

Device & Op Amp Principles — Part 1

- 19. SEMICONDUCTORS AND DIODES
 - 19.1 Conductors and Insulators
 - 19.2 Semiconductors
 - 19.3 The PN Junction Diode
 - 19.4 Diode Specifications
 - 19.5 The Zener Diode
 - 19.6 Light Emitting Diodes
 - 19.7 Other Diodes
 - 19.8 Ohmmeter Testing of Diodes
 - 19.9 A Glance Back
- 20. DIODE BIASING
 - 20.1 Biasing Circuits and Loadlines
 - 20.2 Biasing PN Diodes
 - 20.3 Power Dissipation
 - 20.4 Zener Diode Equivalent Circuit
 - 20.5 Zener Diode Biasing
 - 20.6 LED Biasing
 - 20.7 Diode Measurements
 - 20.8 Troubleshooting Diode Circuits
 - 20.9 A Glance Back
- 21. RECTIFICATION & FILTER CIRCUITS
 - 21.1 Half-Wave Rectifiers
 - 21.2 Full-Wave Rectifiers
 - 21.3 Bridge Rectifiers
 - 21.4 Power Supply Filters
 - 21.5 Troubleshooting Rectifier Circuits
 - 21.6 A Glance Back
- 22. BIPOLAR JUNCTION TRANSISTORS
 - 22.1 BJT Characteristics
 - 22.2 BJT Operation
 - 22.3 Device Operation Modes
 - 22.4 BJT Equations
 - 22.5 BJT Maximum Ratings
 - 22.6 Common Base Characteristics
 - 22.7 Common Emitter Characteristics
 - 22.8 BJT Specification Sheets
 - 22.9 BJT Ohmmeter Testing
 - 22.10 A Glance Back
- 23. BJT BIASING
 - 23.1 BJT Operating Points
 - 23.2 Common Base Biasing
 - 23.3 Common Emitter Biasing
 - 23.4 Emitter Follower Biasing
 - 23.5 Loadlines and Stabilization
 - 23.6 Troubleshooting BJT Biasing Circuits
 - 23.7 A Glance Back
- 24. FIELD-EFFECT TRANSISTORS
 - 24.1 JFET Structure and Terminology
 - 24.2 JFET Operation
 - 24.3 JFET Characteristic Curves
 - 24.4 The JFET Transfer Equation
 - 24.5 Measuring JFET Parameters
 - 24.6 MOSFET Structure, Terminology and Operation
 - 24.7 MOSFET Characteristic Curves
 - 24.8 The MOSFET Transfer Equation
 - 24.9 VMOS and CMOS Structures
 - 24.10 Ohmmeter Testing of FETs
 - 24.11 A Glance Back
- 25. FET BIASING
 - 25.1 FET Operating Points
 - 25.2 JFET Fixed Biasing
 - 25.3 Bias Line Characteristics
 - 25.4 JFET Source Self Biasing
 - 25.5 JFET Gate Voltage Divider Biasing
 - 25.6 Bias Stabilization
 - 25.7 MOSFET Biasing
 - 25.8 FET Loadlines
 - 25.9 Troubleshooting FET Biasing Circuits
 - 25.10 A Glance Back
- 26. DIODE AND TRANSISTOR SWITCHING
 - 26.1 Diode Clipping Circuits
 - 26.2 Diode Clamping Circuits
 - 26.3 Diode Switching Circuits
 - 26.4 BJT Switching Circuits
 - 26.5 FET Switching Circuits
 - 26.6 Troubleshooting Switching Circuits
 - 26.7 A Glance Back
- 27. AMPLIFIER CONCEPTS
 - 27.1 Coupling AC to Devices
 - 27.2 Graphical Signal Analysis
 - 27.3 Amplification Concepts
 - 27.4 Decibels
 - 27.5 Amplifier Measurement Model
 - 27.6 Distortion in Amplifiers
 - 27.7 Tracing AC Signals in Amplifiers
 - 27.8 Troubleshooting the Measurement Model
 - 27.9 A Glance Back
- 28. h-PARAMETER MODELLING
 - 28.1 Two-Port Device Models
 - 28.2 Hybrid Parameter Model
 - 28.3 Relating Parameters to Reality
 - 28.4 CE and CB Parameters
 - 28.5 Relating Parameters to Specifications
 - 28.6 The Current-Dependent Parameter, h_{ib}
 - 28.7 A Simplified Two-Parameter Model
 - 28.8 A Glance Back
- 29. BJT AMPLIFIER ANALYSIS
 - 29.1 Common Emitter AC Equivalent Circuits
 - 29.2 Common Emitter Amplifier Characteristics
 - 29.3 CE Amplifiers With Degeneration
 - 29.4 Common Base AC Equivalent Circuits
 - 29.5 Common Base Amplifier Characteristics
 - 29.6 Emitter Follower AC Equivalent Circuits
 - 29.7 Emitter Follower Amplifier Characteristics
 - 29.8 BJT Amplifier Frequency Response
 - 29.9 Troubleshooting BJT Amplifiers
 - 29.10 A Glance Back

Device & Op Amp Principles — Part 2

- 30. FET AMPLIFIER ANALYSIS
 - 30.1 Hybrid- π Circuit Model
 - 30.2 Common Source AC Equivalent Circuits
 - 30.3 Common Source Amplifier Characteristics
 - 30.4 Common Gate AC Equivalent Circuits
 - 30.5 Common Gate Amplifier Characteristics
 - 30.6 Source Follower AC Equivalent Circuits
 - 30.7 Source Follower Amplifier Characteristics
 - 30.8 FET Amplifier Frequency Response
 - 30.9 Troubleshooting FET Amplifiers
 - 30.10 A Glance Back
- 31. MULTI-STAGE AMPLIFIERS
 - 31.1 Multi-Stage Amplifier Characteristics
 - 31.2 Maximum Transfer of Voltage, Current or Power
 - 31.3 Inter-Stage Coupling Techniques
 - 31.4 Multi-Stage Equivalent Circuits
 - 31.5 Multi-Stage Amplifier Analysis
 - 31.6 Troubleshooting Multi-Stage Amplifiers
 - 31.7 A Glance Back
- 32. SPECIAL CIRCUITS
 - 32.1 Darlington Pairs
 - 32.2 Complementary Pairs
 - 32.3 Direct-Coupled Feedback Pairs
 - 32.4 Cascode Amplifiers
 - 32.5 Differential Amplifiers
 - 32.6 Differential and Common-Mode Signals
 - 32.7 Troubleshooting Differential Amplifiers
 - 32.8 A Glance Back
- 33. NEGATIVE FEEDBACK CIRCUITS
 - 33.1 Negative Feedback Classifications
 - 33.2 Effects of Negative Feedback on Circuit Characteristics
 - 33.3 Voltage-Series Negative Feedback
 - 33.4 Voltage-Shunt Negative Feedback
 - 33.5 Current-Series Negative Feedback
 - 33.6 Current-Shunt Negative Feedback
 - 33.7 A Glance Back
- 34. OPERATIONAL AMPLIFIERS
 - 34.1 Construction of Integrated Circuits
 - 34.2 Typical Op Amp Schematic Diagram
 - 34.3 Ideal Op Amp Characteristics
 - 34.4 Op Amp Specifications
 - 34.5 Non-Inverting Amplifiers
 - 34.6 Inverting Amplifiers
 - 34.7 Troubleshooting Op Amps
 - 34.8 A Glance Back
- 35. LINEAR OP AMP APPLICATIONS
 - 35.1 Non-Inverting Amplifiers
 - 35.2 Inverting Amplifiers
 - 35.3 Follower Amplifiers
 - 35.4 Summing Amplifiers
 - 35.5 Differential Amplifiers
 - 35.6 Integrator Amplifiers
 - 35.7 Differentiator Amplifiers
 - 35.8 Filter Circuits
 - 35.9 Reference Amplifiers
 - 35.10 Precision Rectifiers
 - 35.11 Instrumentation Amplifiers
 - 35.12 Troubleshooting Linear Op Amp Circuits
 - 35.13 A Glance Back
- 36. NON-LINEAR OP AMP APPLICATIONS
 - 36.1 Multivibrator Circuits
 - 36.2 Comparator Circuits
 - 36.3 Schmitt Trigger Circuits
 - 36.4 Detector Circuits
 - 36.5 Waveform Generator Circuits
 - 36.6 Timer Circuits
 - 36.7 Commercial Non-Linear Op Amp Applications
 - 36.8 Troubleshooting Non-Linear Op Amp Circuits
 - 36.9 A Glance Back
- 37. POSITIVE FEEDBACK CIRCUITS
 - 37.1 Positive Feedback Characteristics
 - 37.2 Transformer-Coupled Oscillators
 - 37.3 Reactance-Coupled Oscillators
 - 37.4 Other Oscillator Circuits
 - 37.5 Troubleshooting Oscillator Circuits
 - 37.6 A Glance Back
- 38. POWER AMPLIFIERS
 - 38.1 Class A Power Amplifiers
 - 38.2 Class B and AB Power Amplifiers
 - 38.3 Power Amplifiers With Feedback
 - 38.4 Hybrid and Integrated Power Amplifiers
 - 38.5 Troubleshooting Power Amplifier Circuits
 - 38.6 A Glance Back
- 39. POWER SUPPLY REGULATION
 - 39.1 Zener Regulation
 - 39.2 Series Pass Regulation
 - 39.3 3-Terminal Regulators
 - 39.4 Heat Sinking Techniques
 - 39.5 Switching Power Supplies
 - 39.6 Troubleshooting Power Supply Circuits
 - 39.7 A Glance Back
- 40. MULTI-LAYER DEVICES
 - 40.1 SCR Operation
 - 40.2 SCR Circuits
 - 40.3 Shockley Devices
 - 40.4 DIAC Operation
 - 40.5 TRIAC Operation
 - 40.6 Solid State Relays
 - 40.7 Unijunction Operation
 - 40.8 Light-Sensitive Device Operation
 - 40.9 Troubleshooting SCR Circuits
 - 40.10 A Glance Back