SOLID STATE HIGH POWER AMPLIFIERS

MILITARY

COMMUNICATIONS

SATELLITE

RADAR

INSTRUMENTATION

MEDICAL

SWITCHES

COMTECH PST
Comtech PST Corp. (CPST) designs, develops, and manufactures solid-state high-power amplifiers. We serve a variety of domestic and international high technology markets including defense, wireless and satellite communications, cellular and PCS instrumentation, electromagnetic compatibility testing, and medical testing systems. Located in Melville, NY, Comtech PST’s facility is a modern, 46,000 square-foot structure that provides office space for our corporate office as well as engineering and manufacturing for the Comtech PST Division.

A subsidiary of Comtech Telecommunications Corp., the PST division was established in 1987 for the express purpose of designing and manufacturing High Power RF Amplifiers. Our engineering talent has participated in the major growth of this technology. This background in solid state amplifier design and development has provided CPST with experience in such diverse fields as EW/ECM systems, TACAN/ RADAR systems, TWT replacement, high power testing, satellite tracking systems, communication, RFI/EMC testing, radio transmitters, boosters, and general laboratory testing. Our fully staffed engineering support group is always available to provide expert assistance for any of your special needs relating to design and application issues.

Comtech PST has continued to expand its capabilities through continual improvement of our product offerings, as well as through acquisitions. In recent years, Comtech PST has acquired companies whose product offerings and technology complement our own legacy of solid state amplifier products. Hill Engineering, a manufacturer of solid state control devices, was acquired by CPST in 2000. This division of CPST provides solid state high power RF switches for integration into many of our power amplifier systems. A stand alone product line of Hill’s products can be found on page .

Microwave Power Devices, also a manufacturer of solid state power amplifiers since 1967, was acquired by Comtech PST in 2001. The product lines acquired have extensive applications in the commercial satellite, medical, and defense markets. Through continued investment in improving technologies and strategic acquisitions, Comtech PST has positioned itself as the market leader in solid state power amplifier products and systems.

**PRODUCTS AND CAPABILITIES**

Comtech PST is focused on making superior solid state amplifiers have led to the development of a versatile and highly reliable product line. Whether your needs include amplifier module building blocks, rack-mounted amplifier units, or complete amplifier systems, our standard and customized solid-state power amplifier products provide the flexible effective solution.

Comtech PST Corp. offers solid-state power amplifiers in frequency ranges from 1 MHz through 3.0 GHz, with output power levels ranging from 5 watts to over 30 kW.

While we offer standard products to serve a variety of markets and applications, at times a custom-designed amplifier may be required. Our highly-skilled engineering staff possesses the knowledge and ability to design and develop cost-effective custom solutions to meet your solid state power amplifier requirements.

**CUSTOMER SERVICE**

Comtech PST Corp. is, above all, committed to our customer’s satisfaction. This responsibility is woven into the corporate fabric with our technical expertise, defined quality standards, and production of versatile and highly reliable solid state amplifiers. Comtech PST’s commitment does not stop at delivery.

We have a dedicated customer service staff to continually support all of our products. They are here to satisfy the needs of our customers. This includes performing warranty and out-of-warranty repairs, providing spare parts information, answering equipment installation and operation questions, and providing technical documentation and training as required.

**QUALITY SYSTEM**

Comtech PST Corp. is an ISO9001-2000 certified company. We take seriously the responsibility for maintaining this stringent quality standard. At Comtech PST Corp., we see it as a logical extension of our ongoing commitment to quality. CPST has always had well-established written practices and procedures assuring complete product integrity throughout all stages of design, manufacture, test and inspection.

ISO 9001 quality system certification of Comtech PST further assures you of consistent and reliable products. The ISO 9001 certification emphasizes the company’s commitment to providing our customers with the highest quality solid state power amplifiers.

**QUALITY POLICY**

Comtech PST Corp. is committed to the continuous pursuit of quality in every aspect of our business. We strive to deliver excellence and will continue to improve our products and services to better satisfy the needs of our customers. Our goal is to deliver on time and every time defect free products and services. We define Quality as meeting customer requirements (both internal and external), including cost and schedules. Each of us is accountable for the quality of the work we do. Our aim is to be the supplier of choice of all our customers.
### General Purpose Linear Amplifiers

#### Series AM

**20-500 MHz 25 Watts**

Series AM amplifiers are available for operating frequencies from 20 MHz to 2 GHz and output power from 2 to 100 W at 1 dB compression. Their design utilizes the most advanced state-of-the-art technologies in RF/microwave power, including combination techniques and component selection of transistors.

#### Series AR

Series AR amplifiers are rack-mountable units which incorporate the Series AM amplifier in a cabinet containing a built-in universal AC power supply (for models up to 100 watts). Models are available for operation at frequencies from 20 MHz to 2 GHz and output power from 10 to 250 W. They are forced-air cooled by blowers built into the mechanical package. AR models are also available with an optional IEEE BUS for remote control and monitoring (ARD version).

### General Purpose Linear Amplifiers

#### Model No. | Frequency (MHz) | Power Out (W) | Gain at 1 dB (dB min) | Current (amps max) | H (cm) | W (cm) | L (cm) | Weight (lbs) | Dimensions
|---------------|----------------|---------------|---------------------|-------------------|-------|-------|-------|-------------|-----------|
| AM2758/10 | 20-500 | 10 15 | 40 | 17.5A @ 26Vdc | 14.6 | 6.8 | 26 | 29.2 | 60 27.2
| AM2758/25 | 20-500 | 25 30 | 44 | 5.5A @ 26Vdc | 16.2 | 7.0 | 21.9 | 30.0 | 22 13.6
| AM8825/10 | 800-2500 | 10 13 | 45 | 7.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AM8825/30 | 800-2500 | 30 35 | 47 | 7.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AM8825/50 | 800-2500 | 50 55 | 49 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AM8825/100 | 800-2500 | 100 115 | 50 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AM178238/10 | 1700-2300 | 10 | 13 | 40 | 7.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AM178238/50 | 1700-2300 | 50 | 55 | 47 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AM178238/100 | 1700-2300 | 100 | 115 | 50 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9

*Specifications are subject to change without notice.*

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#### Model No. | Frequency (MHz) | Power Out (W) | Gain at 1 dB (dB min) | Current (amps max) | H (cm) | W (cm) | L (cm) | Weight (lbs) | Dimensions
|---------------|----------------|---------------|---------------------|-------------------|-------|-------|-------|-------------|-----------|
| AR178238-10 | 20-500 | 10 15 | 40 | 17.5A @ 26Vdc | 14.6 | 6.8 | 26 | 29.2 | 60 27.2
| AR178238-25 | 20-500 | 25 30 | 44 | 5.5A @ 26Vdc | 16.2 | 7.0 | 21.9 | 30.0 | 22 13.6
| AR8825/10 | 800-2500 | 10 13 | 45 | 7.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AR8825/30 | 800-2500 | 30 35 | 47 | 7.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AR8825/50 | 800-2500 | 50 55 | 49 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AR8825/100 | 800-2500 | 100 115 | 50 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9
| AR178238-100 | 1700-2300 | 100 115 | 50 | 5.5A @ 15Vdc | 1.06 | 2.69 | 16.5 | 23.8 | 35 15.9

*Specifications are subject to change without notice.*
Series AM cellular amplifiers are available for operating frequencies from 800 to 3000 MHz and output power from 10 to 50 W at 1 dB compression. Their design utilizes the most advanced state-of-the-art technologies in RF/microwave power, including combination techniques and component selection of transistors.

**ELECTRICAL**
- **RF Input Signals**: CW, AM, FM, Phase and Pulse
- **Harmonics**: -20dBc Max
- **Spurious**: -50dBc Max
- **Input VSWR**: 2.0:1 Max
- **Load VSWR**: Open / Short Circuit Protected, Unconditionally Stable
- **Noise Figure**: 10dB Typical
- **Maximum RF Input**: 10dBc above the input required to achieve P1dB

**RF Connectors**: SMA Female

**AVAILABLE OPTIONS**
- Noise Quiet
- Custom Specifications
- Other Frequency Ranges, Power Levels, Gains and Connectors

**Specifications are subject to change without notice.**
Series BHE Amplifiers are arranged in a variety of configurations, depending on the output power requirements and frequency range.

The series BHE wide bandwidths are ideal for multi-octave, frequency-agile systems; Typical applications include:

- EW/ECM systems
- Communication systems
- AM/FM transmitter boosters
- TWT replacement
- RFI/EMI testing
- High power calibration testing

**LOAD VSWR PROTECTION:**
Series BHE amplifiers provide load VSWR protection via an electronic power output turndown system employing negative feedback techniques. The system is self-correcting as a function of load VSWR to infinity, at any phase angle. The typical response time is 60 µsec. The magnitude of turndown follows the curve shown in Fig. A. Page 10.

**INPUT/OUTPUT OVERDRIVE PROTECTION:**
A leveling loop system protects the amplifiers from input overdrive signals of up to +6 dB. Under an overdrive condition, the output power is controlled at a level 2 to 10% above the rated output power at normal input level conditions. A power overshoot will be present at the beginning of the overdrive condition, which is a function of the amount of overdrive. Note that this characteristic can be used to obtain a 1 to 3 dB output (or more depending on model) power increase for narrow pulses with a low duty cycle.

### LOAD VSWR Protection
Series BHE amplifiers provide load VSWR protection via an electronic power output turndown system employing negative feedback techniques. The system is self-correcting as a function of load VSWR to infinity, at any phase angle. The typical response time is 60 µsec. The magnitude of turndown follows the curve shown in Fig. A. Page 10.

### INPUT/OUTPUT OVERDRIVE Protection
A leveling loop system protects the amplifiers from input overdrive signals of up to +6 dB. Under an overdrive condition, the output power is controlled at a level 2 to 10% above the rated output power at normal input level conditions. A power overshoot will be present at the beginning of the overdrive condition, which is a function of the amount of overdrive. Note that this characteristic can be used to obtain a 1 to 3 dB output (or more depending on model) power increase for narrow pulses with a low duty cycle.

**ELECTRICAL**
- Class of Operation: AB Linear
- RF Input Power: 1mW (0dBm) for full output power
- RF Input Signals: CW, AM, FM, Phase and Pulse modulation
- Harmonics:
  - B.W. <One Octave: -30dBc Max
  - Even: -20dBc Max
  - Odd: -13dBc
- Spurious: -60dBc Max
- Input VSWR: 2.0:1 nominal
- Output Load VSWR: 2.1:1, full forward power output
- AM Distortion (85% D.O.M.): 10% Max
- Pulse Rise/Fall Time:
  - 1.5-30MHz Models: 500ns
  - >20MHz Models: 150ns
- Noise Power Output: -86dBm/Hz typical (model dependant)
- Maximum RF Input: +8dBm
- RF Connectors:
  - Input: Female Type N, Rear Panel
  - Output: Female Type N or SC, Rear Panel (model dependant)
- Built-in Test (Models >= 500 W):
  - Digital Meters: Relative Forward/Reflected Power, Module Status, Power Supply Current and Voltage
  - Indicators: Power On, Thermal Overload, Fault Sense
  - Protection: Load VSWR, Thermal Overload, Input Overdrive, Gracious Degradation, Over voltage, Under voltage, Over current
- AC Input:
  - 100 and 200 W Models: Power Factor Corrected Universal 100-240Vac, 50/60Hz
  - 500 to 1500 W Models: Power Factor Corrected 208, 380 or 440VAC available, 50/60Hz, 3Phase 5 wire (400Hz available)
- Efficiency (AC to RF): 16% typical

**AVAILABLE OPTIONS**
- Digital Interfaces available: ETHERNET, RS422, RS232, IEEE488
- Mechanical or Solid State Switched Filter Assemblies
- Forward/Reflecting Sample Ports
- Relaxed turndown into High Load VSWR available for some models
- AM Leveling Loop
- Noise Quieting
- Remote On/Off
- Other Primary Power (AC or DC)
- Rack Mounting Slides
- Custom Specifications
### Class AB Linear Amplifiers

**Series BHE**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Frequency (MHz)</th>
<th>Power Out (W)</th>
<th>Power Amp (max)</th>
<th>Cabinet Height (in)</th>
<th>Power Supply (max)</th>
<th>Filter (max)</th>
<th>Total Height (in)</th>
<th>Combined Weight (lbs)</th>
<th>Combined Weight (kg)</th>
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<tbody>
<tr>
<td>BHE1437-100</td>
<td>1.3-10</td>
<td>0.6</td>
<td>5.22</td>
<td>8.72</td>
<td>21.15</td>
<td>31.04</td>
<td>33.16</td>
<td>84.23</td>
<td>237</td>
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<tr>
<td>BHE1437-200</td>
<td>1.5-20</td>
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<td>5.22</td>
<td>8.72</td>
<td>21.15</td>
<td>31.04</td>
<td>33.16</td>
<td>84.23</td>
<td>237</td>
</tr>
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<td>BHE1437-220</td>
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<td>0.6</td>
<td>5.22</td>
<td>8.72</td>
<td>21.15</td>
<td>31.04</td>
<td>33.16</td>
<td>84.23</td>
<td>237</td>
</tr>
<tr>
<td>BHE1437-500</td>
<td>1.5-500</td>
<td>0.6</td>
<td>5.22</td>
<td>8.72</td>
<td>21.15</td>
<td>31.04</td>
<td>33.16</td>
<td>84.23</td>
<td>237</td>
</tr>
</tbody>
</table>

### Specifications
- Dimensions and Weight are subject to change without notice.
- Bandwidths include both single and dual (1/2) bandwidths.
- Specifications may vary due to design changes without notice.

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**Pulse Amplifiers**

**Series PHE/PHC**

**1000 MHz 150 Watts**

**1030 MHz 2.5 Watts**

**Available Options**
- Forward/Reflecting Sample Ports
- Pulse Widths and Duty Factor Input Protection
- Custom Control and Monitoring Configurations
- Rise-Time and Spectrum Containment Pulse Shaping
- Digital Interfaces available: ETHERNET, RS422, RS232, IEEE488
- Other Primary Power (AC or DC)
- AIN Custom Specifications
- Internal Modulator
- Rack Mounting Sizers
- Remote On/Off

**Typical Applications**
- Radar
- TACAN/DME
- IFF
- MODE-S
- Short Message
- MODE-5

**Electrical**
- Power Input: 100 – 240Vac, 50/60Hz
- AC Input: 100 – 240Vac, 50/60Hz
- Power: 50/60Hz, 3 or 440VAC available, 50/60Hz

**Rack Mount**
-女 Type N. Rear Panel
- Female Type N or SC, Rear Panel

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**Rack Mount**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Frequency (MHz)</th>
<th>Power Out (peak with min)</th>
<th>Duty Factor (% max)</th>
<th>Rise/Fall Time (max)</th>
<th>Height (in)</th>
<th>Dimension (power amp)</th>
<th>Length (in)</th>
<th>Combined Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHE4275-500</td>
<td>400-500</td>
<td>500</td>
<td>0.5</td>
<td>200ns</td>
<td>2</td>
<td>10</td>
<td>16.43</td>
<td>11.95</td>
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<tr>
<td>PHE4275-520</td>
<td>420-520</td>
<td>520</td>
<td>0.5</td>
<td>200ns</td>
<td>2</td>
<td>10</td>
<td>16.43</td>
<td>11.95</td>
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<tr>
<td>PHE1037-2500</td>
<td>1037-2500</td>
<td>2500</td>
<td>0.5</td>
<td>200ns</td>
<td>2</td>
<td>10</td>
<td>16.43</td>
<td>11.95</td>
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<tr>
<td>PHE4275-500</td>
<td>400-500</td>
<td>500</td>
<td>0.5</td>
<td>200ns</td>
<td>2</td>
<td>10</td>
<td>16.43</td>
<td>11.95</td>
</tr>
</tbody>
</table>

**Notes**
- A includes: Heat Sink and Mounting Flange
- B: Incompliance/MODS 1, 3, 4, MODE 5, Short Message, and MODE 5
- C: Power Supply (400Hz Available)
- U: Industrial Control Aircraft Environment
The SSPA series of amplifiers operate in S-Band with power levels up to 300 watts peak. These Class ‘C’ amplifiers are designed for maximum power output and maximum AC to RF efficiency with minimal size. Typically used as driver amplifiers for Klystron PA’s within a Linear Accelerator.

**ELECTRICAL**
- Frequency Range: 1626.5 to 1660.5 MHz
- Output Power: 240 Peak Watts (1)
- 300 Peak Watts (2)
- Pulse Rise/Fall Time: 0.15s Max
- Load VSWR: 1.01 Max, Circulator Protected
- RF Connectors: Female Type N, Rear Panel
- Pulse Trigger Connector: Female BNC, Rear Panel
- Reliability: MTBF 20,000 Hours
- AC Input: 110 or 240Vac, 50/60Hz, 1 Phase

**AVAILABLE OPTIONS**
- Interfacing: available ETHERNET, RS422, RS232, CAN
- Internal Pulse Trigger
- Pulse to Pulse Width Control over 0.15s in 0.15s steps
- Pulse to Pulse Width Control over 0.15s in 0.15s range in
- Other Operating Frequencies, Power Levels
- Custom Specifications

**APPLICATIONS**
- Oncology Treatment
- Electronic Pasteurization
- X-Ray Cargo Inspection

**Specifications are subject to change without notice.**

The Satcom series of airborne amplifiers operate over the INMARSAT frequency Range of 1626.5 to 1660.5 MHz. Their designs utilize linear amplifier technology (class AB) for amplification of multiple input carriers. These amplifiers provide the lowest distortion (IMD) with the highest efficiency possible. Their light weight and compact size make them suitable for airborne applications where weight and size are essential.

**ELECTRICAL**
- Frequency Range: 1626.5 to 1660.5 MHz
- Output Power: 60W CW 6dB, two Carriers, 30V Each
- Intermodulation: 2 30W Carriers: 25dBc
- Class of Operation: Class *A* Linear
- Output Power Reporting: +1dB, 16dB Dynamic Range
- Gain: 60 ±2 dB
- RF Input Overdrive: +20 dBm
- RF Input Low Level Detection: -30 dBm ± 2 dB
- RF Input Range: -12 dBm for Nominal 60W Output
- Gain Stability/Variation: +1.5 dB Frequency, Temperature, Time
- AM/PM Conversion: 2°dB or 30/2msec
- Spurious: -55 dBc, <150 MHz, >1559 MHz
- -83 dBc 1530 MHz to 1559 MHz
- -95 dBc Max. 0.5,000 MHz
- Noise Figure: +20 dB for 0 dB Backoff
- Input VSWR: 2.01 Max.
- Load VSWR: 2.01 Max.
- AC Input: 115 Vac, 400 Hz
- Heat Dissipation: 300W Max. at 60W RF Output
- Cooling: External Air Force
- Control/Status: Output Power Reporting
- VSWR Reporting
- Individual Device Failure
- Internal Shutdown
- Temperature Reporting
- Transient Enable
- Weight: Less than 10 pounds
- Size: 12.5” x 10.2” x 7.6”
- MTBF: 30,000 Hours
- Construction: Field Replaceable Modules
- Qualification: RTCA DO-160 D Qualified
- Temperature Reporting

**Specifications are subject to change without notice.**

**ARINC 429 compatible (60W Model)**

**Linear operation (Low IMD)**

**RTCA DO-160 D Qualified**
While the standard products we offer are suitable for most applications, there are times when a custom design is required as a solution. Comtech PST has the background and experience to design, manufacture, and deliver a complete custom solution to meet your requirement. Let our vast technical engineering expertise help you with your application.

Listed below and on the next page are several examples of custom designs and applications.

COMMUNICATIONS
Applications include Secure Digital Radio, Airborne Boosters, Integrated RF Assemblies, and High Power Communications Radio Boosters.

COMMUNICATIONS JAMMERS / CONVOY PROTECTION
Comtech PST’s amplifiers are utilized to counter the threat of improvised explosive devices, as well as for other communications jamming applications. Platforms include fixed sites, airborne and ground-based mobile jamming.

CLASS C AMPLIFIERS
Comtech PST has extensive experience in the design and manufacture of Class C amplifiers, which allow for maximum efficiency (AC to RF) for transmission of both frequency and phase-modulated carriers. Also available in weather-proof designs.

PCS / DCS / UMTS AMPLIFIERS
Designed in both single and dual band configuration, available in both module and rack-mountable form.

RADAR
Comtech PST has designed amplifiers and systems for several types of radar applications, including Airborne and Shipborne radars, IFF interrogation, synthetic aperture radar, and over-the-horizon radar.

WATTMETER CALIBRATION
Comtech PST has previously designed and manufactured several systems for use in wattmeter calibration.

Comtech PST possesses the experience and knowledge to help you find a solution to your requirements.

For more information on these products, as well as new product offerings, or to locate a sales representative in your area, please visit our website, www.comtechpst.com.

Contact a member of our sales staff today at +1 (631) 777-8900, or via e-mail at sales@comtechpst.com.
HIGH POWER SWITCHES
AND LIMITERS

The switches listed below are our standard module MIC high power diode switch designs. Typical applications include antenna selection, transmit/receive, polarity switches, receiver protection, switch filters, switch- limiters and switch fixed attenuators. Standard module designs are for reflective, cold-switched usage. Certain parametric restrictions may apply to your application. Other options such as straddle-band operation, hot switching, absorptive (matched) ports, position indicators and fail-safe or latching are available.

**RF SWITCHES**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Frequency (MHz)</th>
<th>Config.</th>
<th>Power Peak (watts)</th>
<th>Power Average (watts)</th>
<th>Speed (µs)</th>
<th>Isolation (dB)</th>
<th>Insertion Loss (dB)</th>
<th>Bias (V DC)</th>
<th>Connector Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VH20-180</td>
<td>20-100</td>
<td>T/R</td>
<td>1300</td>
<td>1300</td>
<td>40</td>
<td>30/60</td>
<td>0.25</td>
<td>+5 &amp; +28</td>
<td>SMAF</td>
</tr>
<tr>
<td>VH20-280</td>
<td>20-500</td>
<td>T/R</td>
<td>500</td>
<td>500</td>
<td>40</td>
<td>30/60</td>
<td>0.5</td>
<td>+5 &amp; +28</td>
<td>SMAF</td>
</tr>
<tr>
<td>H221-102</td>
<td>100-1000</td>
<td>T/R</td>
<td>100</td>
<td>100</td>
<td>7</td>
<td>20/50</td>
<td>0.7</td>
<td>+5 &amp; -70</td>
<td>SMAF</td>
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<tr>
<td>H222-301</td>
<td>500-1000</td>
<td>T/R</td>
<td>800</td>
<td>800</td>
<td>40</td>
<td>30/60</td>
<td>0.5/1</td>
<td>+5 &amp; +28</td>
<td>SMAF</td>
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**MICROWAVE SWITCHES**

<table>
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<tr>
<th>Model No.</th>
<th>Frequency (GHz)</th>
<th>Config.</th>
<th>Power Peak (watts)</th>
<th>Power Average (watts)</th>
<th>Speed (µs)</th>
<th>Isolation (dB)</th>
<th>Insertion Loss (dB)</th>
<th>Bias (V DC)</th>
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<tr>
<td>H22-103</td>
<td>0.5-2</td>
<td>T/R</td>
<td>10000</td>
<td>80</td>
<td>1.5</td>
<td>20/50</td>
<td>0.7</td>
<td>+5 &amp; -50</td>
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<tr>
<td>H22-200</td>
<td>1.2</td>
<td>IP4T</td>
<td>2000</td>
<td>80</td>
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<td>40</td>
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<td>40</td>
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<td>+5 &amp; -30</td>
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<td>80</td>
<td>1.5</td>
<td>40</td>
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<td>40</td>
<td>1.9</td>
<td>+5 &amp; -30</td>
<td>SMAF</td>
</tr>
<tr>
<td>H24-204</td>
<td>8-12</td>
<td>IP4T</td>
<td>2000</td>
<td>80</td>
<td>1.5</td>
<td>40</td>
<td>1.5</td>
<td>+5 &amp; -30</td>
<td>SMAF</td>
</tr>
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<td>H44-404</td>
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<td>IP4T</td>
<td>2000</td>
<td>80</td>
<td>1.5</td>
<td>40</td>
<td>2.5</td>
<td>+5 &amp; -30</td>
<td>SMAF</td>
</tr>
<tr>
<td>H25-205</td>
<td>12-18</td>
<td>IP4T</td>
<td>2000</td>
<td>80</td>
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<td>40</td>
<td>1.8</td>
<td>+5 &amp; -50</td>
<td>SMAF</td>
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<tr>
<td>H45-405</td>
<td>12-18</td>
<td>IP4T</td>
<td>2000</td>
<td>80</td>
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<td>40</td>
<td>2.9</td>
<td>+5 &amp; -50</td>
<td>SMAF</td>
</tr>
<tr>
<td>H25-206</td>
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<td>IP4T</td>
<td>2000</td>
<td>80</td>
<td>1.5</td>
<td>40</td>
<td>2.5</td>
<td>+5 &amp; -50</td>
<td>SMAF</td>
</tr>
<tr>
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<td>IP4T</td>
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<td>80</td>
<td>2</td>
<td>40</td>
<td>3.4</td>
<td>+5 &amp; -50</td>
<td>SMAF</td>
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</tbody>
</table>

**MICROWAVE LIMITERS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Frequency (GHz)</th>
<th>Pulse Width (µs)</th>
<th>Power Peak (watts)</th>
<th>Power Average (watts)</th>
<th>Recovery Time (µs)</th>
<th>Flat Leakage (dBm)</th>
<th>Spike Leakage (dB)</th>
<th>Insertion Loss (dB)</th>
<th>Connector Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL2-235</td>
<td>5.4</td>
<td>20</td>
<td>1000</td>
<td>30</td>
<td>5</td>
<td>18</td>
<td>0.5</td>
<td>1.1</td>
<td>SMAF</td>
</tr>
<tr>
<td>HL3-235</td>
<td>4.18</td>
<td>20</td>
<td>1000</td>
<td>35</td>
<td>5</td>
<td>18</td>
<td>0.5</td>
<td>1.7</td>
<td>SMAF</td>
</tr>
</tbody>
</table>

HIGH POWER SWITCHES
AND LIMITERS

**COMPACT 20-500MH HIGH POWER PIN DIODE SWITCHES**

These compact high power switches are built on a ceramic substrate in a thermally efficient aluminum package. The package size is 0.5" x 0.3" x 0.1". Typical applications include IF switches, filter switches, and antenna or amplifier selection diversity switches for radar, radios, and COMM/AM systems.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Frequency (MHz)</th>
<th>Config.</th>
<th>Power Peak (watts)</th>
<th>Power Average (watts)</th>
<th>Pulse Width (µs)</th>
<th>Loss (dB)</th>
<th>Isolation (dB)</th>
<th>Speed to 1dB (µs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M20-202</td>
<td>20-200</td>
<td>SP2T</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>0.5</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>M20-303</td>
<td>30-400</td>
<td>SP2T</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>0.5</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>M20-304</td>
<td>225-400</td>
<td>SP2T</td>
<td>200</td>
<td>200</td>
<td>150</td>
<td>0.5</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>H20-201</td>
<td>400-500</td>
<td>SP2T</td>
<td>1000</td>
<td>120</td>
<td>15</td>
<td>0.45</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>M20-305</td>
<td>20-300</td>
<td>SP2T</td>
<td>230</td>
<td>120</td>
<td>80</td>
<td>0.55</td>
<td>25</td>
<td>10</td>
</tr>
</tbody>
</table>

**MICROWAVE LIMITERS**

**SURFACE MOUNT HIGH POWER PIN DIODE SWITCHES**

These tiny high power switches are built on ceramic substrate in our unique Therm-Master™ surface mount package. The package size is 0.54" x 0.46" x 0.14". Typical applications include VHF switches, and antenna or amplifier selection diversity switches for radars, radios, IFF, data links, and GSM or CDMA base stations.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Frequency (GHz)</th>
<th>Config.</th>
<th>Power Peak (watts)</th>
<th>Power Average (watts)</th>
<th>Pulse Width (µs)</th>
<th>Loss (dB)</th>
<th>Isolation (dB)</th>
<th>Speed to 0.5dB (µs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADS22-149</td>
<td>900-1800</td>
<td>SPD</td>
<td>1000</td>
<td>60</td>
<td>7</td>
<td>0.7</td>
<td>30</td>
<td>600</td>
</tr>
<tr>
<td>ADS22-151</td>
<td>1025-1095</td>
<td>SPD</td>
<td>900</td>
<td>27</td>
<td>34</td>
<td>0.35</td>
<td>25</td>
<td>330</td>
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<tr>
<td>ADS24-409</td>
<td>500-1400</td>
<td>SP4T</td>
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<td>30</td>
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<td>0.6</td>
<td>34</td>
<td>500</td>
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<tr>
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<td>960-1215</td>
<td>SP4T</td>
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<td>25</td>
<td>460</td>
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<td>SP4T</td>
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<td>0.4</td>
<td>20</td>
<td>500</td>
</tr>
<tr>
<td>ADS20-450</td>
<td>500-1000</td>
<td>SPD</td>
<td>6</td>
<td>100</td>
<td>0.5</td>
<td>25</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

For Environmental Specifications, see page 18. Table 3 Specifications are subject to change without notice.
ENVIRONMENTAL & CONVERSION CHARTS

**POWER - CONVERSION CHART**

<table>
<thead>
<tr>
<th>dBm (mW)</th>
<th>dBm (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>-10</td>
</tr>
<tr>
<td>-19</td>
<td>-12</td>
</tr>
<tr>
<td>-18</td>
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<tr>
<td>-2</td>
<td>-95</td>
</tr>
<tr>
<td>-1</td>
<td>-100</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL - TABLE 1 (MODULES)**

- Operating 0°C to 71°C, baseline
- Non-operating 40°C to 85°C
- Altitude 10,000 feet
- Non-operating 40,000 feet
- Humidity 93% non-condensing
- Shock & Vibration Normal conditions encountered

**ENVIRONMENTAL - TABLE 2 (RACK MOUNTED)**

- Operating 0°C to 50°C, ambient
- Non-operating 40°C to 85°C
- Operating 10,000 feet
- Non-operating 40,000 feet
- Humidity 93% non-condensing
- Vibration MIL-STD-810C, method S14-2, procedure V, curve V, 11/16 sec

**ENVIRONMENTAL - TABLE 3 (SWITCHES/LIMITERS)**

- Operating Range 0°C to 40°C (Baseline)
- Storage -55°C to +85°C
- Vibration & Shock Ground transport
- Burn-in 48 hrs at +60°C minimum

**Altitude: 10,000 feet**
- 95% non-condensing
- 0ºC to 50ºC, ambient
- Normal conditions encountered

**COMTECH PST SOLID STATE HIGH POWER AMPLIFIERS**

**CONVERSION CHARTS**

**ENVIRONMENTAL &**

**PROTOCOLS**

These are the current hardware protocols used for remotely controlling any of our products, some are standard, some optional. Other customer specified interfaces can also be implemented.

- Ethernet (TCP/IP, UDP, HTTP, SMTP)
- IEEE-488
- RS-422 (Serial)
- RS-422 (Discrete)

**APPLICATIONS**

Comtech develops control applications for both in-house and customer specified use. These applications work in conjunction with our many ATE Test Stations.

- National Instruments Measurement Studio
- National Instruments LabView
- National Instruments CVI
- Visual Basic
- C/C++
- JAVA
- HTML
- Hewlett Packard VEE

**LIST FEATURES**

Listed below are standard features within our product line. This list can be expanded upon, based on specific customer requirements.

- Filter/Band Switching
- Transmitted Power Monitoring
- Thermal, Overcurrent, VSWR, etc – Fault Detection
- Power Control
- Modulation Selection, AM, FM, SSB, etc.
- Transmit/Receive modes
- Noise Quiet
- Standby / Operate

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- Ethernet (TCP/IP, UDP, HTTP, SMTP)
- IEEE-488
- RS-422
- RS-448
- RS-422 (Serial)
- RS-442 (Discrete)

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- Noise Quiet
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**TECHNOLOGIES**

Comtech employs a broad range of the latest technologies within their product line

- ATE
- CPLD’s
- Embedded Ethernet
- Digital ALC
- Fast frequency Hopping Controls
- Fiber Optic Links

**COMTECH PST**

**DIGITAL DESIGN AND SOFTWARE DEVELOPMENT CAPABILITIES**

All of our rack mounted amplifier systems are available with all of today’s remote control interface options. This allows seamless integration with your automated test or remote applications.

We offer the following interfaces for remote control of our equipment: IEEE 488, RS-422 and RS-485. In addition, custom parallel or serial interfaces may also be incorporated based on your specific application. Comtech can now offer our new Ethernet interface with TCP/IP stack. Configure your amplifier with an IP address and use an application similar to the one shown below, and give your system “Internet Appliance” capability. This feature allows for monitoring and control of our amplifier systems over the Internet.

Working in conjunction with these remote control protocols, our Software Development Group can design custom PC applications to make your testing and/or control requirements totally automated, featuring control, data acquisition, analysis and presentation.

For further information on Comtech PST’s products and custom design capabilities, please visit our website, or contact us directly.

www.comtechpst.com

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