.Positive Biased Series Diode ClipperThe positive biased series clipper clips the positive half-cycle of the wavefunction.The positive half-cycle has a peak voltage of Vbias, because the output is taken off the biasing voltage source (Vbias) and the resistor R1.The negative half-cycle is also shaped by the biasing voltage. The output of the clipper sees the negative voltage of the source (-Vp), the voltage from the biasing source (-Vbias), and the forward voltage of the diode, which opposes the other two voltage sources (Vf).Therefore the positive half-cycle has a maximum voltage of Vbias, and the negative half-cycle has a minimum voltage of Vf Vp -Vbias.Negative Biased Shunt Diode ClipperThe negative biased diode clipper is the opposite of the positive biased diode clipper.It produces a waveform that has a clipped negative half-cycle, which can be tuned by adjusting the bias voltage level.The complete positive half-cycle is also allowed to pass because the diode is reverse biased, thus allowing the signal to short through the load.Negative Biased Series Diode ClipperNegative biased series clippers have the opposite action of positive biased series clippers.The positive half-cycle sees a maximum voltage of Vp, which adds to the voltage from the biasing source Vbias. However, a voltage drop also occurs due to the diode forward voltage Vf.During the negative half-cycle, the diode is reverse biased so that current cannot pass. The only voltage measured therefore comes from the biasing source, -Vbias.Therefore the positive half-cycle passes a maximum voltage of Vp + Vbias Vf, and the negative half-cycle passes a minimum voltage of -Vbias.Combination (Dual) Biased Shunt Diode ClipperThe combination biased diode clipper is like placing two biased clippers in parallel.One diode clips the positive half-cycle of the waveform to the level equal to V1bias + V1forward. A second diode clips the negative half-cycle of the waveform to the level equal to -V2bias-V2forward.This allows us to produce a waveform that is clipped on both the positive and negative half-cycles.The main advantage of this type of clipper circuit is that it can prevent an output signal from exceeding voltage limits for both half-cycles of the waveform, thus providing total control over the positive and negative limits of the output.The disadvantage of this type is that it requires twice the number diodes as a single biased clipper, as well as two voltage sources. Thus it also consumes more power.Zener Diode Clipper CircuitsOne of the primary challenges with using biased clippers is that they require additional voltage sources, adding cost and complexity to the overall design.One solution to this is by using Zener diodes, which clip both sides of the waveform.An additional advantage is that there are many Zener diodes available, with a large range of Zener voltages. This allows us to design circuits that can clip one or both half-cycles of a waveform to a custom level designated by the Zener voltage.Positive Zener Diode ClipperA positive Zener diode clipper uses a Zener diode in the same configuration as a regular diode in a positive diode clipper circuit.Both a regular diode and a Zener diode will clip the positive half-cycle of the input waveform to the level of the forward voltage (VF).However, the Zener diode also allows current to flow through it when the voltage reaches the Zener voltage VZ.This means that the negative half cycle is clipped to the Zener voltage (technically -VZ)Thus a single Zener diode can be used to clip both sides of the waveform.Negative Zener Diode ClipperA negative Zener diode clipper has the diode in the opposite configuration to the positive Zener diode clipper.In this case, the negative half-cycle is clipped to the forward voltage VF, and the positive half-cycle is clipped to the Zener voltage, VZ.Combination (Full-Wave) Zener Diode ClipperZener diodes can also be used to clip both halves of the waveform. A full-wave Zener diode clipper has a positive and negative half cycle both clipped to VZ.The Zener diodes do not have to be identical. By using two Zener diodes, each with a different Zener voltage, it is possible to clip each half-cycle of the waveform to specific voltages.Combination Zener Diode Clipper Circuit DiagramCombined with the availability of Zener diodes with a wide range of Zener voltages, this makes the combination Zener diode clipper an incredibly useful circuit.ConclusionIn conclusion, we have seen that a variety of clipper circuits exist. They are used to clip a waveforms voltage, so that it is within the desired range of voltages for use in circuits.In this post I am going to explain clipper and clamper circuits. The clipper and clamper are called wave shaping circuits because they convert the incoming signal wave to another kind of useful wave.They are used widely in power supplies, filter circuits, RF transmitters / receivers, voltage suppressors, audio amplifiers and the list goes on.Clipper Circuit:What is a clipper circuit?Clipper circuit is a circuit arrangement with diodes and other passive components that prevent electrical signals exceeding a preset voltage level at its output.When the input exceeds the threshold for which the clipper circuit is designed for, the excess spike voltage is simply clipped or sliced off from the rest of the waveform.A point to be noted is that only the excess amplitude is clipped off and the rest of the waveform is unaffected. Clipper circuits are often labeled as protection circuits.Classification of clipper circuit:The above block diagram illustrates different types of diode based clippers. There are two main types of clipper circuits and those are series clipper and shunt clipper and the rest of them are derived from these two types.A clipper circuit is classified as a series when the diode is in series with load.A clipper circuit is classified as shunt when the diode is in parallel with the load.A clipper circuit is said to be biased when we apply a voltage to the clipper circuit to control the level of clipping at the output.Polarity of the bias determines whether the clipper is positively biased or negatively biased.Dual clipper circuit is a circuit arrangement using two diodes where both the half cycles get clipped and they can be biased too.Now lets explore each of the clipper circuits mentioned in the block diagram.Series Positive Clipper:Series positive clipper consists of a diode and a load resistor RL, the positive cycles of the signal are clipped off and negative cycles are passed at the output unaffected.When the diode encounters a positive signal at the cathode, the diode is reverse biased and no signal is passed to the output.When the diode encounters a negative signal at the cathode terminal, the diode is forward biased and this signal is passed to the output unaffected.The above circuit is essentially a half-wave rectifier and it is the most simple clipper circuit.Series negative clipper:Series negative clipper circuit clips off negative cycles of input signal. The arrangement of this circuit is the same as the previous one except the diodes position is reversed.When the diode encounters a positive signal at the anode, the diode is forward biased and allows positive signals at the output to be unaffected.When the diode encounters a negative signal at the anode, the diode is reverse biased and negative cycles are eliminated at the output.Series Positive Clipper with Positive Bias:We have discussed two types of clipping circuits which completely clip off one half-cycle of a signal waveform completely.Now, what if we want to clip off only a portion of a signal? To achieve this we are applying a reference voltage to a series positive clipper circuit as illustrated above.The above circuit is the same as a series positive clipper except we are applying a bias voltage to the load resistor. The voltage of the battery determines the amplitude of the clipped signal.Now lets try to understand the circuit during both the half-cycles.Now consider that we are applying +Ve at point A and Ve at point B. The diode is reverse biased and no current will reach the output, but since we have a voltage source in series with a load resistor, the voltage from the battery is passed to the output; hence we get a positive voltage on the graph.Now consider applying Ve at point A and +Ve at point B. The diode is forward biased and when the input voltage exceeds the bias voltage (battery), the output goes negative.Series Positive Clipper with Negative Bias:The above circuit is same as the previous one except the bias voltage is in reverse polarity.Now lets consider applying +Ve to point A and Ve at point B.Now the cathode of the diode is connected to +Ve of the input supply, the diode is reverse biased and acts like an open circuit.Since a battery is connected at the output, we will see the output voltage equal to the battery (flat portion of the graph).Now considering we are applying Ve to point A and +Ve to point B, the diode gets forward biased and conducts the input voltage to output.As long as the input voltage is below the battery voltage we will see a voltage equal to battery potential, but when input voltage exceeds the bias voltage we will see negative peak voltage as dictated by the input.Series Negative Clipper with Positive Bias:In this clipper circuit the diode has switched its terminals compared to the previous type. Now lets see what happens in each half cycle of the input.Now lets apply -Ve to point A and +Ve to point B. The diode is reverse biased and no voltage will reach the output, but since we have a voltage source, the output will be equal to the source voltage; we can see the flat portion of the graph.Now lets apply +Ve to point A and Ve at point B. Now the diode is forward biased and input voltage reaches the output.There will be no change in the output voltage if the input is below the source voltage because the bias voltage is dominant, but when input voltage exceeds the source voltage we will see a positive spike as dictated by the input signal.Series Negative Clipper with Negative Bias:In this circuit we just reversed the bias source polarity; now lets see what happens for each half cycle.Lets apply Ve to point A and +Ve at point B.Now the diode is reverse biased because the Ve polarity of the input is connected to the anode of the diode, hence no voltage at the output.Since we have a bias voltage, the output will be equal to bias battery potential and thats why we are observing a negative voltage on the graph.Now lets reverse the polarity of the input supply. Now the diode is forward biased and when the input voltage exceeds the bias voltage we will see positive voltage on the positive quadrant of the graph.This concludes the series clipper circuit.Shunt clipper:Shunt clippers perform the opposite function of series clippers; the input gets conducted to the output when the diode is reverse biased, which is opposite to the series clipper.Shunt Positive Clipper:A shunt positive clipper is illustrated above, the load resistor is series with the input signal and the diode is parallel to the output. Lets try to understand what happens at both half cycles.Now lets apply +Ve to point A and Ve to point B. The diode is forward biased because the anode is connected to +Ve of the input and the diode will route the signal back to the input source. The diode acts as a low resistance return path for the input signal, hence no output.Now lets apply Ve to point A and +Ve at point B. The diode is reverse biased and the diode acts like an open circuit and the input signal will appear at output, hence we see negative cycles at the output.Shunt Negative Clipper:In the shunt negative clipper circuit the diodes position is reversed, lets understand how it works on both the half cycles.Lets consider +Ve at point A Ve at point B. The diode is reverse biased as the cathode of the diode is in contact with +Ve of the input.Now the diode acts like an open circuit and hence the signal appears at the output.Now lets apply Ve at point A and +Ve at point B.The diode is forward biased and acts like a low resistance return path and the signal gets returned back to the input source for this half cycle, hence we see no negative half cycle at the output.Shunt Positive Clipper with Positive BiasThe above circuit is a positive shunt clipper with a biasing voltage. Lets apply the same rules as before and determine the output.When we apply +Ve at point A and Ve at point B, the diode is forward biased but the bias voltage tries to make the diode partially reverse biased, hence we will get a positive voltage at the output that is clipped.Now if we apply Ve at point A and +Ve at point B, the diode is reverse biased and the diode becomes open circuit and the negative half cycle is unaffected.Shunt Positive Clipper with Negative Bias:The above circuit is the same as the previous except the bias voltage polarity has been reversed.Lets apply +Ve to point A and Ve to point B, the diode is forward biased and acts like a closed switch and the bias voltage also makes the diode forward biased.Now the input and the bias voltage (the two voltage sources) are connected in series, but since the output is taken across the bias voltage, only the bias voltage appears at the output (flat part of the graph).Now if we reverse the input polarity the diode is reverse biased and the voltage appears at the output, but the bias voltage makes the diode forward biased and this voltage potential will also appear at the output.If the input volt

circuit is a diode or any other type of diode. The diode clips a portion from the input waveform. The shape of the waveform depends on the configuration as well as the design of the circuit. Therefore, there are different types of clipper circuits discussed below. Related Posts: Types of ClippersThe diode-based clipper circuit can be classified into the following two types.Series Diode ClippersShunt Diode ClippersSeries ClippersIn series clipper circuits, the diode is connected in series with the output. In such clippers, the input signal appears at the output when the diode is forward biased and conducting. On the contrary, the shunt clippers passes the input signal when the diode is reverse biased or blocking.It is divided into positive and negative clippers.Series Positive ClippersSeries positive clippers remove or clips the positive half of the waveform. In a series positive clipper, the diode is in reverse biased and in series with the output as shown in the figure below.The input signal Vi is applied at the input side while the output is taken at the load resistor. During the positive half cycle of the input, the voltage at point A is positive than point B. So the diode is in reverse bias and there is no current conduction. The input signal cannot pass, thus there is no voltage drop at the Rl. Therefore, there the positive half cycle does not appear at the output as shown in the figure. During the negative half-cycle, the voltage at point A is negative than point B. The diode becomes forward bias and the signal pass through it. The signal appears across the Rl. Therefore, the negative half cycle passes through the circuit and appears at the output.As illustrated in the given figure, it shows how it clips the positive half and allows the negative half of the input waveform.Related Posts: Series Positive Clippers with BiasThe biasing in the clippers circuit is used to clip a portion of the half cycle and not the whole halve. Therefore, a series positive clipper with biasing which can be positive or negative is used for producing the desired waveforms.Positive BiasIn such a positive clipper circuit, the positive of the battery is connected to the P side of the diode as shown in the figure below.During the positive half cycle, the voltage at point A is greater than point B due to which, the diode is in reverse bias and switched off. But there is another voltage source whose positive is connected to the P-side of the diode. This voltage source or battery puts the diode in forward bias. If the input voltage is less than the battery voltage, the diode remains in forward bias and it conducts. Therefore, the signal appears at the output. When the input voltage increases above the battery voltage, the diode becomes reverse-biased and does not conduct the input signal. Therefore, the battery voltage Vb appears at the output.During the negative half cycle, the diode is forward biased due to the input voltage as well as the battery voltage. Therefore, the input signal passes through the diode and it appears at the output.Related Post:12V to 5V Converter Circuit Boost and Buck ConvertersNegative BiasThe battery in the negative biased series positive clipper is connected in reverse with the diode as shown in the figure below.During the positive half cycle, the diode is reversed biased due to the input voltage and the negative battery as well. Therefore, in the positive half cycle, the diode does not conduct and only the negative battery voltage appears at the output.During the negative half-cycle, the input voltage polarity reverses and the diode becomes forward biased. However, the diode is reverse biased due to the negative battery. Therefore, the diode only becomes forward biased if the input voltage increases above the battery voltage and the input signal appear at the output. Otherwise, the negative battery voltage appears at the output.Series Negative ClippersThe series negative clipper circuit clips the negative half of the input cycle. its circuit diagram is given below. During positive half cycle, the diode is forward biased due to the input voltage. Therefore, the input signal passes through the diode and appears at the output.During the negative half cycle, the diode becomes reverse-biased and it does not conduct. Therefore, there is no voltage at the output and the negative half cycle is clipped from the input waveform.Related Posts: Series Negative Clippers with BiasThe series negative clipper is biased with either positive or negative voltage battery to modify the waveform instead of clipping the whole negative half.Positive BiasDuring the positive half cycle, the diode is forward biased due to input signal voltage. While it is reversed biased due to the battery voltage. the state of the diode depends on both the voltage sources. Therefore, the diode will be forward biased and conduct only if the input voltage is greater than the battery voltage. At first, the input voltage is lower than battery voltage, therefore, the diode is reversed biased and does not conduct. So the battery voltage appears at the output. The input signal appears at the output for the portion when it becomes greater than the battery voltage as shown in the figure.During the negative half of the cycle, the diode is reversed biased due to both the input voltage as well as the battery voltage. therefore, only battery voltage appears at the output for the whole negative half cycle.Negative BiasDuring the positive half cycle, the diode is forward biased due to both the input signal and the battery voltage. Therefore, the diode conducts the signal for the whole positive half cycle and it appears at the output as it is in the input.During the negative half-cycle, the input voltage forces the diode in reverse bias but the battery voltage still forward biases the diode. During this whole cycle, the diode only conducts when the battery voltage exceeds the input voltage.At first, the input voltage is less than the battery voltage, thus the diode conducts and the signal appears at the output. But when it exceeds the battery voltage, the diode blocks the input signal and the battery voltage starts to appear at the output as shown in the figure.Related Posts: In shunt clippers, the diode is connected in parallel with the output. The input signal appears the output when the diode is blocking as opposed to the series clippers.The shunt clippers can also be divided into positive and negative clippers.Shunt Positive ClippersShunt Negative ClippersShunt Positive ClippersThe shunt positive clipper clips the positive half cycle of the input waveform. The circuit diagram of the shunt positive clipper is given below.During the positive half cycle, the diode is forward biased as the voltage at point A is greater than point B. so the diode conducts the input signal and there is no voltage difference at the output.During the negative half-cycle, the voltage polarity of the input signal at points A and B reverses and the diode becomes reverse biased. Therefore, the diode blocks the input signal and the signal voltage appears across the diode that is taken as the output of the clipper.In such a way, the shunt positive clippers, clips or remove, the positive half of the input cycle and allow the negative half cycle. The biasing is done by using another fixed voltage source such as a battery inside the circuit to modify the waveform furthermore. The voltage source can be connected in either positive or negative biasing.Positive BiasDuring the positive half cycle, the diode is forward biased due to the input voltage. but it is reversed biased due to the battery voltage. The sum of both voltages will decide the state of the diode. If the input voltage is greater than the battery voltage, the diode will be forward biased otherwise it will remain in reverse bias.At first, the input signal is less than the battery voltage, so the diode is reversed biased and the signal appears at the output. but when it exceeds the battery voltage, the diode starts conducting the signal and only the battery voltage starts to appear at the output.During the negative half cycle, the diode is reversed biased due to both input voltage as well as battery voltage. Therefore, the input signal appears for the whole negative half-cycle at the output.Negative BiasDuring the positive half cycle, the diode is forward biased for both input signal and battery voltage. Therefore, the diode conducts for the whole cycle and only the battery voltage appears at the output.During the negative half cycle, the diode is reversed biased for input signal and forward biased for battery voltage. The combined effect of both voltage sources decides the state of the diode. The diode is forward biased when the input voltage is less than the battery voltage.At first, the input signal is less than the battery voltage, thus the diode is forward biased. Therefore, the battery voltage appears at the output. When the input voltage exceeds the battery voltage, the diode becomes reversed biased and the input signal starts to appear at the output as shown in the figure.Shunt Negative ClippersThe shunt negative clipper clips the negative half of the input waveform. The circuit diagram is given belowDuring the positive half cycle, the diode is reversed biased, thus it blocks the signal that appears across it. therefore, the positive half also appears at the output.During the negative half cycle, the diode is forward biased and it conducts the signal. Therefore, there is no voltage at the output for the negative half cycle. Thus the shunt negative clipper clips or removes the negative half of the input waveform.Shunt Negative Clippers with BiasTo further modify the waveform of the shunt negative clipper, positive or negative biasing is used with it by connecting a battery source in one of the two ways called positive biasing and negative biasing. The waveform can be modified by varying the voltage of the battery.Positive BiasDuring the positive half cycle, the diode is reversed biased for input voltage but forward biased for battery voltage. So, the diode will be reversed biased only when the input voltage exceeds the battery voltage and then the input signal will appear at the output.At first, the signal is less than the battery, so the diode is forward biased and it conducts the signal. Therefore, only the battery voltage appears at the output. but when the input signal exceeds the battery voltage, the diode becomes reversed biased and the signal appears at the output as shown in the figure.During the negative half cycle, the diode is forward biased for both input signal and battery voltage. Therefore, the diode conducts and only the battery voltage appears at the output for the whole negative cycle.Negative BiasDuring the positive half cycle, the diode is reversed biased for both input and battery voltage. thus, the diode blocks the voltage and the signal appears at the output for the whole positive half cycle.During the negative half cycle, the diode conducts when the input voltage exceeds the battery voltage. Therefore, when the voltage is less than the battery voltage, the diode blocks and the signal appears at the output. When the input voltage exceeds, the diode starts conduction and only the battery voltage appears at the output.Related Posts: Dual or Combination ClippersDual clipper or combination clipper can clip a portion off from both positive and negative half cycle of the waveform. Two diodes are connected in parallel to each other where each diode has a battery or voltage source in series that reverse biases the respective diode. Here is the circuit diagram of a combination clipper.The circuit operates using a simple principle. If both diodes are reversed biased or if they do not conduct, the input signal would appear across the diode and also appears at the output. Now, if one of the diodes starts conduction, their respective battery voltage will start to appear at the output.During the positive half cycle, the diode D1 is forward biased while the D2 is reversed biased for input voltage. But the diode D1 and D2 is reversed biased for the battery voltage VB1 and VB2 respectively.During the positive half cycle, the diode D1 is forward biased for input voltage and reversed biased for battery voltage VB1. While the diode D2 is reverse biased for both the input voltage as well as the battery voltage VB2. At first, the input voltage is less than the battery voltage VB1, thus the diode D1 is in reverse bias. while the diode D2 is already in reverse bias. therefore, the input signal appears at the output. when the input voltage exceeds the VB1, diode D1 starts conduction and battery voltage VB1 starts to appear at the output.During the negative half cycle, the diode D1 is reversed biased due to both input voltage and battery voltage VB1. The diode D2 is forward biased due to input voltage but reversed biased due to battery voltage VB2. At first, the input voltage is lower than the VB2, thus the diode D2 is reversed biased and it does not conduct. The diode D1 is already in reverse bias. Therefore, the input signal appears at the output. When the input voltage exceeds the VB2, the diode starts conduction and the battery voltage VB2 appears at the output.Using Zener DiodeA Zener diode is a special type of diode that not only conducts in forward direction (0.7v drop) but also in the reverse direction when the voltage exceeds Zener breakdown voltage. The reverse current flows while the voltage across it remains constant. Therefore, a Zener diode can act as a biased diode without using another biasing source.Half Wave Zener ClipperHere is the circuit diagram of the Zener diode clipper. During the positive half cycle, the diode is reversed biased for the input voltage. Therefore, the signal appears at the output. When the input voltage exceeds the Zener voltage, the Zener diode starts conduction and Zener voltage VZ starts to appear at the output.During the negative half-cycle, the Zener diode is forward biased. Therefore, only the diode forward voltage drop (0.7v) appears at the output.Full Wave Zener ClipperTwo Zener diodes can be used to clip portions from both halves of the input waveform. The Zener diodes are connected in reverse with each other as shown in the figure below.During the positive half cycle, the Zener diode ZD1 is reverse-biased while the Zener diode ZD2 is forward biased. At first, the ZD1 diode does not allow the current. therefore, the signal appears at the output. But when the input voltage exceeds the Zener breakdown voltage, the Zener diode starts conduction and the Zener voltage Vz1 of the Zener diode ZD1 starts to appear at the output. Similarly, during the negative half cycle, the negative waveform is clipped after the Zener voltage of ZD2.Applications of ClipperThe main purpose of the clipper circuit is to modify the waveform of the signal which can be used in several applications such as in protection against overvoltage, noise removal, transmission, etc.The clipper circuit offer overvoltage protection therefore, it is used in power supplies for limiting the voltage.They are used for filtering noise in transmitters.They are used in transmitters and receivers of television.They are used for modifying or generating new waveforms such as square, triangular, etc.Related Posts:IGBT? Construction, Types, Working and ApplicationsGTO? Types, Construction, Working and ApplicationsTRIAC? Symbol, Construction, Working and ApplicationsDIAC? Symbol, Construction, Working and ApplicationsMOSFET Working, Types, Operation, Advantages, and ApplicationsTypes of Transistors BJT, FET, JFET, MOSFET, IGBT & Special Transistors

How does a clipper circuit work. Clipper circuit. What is the primary function of a clipper circuit. Clipper function. Why clipper circuit is used. Clipper circuit is also known as. What is the application of clipper circuit. What is the primary function of a diode clipper circuit.