| | Cage Code: | Title: | Date: | Rev: | Model no: |
|---------------------------|------------|---------------------|--------|------|-----------|
| Hill Engineering Division | 02WL0 | PRODUCT DATA | 8/5/03 | None | M20-030 |
| | | (subject to change) | | | |

This document describes the performance of a high power 1P2T/TR switch. This is a cold-switched design i.e.; switched while RF is off. Proper bias connections must be made before operation of this switch. See section 11, below.

| ITEM | CHARACTERISTIC | CONDITIONS | MIN | MAX | UNITS | COMMENTS |
|---------|---------------------------|-----------------|------|-------|-------------|---------------|
| NO 1 | POWER SPECIFICATION | IN BAND | | | | |
| 1.1 | FREQUENCY | | 20 | 500 | MHz | |
| 1.2 | PEAK POWER | 100 uS duration | 20 | 500 | WATTS | |
| 1.2 | PULSE WIDTH | | | 100 | | TRANSMIT PATH |
| 1.4 | DUTY | | | 50 | μs % | TRANSMIT PATH |
| 1.4 | AVG POWER | ABSOLUTE MAX | | 250 | ∕₀ WATTS | TRANSMIT PATH |
| 1.6 | Receive power | ABSOLUTE MAX | | 30 | WATTS | TRANSMIT PATH |
| 2 | POWER SPECIFICATIONS | GUARD BAND | | | WAIIS | RECEIVE PATH |
| | FREQUENCY | GUARD BAIND | 500 | 700 | MHz | |
| 2.1 | PEAK POWER | | 500 | | | |
| 2.2 | PEAK POWER PULSE WIDTH | | C)W/ | 5 | WATTS | |
| 2.3 | | | CW | | μs | |
| 2.4 | DUTY | | CW | | % | |
| 2.5 | CW POWER | | | 5 | WATTS | |
| 3 | POWER SPECIFICATIONS | OUT OF BAND | | | | |
| 3.1 | FREQUENCY | | >700 | | MHz | |
| 3.2 | PEAK POWER | | | 33 | dBm | |
| 3.3 | PULSE WIDTH | | | CW | μs | |
| 3.4 | DUTY | | | CW | % | |
| 3.5 | CW POWER | | | 33 | dBm | |
| 4 | OPERATING FREQUENCY | | 20 | 500 | MHz | |
| 5 | INSERTION LOSS | | | | | |
| 5.1 | RCV | J3-J2 | | 0.8 | dB | |
| 5.2 | TX | J1-J3 | | 0.5 | dB | |
| 6 | ISOLATION | | | | | |
| 6.1 | ТΧ | J1-J3 | 40 | | dB | |
| 6.2 | RCV | J1-J2 | 50 | | dB | |
| 7 | PHASE | | | | | |
| 7.1 | MATCHING/TRACKING | | | | | NOT SPECIFIED |
| 8 | VSWR | | | | | |
| 8.1 | RCV PORT SELECTED | J3-J2 | | 1.7:1 | | RECEIVE PATH |
| 8.1.1 | TX PORT SELECTED | J1-J3 | | 1.5:1 | | TRANSMIT PATH |
| | | | | | | |

Federal Cage Code 02WLO

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|---------------------------|------------|---------------------|--------|------|-----------|
| Hill Engineering Division | 02WL0 | PRODUCT DATA | 8/5/03 | None | M20-030 |
| | | (subject to change) | | | |

| R.2 PORT NOT SELECTED >20:1 INFINITY 8.3 LOAD 2.0:1 INFINITY 8.4 SOURCE 1.5:1 INFINITY 8.4 SOURCE 1.5:1 INFINITY 9 HARMONICS & SPURS Internal (Control (Contret)) Internal (Contret) </th <th>ITEM NO</th> <th>CHARACTERISTIC</th> <th>CONDITIONS</th> <th>MIN</th> <th>MAX</th> <th>UNITS</th> <th>COMMENTS</th> | ITEM NO | CHARACTERISTIC | CONDITIONS | MIN | MAX | UNITS | COMMENTS |
|--|------------|--------------------------------|--------------------------|------|-------------|--------------|--------------------------------|
| 8.4 SOURCE 1.5:1 9 HARMONICS & SPURS 1 9.1 INTERNALLY GENERATED TRANSMIT MODE -50 dBc 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 2 10.5 10.5 LOGIC TABLE 2 KHz 10.0 11 D.C. POWER 2 10.5 LOGIC TABLE 20 VDC 11.1 POSITIVE BIAS VOLTAGE -240 -260 VDC 11.1 11.2 NEGATIVE BIAS CURRENT 25 mA 11.1 11.4 NEGATIVE BIAS CURRENT 25 mA 11.1 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 250V 11.6 11.5 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 250V. | | PORT NOT SELECTED | | | >20:1 | | INFINITY |
| 9 HARMONICS & SPURS Image: constraint of the second seco | 8.3 | LOAD | | | 2.0:1 | | |
| 9.1 INTERNALLY GENERATED TRANSMIT MODE -50 dBc 10 SWITCHING 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING RATE 2 KHz 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING RATE 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER 11 D.C. POWER 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.1 POSITIVE BIAS CURRENT 1 500 mA 11.1.4 NEGATIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 12 CONNECTORS 14 14 14 | 8.4 | SOURCE | | | 1.5:1 | | |
| 9.1 INTERNALLY GENERATED TRANSMIT MODE -50 dBc 10 SWITCHING 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING RATE 2 KHz 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING RATE 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER 11 D.C. POWER 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.1 POSITIVE BIAS CURRENT 1 500 mA 11.1.4 NEGATIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 12 CONNECTORS 14 14 14 | | | | | | | |
| 9.1 INTERNALLY GENERATED TRANSMIT MODE -50 dBc 10 SWITCHING 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING RATE 2 KHz 10.1 SPEED TO 0.50DB I.L. 30 µs 10.2 SWITCHING RATE 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER 11 D.C. POWER 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.1 POSITIVE BIAS CURRENT 1 500 mA 11.1.4 NEGATIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 12 CONNECTORS 14 14 14 | 9 | HARMONICS & SPURS | | | | | |
| 10.1 SPEED TO 0.50DB I.L. 30 μs 10.2 SWITCHING RATE 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.2 NEGATIVE BIAS CURRENT 1 500 mA 11.3 POSITIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. | | | TRANSMIT MODE | | -50 | dBc | |
| 10.2 SWITCHING RATE 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.2 NEGATIVE BIAS VOLTAGE 1 -260 VDC 11.4 NEGATIVE BIAS CURRENT 1 500 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 12.1 RF INPUT & XMIT Type NF <td>10</td> <td>SWITCHING</td> <td></td> <td></td> <td></td> <td></td> <td></td> | 10 | SWITCHING | | | | | |
| 10.2 SWITCHING RATE 2 KHz 10.3 VIDEO LEAKAGE 20 Vpp Across 50 Ohms 10.4 COMMAND LOGIC RS-422 DWG: 3714 BELOW 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER DWG: 3714 BELOW 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.2 NEGATIVE BIAS VOLTAGE 1 -240 -260 VDC 11.3 POSITIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 10 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13.1 WEIGHT 0.9 LBS 13.2 OUTLINE 0.9 DWG: 3714 BELOW 14 E | 10.1 | SPEED | TO 0.50DB I.L. | | 30 | μs | |
| 10.4 COMMAND LOGIC RS-422 Image: Common sequence in the second sec | 10.2 | SWITCHING RATE | | | 2 | KHz | |
| 10.5 LOGIC TABLE DWG: 3714 BELOW 11 D.C. POWER DWG: 3714 BELOW 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.2 NEGATIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.3 POSITIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 500 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 25 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13.1 WEIGHT 0.9 LBS 13.2 OUTLINE DWG: 3714 BELOW 14.1 OPERATING -20 -20 13.2 OUTLINE DWG: 3714 BELOW 14.1 OPERATING -20 -20 14.2 STORAGE TEMPERATURE -20 -2 | 10.3 | VIDEO LEAKAGE | | | 20 | Vpp | Across 50 Ohms |
| 11 D.C. POWER Image: Comparison of the system of the | 10.4 | COMMAND LOGIC | RS-422 | | | | |
| 11.1POSITIVE BIAS VOLTAGE 14.805.20VDC11.2NEGATIVE BIAS VOLTAGE-240-260VDC11.3POSITIVE BIAS CURRENT 1500mA11.4NEGATIVE BIAS CURRENT 125mA11.5NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V.11.6NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port.12CONNECTORS912.1RFINPUT & XMIT13.1MECHANICAL913.1WEIGHT0.913.2OUTLINE014.1OPERATING TEMPERATURE-2014.2STORAGE TEMPERATURE-2014.3VIBRATION LEVEL6 | 10.5 | LOGIC TABLE | | | | | DWG: 3714 BELOW |
| 11.1 POSITIVE BIAS VOLTAGE 1 4.80 5.20 VDC 11.2 NEGATIVE BIAS VOLTAGE -240 -260 VDC 11.3 POSITIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 1 25 mA 11.4 NEGATIVE BIAS CURRENT 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 2 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13.1 MECHANICAL 2 9 pin "D" type 13.1 WEIGHT 0.9 LBS 13.2 OUTLINE 2 DWG: 3714 BELOW 14.1 OPERATING TEMPERATURE -20 +55 °C 14.1 OPERATING -20 +55 °C 14.3 VIBRATION LEVEL 40 +70 °C | | | | | | | |
| 11.2 NEGATIVE BIAS VOLTAGE -240 -260 VDC 11.3 POSITIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection - This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 20 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13 MECHANICAL 20 9 pin "D" type 13.1 WEIGHT 0.9 LBS 13.2 OUTLINE 20 DWG: 3714 BELOW 14 ENVIRONMENTAL 20 20 14.1 OPERATING -20 +55 °C 14.3 VIBRATION LEVEL -20 +55 °C | 11 | D.C. POWER | | | | | |
| 11.3 POSITIVE BIAS CURRENT 1 500 mA 11.4 NEGATIVE BIAS CURRENT 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection – This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 10 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13 MECHANICAL 10 13.1 WEIGHT 0.9 LBS 13.2 OUTLINE 10 DWG: 3714 BELOW 14 ENVIRONMENTAL 14 ENVIRONMENTAL 14.1 OPERATING TEMPERATURE -20 +55 °C 14.3 VIBRATION LEVEL 40 +70 °C | 11.1 | POSITIVE BIAS VOLTAGE 1 | | 4.80 | 5.20 | VDC | |
| 11.4 NEGATIVE BIAS CURRENT 25 mA 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection – This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 10 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13 MECHANICAL 10 13.1 WEIGHT 0.9 LBS 13.2 OUTLINE DWG: 3714 BELOW 14 ENVIRONMENTAL 14 PERATING 14.1 OPERATING -20 +55 °C 14.2 STORAGE TEMPERATURE -40 +70 °C | 11.2 | NEGATIVE BIAS VOLTAGE | | -240 | -260 | VDC | |
| 11.5 NOTE 1: Power on sequence - To prevent possible damage to the switch, the + 5Vshould be applied first, then the -250V. 11.6 NOTE 2: Voltage Protection – This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 12.1 RF 12.3 DC 9 pin "D" type 13 MECHANICAL 13.1 WEIGHT 13.2 OUTLINE 14 ENVIRONMENTAL 14 OPERATING TEMPERATURE 14.1 OPERATING TEMPERATURE 14.2 STORAGE TEMPERATURE 14.3 VIBRATION LEVEL | 11.3 | POSITIVE BIAS CURRENT 1 | | | 500 | mA | |
| -250V. 11.6 NOTE 2: Voltage Protection – This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 12.1 RF INPUT & XMIT Type NF 12.3 DC 9 pin "D" type 13.1 MECHANICAL DWG: 3714 BELOW 13.1 WEIGHT OUTLINE 14 ENVIRONMENTAL 14.1 OPERATING TEMPERATURE -20 *55 °C 14.2 STORAGE TEMPERATURE -40 +70 °C | 11.4 | NEGATIVE BIAS CURRENT | | | 25 | mA | |
| 11.6 NOTE 2: Voltage Protection – This unit does not have over-voltage or reverse polarity protection on any bias port. 12 CONNECTORS 12.1 RF 12.3 DC 13 MECHANICAL 13.1 WEIGHT 13.2 OUTLINE 14 ENVIRONMENTAL 14 ENVIRONMENTAL 14.1 OPERATING TEMPERATURE 14.2 STORAGE TEMPERATURE 14.3 VIBRATION LEVEL | 11.5 | NOTE 1: Power on sequence - | To prevent possible dar | | e switch, t | he + 5Vsho | uld be applied first, then the |
| 12.1RFINPUT & XMITType NF12.3DC9 pin "D" type13MECHANICAL9 pin "D" type13MECHANICAL9.913.1WEIGHT0.913.2OUTLINE914ENVIRONMENTAL914.1OPERATING TEMPERATURE-2014.2STORAGE TEMPERATURE-4014.3VIBRATION LEVEL414.3VIBRATION LEVEL | 11.6 | NOTE 2: Voltage Protection – T | his unit does not have o | | ge or reve | rse polarity | protection on any bias port. |
| 12.1RFINPUT & XMITType NF12.3DC9 pin "D" type13MECHANICAL9 pin "D" type13MECHANICAL9.913.1WEIGHT0.913.2OUTLINE914ENVIRONMENTAL914.1OPERATING TEMPERATURE-2014.2STORAGE TEMPERATURE-4014.3VIBRATION LEVEL414.3VIBRATION LEVEL | | | | | | | |
| 12.3 DC Image: Constraint of the second | 12 | CONNECTORS | | | | | |
| Image: constraint of the second sec | 12.1 | RF | INPUT & XMIT | | | | Type NF |
| 13.1WEIGHT0.9LBS13.2OUTLINE0.9LBS13.2OUTLINE0.9DWG: 3714 BELOW14ENVIRONMENTAL0014.1OPERATING TEMPERATURE-20+55°C14.2STORAGE TEMPERATURE-40+70°C14.3VIBRATION LEVEL000 | 12.3 | DC | | | | | 9 pin "D" type |
| 13.1WEIGHT0.9LBS13.2OUTLINE0.9LBS13.2OUTLINE0.9DWG: 3714 BELOW14ENVIRONMENTAL0014.1OPERATING TEMPERATURE-20+55°C14.2STORAGE TEMPERATURE-40+70°C14.3VIBRATION LEVEL000 | 40 | | | | | | |
| 13.2OUTLINEDWG: 3714 BELOW13.2OUTLINEDWG: 3714 BELOW14ENVIRONMENTALImage: Constraint of the second | | | | | 0.0 | | |
| 14ENVIRONMENTAL | | | | | 0.9 | LB2 | |
| 14.1OPERATING TEMPERATURE-20+55°C14.2STORAGE TEMPERATURE-40+70°C14.3VIBRATION LEVEL-40-40GROUND TRANSPORT | 13.2 | OUTLINE | | | | | DVVG: 3714 BELOVV |
| TEMPERATURE14.2STORAGE TEMPERATURE14.3VIBRATION LEVEL14.3GROUND TRANSPORT | 14 | ENVIRONMENTAL | | | | | |
| 14.2 STORAGE TEMPERATURE -40 +70 °C 14.3 VIBRATION LEVEL GROUND TRANSPORT | 14.1 | | | -20 | +55 | °C | |
| | 14.2 | | | -40 | +70 | °C | |
| 14.4 HUMIDITY RH @ +40 DEG C 95% | 14.3 | VIBRATION LEVEL | | | | | GROUND TRANSPORT |
| | 14.4 | HUMIDITY RH | @ +40 DEG C | | 95% | | |

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| Hill Engineering Division | 02WL0 | PRODUCT DATA | 8/5/03 | None | M20-030 |
| | | (subject to change) | | | |

