

# GC2530

## 100 TO 2500 MHz TO-8 VOLTAGE CONTROLLED ATTENUATOR MODULE

| Typical Values                   | GC2530   |
|----------------------------------|----------|
| Fast Switching (10 - 90%)        | 200 ηsec |
| (0 - 100%)                       | 700 ηsec |
| High Attenuation Range           | > 35 dB  |
| Low SWR                          | < 1.5:1  |
| Excellent Flatness vs. Frequency | ± 0.5    |
| Standard Size TO-8 Package       |          |

### SPECIFICATIONS\*

| Parameter  | Typical            | Guaranteed          |                     |
|--|--------------------|---------------------|---------------------|
|  |                    | 0 to 50 °C          | -55 to +85 °C       |
| <b>Frequency Range</b>                                     | <b>50-2600 MHz</b> | <b>100-2500 MHz</b> | <b>100-2500 MHz</b> |
| <b>Attenuation (Min.)</b>                                  |                    |                     |                     |
| 100-500 MHz  | 52 dB              | 40 dB               | 37 dB               |
| 500-1000 MHz   | 43 dB              | 35 dB               | 32 dB               |
| 1000-2000 MHz  | 38 dB              | 30 dB               | 27 dB               |
| 2000-2500 MHz  | 35 dB              | 28 dB               | 25 dB               |
| <b>Insertion Loss (Max.)</b>                               |                    |                     |                     |
| 100-500 MHz  | 2.0 dB             | 2.8 dB              | 3.0 dB              |
| 500-1000 MHz   | 2.3 dB             | 2.8 dB              | 3.2 dB              |
| 1000-2000 MHz  | 2.8 dB             | 3.3 dB              | 3.8 dB              |
| 2000-2500 MHz  | 3.0 dB             | 3.5 dB              | 4.2 dB              |
| <b>SWR (Max.)</b>  |                    |                     |                     |
| Input/Output   |                    |                     |                     |
| 100-1000 MHz   | 1.2:1              | 1.8:1               | 1.8:1               |
| 1000-2000 MHz  | 1.2:1              | 2.0:1               | 2.0:1               |
| 2000-2500 MHz  | < 1.3:1            | 2.2:1               | 2.2:1               |
| <b>Flatness vs. Freq. (Max.)</b><br>(Attenuation to 25 dB) |                    |                     |                     |
| 100-1000 MHz   | < ±0.5 dB          | < ±1.0 dB           | < ±1.0 dB           |
| 1000-2500 MHz  | < ±1.0 dB          | < ±1.5 dB           | < ±1.7 dB           |
| <b>Switching Speed (Max.)</b>                              |                    |                     |                     |
| 10 - 90%   | 200 ηsec           | 400 ηsec            | —                   |
| 0 - 100%   | 700 ηsec           | 1.0 μsec            | —                   |
| <b>Bias Current (Max.)</b>                                 | 7 mA               | 10 mA               | 12 mA               |
| <b>Control Voltage</b>                                     | 0 to +15 V         | 0 to +15 V          | 0 to +15 V          |
| <b>Control Current (Max.)</b>                              | 7 mA               | 10 mA               | 10 mA               |

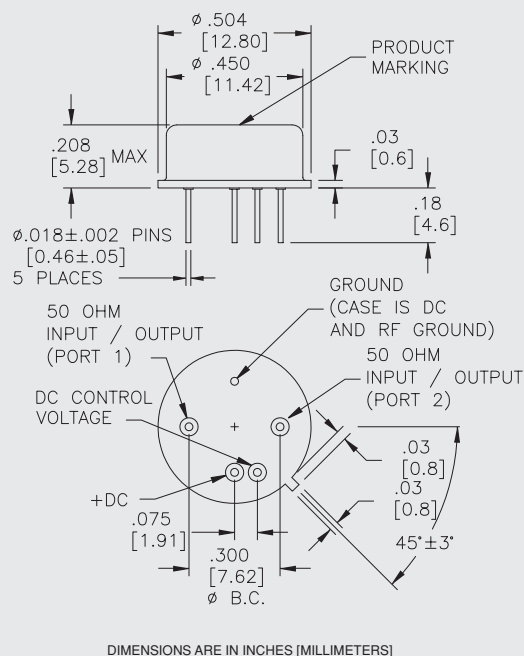
\* Measured in a 50-ohm system at +15 Vdc bias.

### ABSOLUTE MAXIMUM RATINGS

|                                   |                |
|-----------------------------------|----------------|
| Storage Temperature               | -62 to +125 °C |
| Maximum Case Temperature          | +125 °C        |
| Maximum DC Voltage                | +19 Volts      |
| Maximum Continuous RF Input Power | 200 Milliwatts |
| Maximum Peak Power (3 μsec Max.)  | 1.0 Watt       |
| Burn-in Temperature               | +125 °C        |

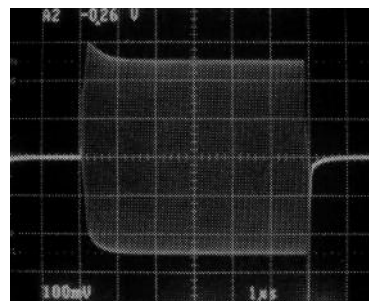
### GC2530

#### TO-8 Package for Attenuators

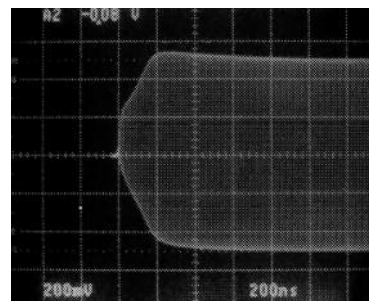


### SWITCHING SPEED

#### Typical Switching Speed at 25 °C



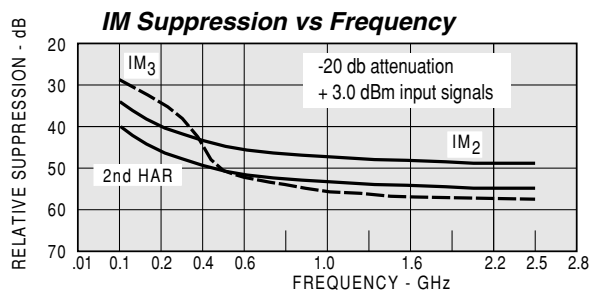
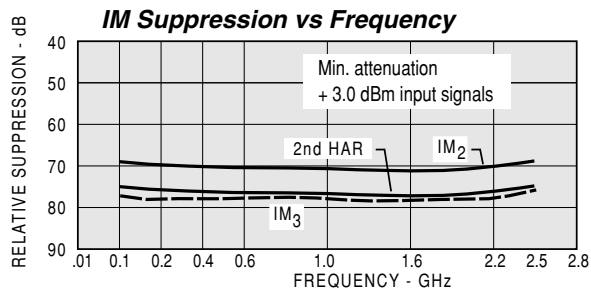
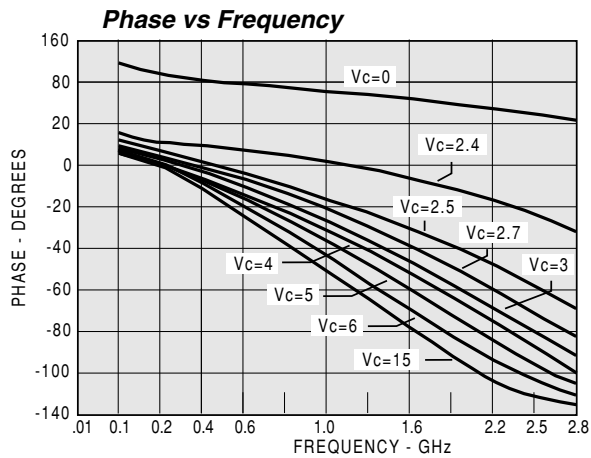
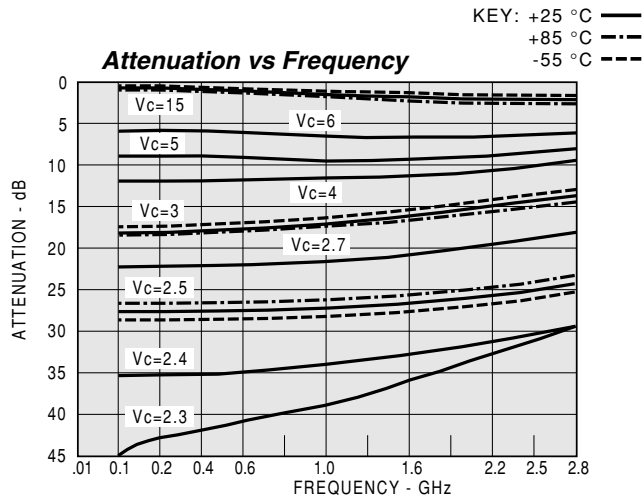
Full Attenuation Range



10 dB Attenuation Range

**TYPICAL PERFORMANCE**

**TYPICAL AUTOMATIC TEST DATA**



MODEL: GC2530 Vcc = +15V Icc = 5.75 Ma  
Vc = 15v

| FREQ<br>MHZ | VSWR<br>IN | VSWR<br>OUT | GAIN<br>DB | GROUP DELAY<br>NSEC | REV/ISO<br>DB |
|-------------|------------|-------------|------------|---------------------|---------------|
| 100         | 1.35       | 1.36        | -1.4       | 0.183               | -1.4          |
| 500         | 1.17       | 1.18        | -1.4       | 0.183               | -1.4          |
| 1000        | 1.21       | 1.23        | -1.5       | 0.140               | -1.5          |
| 1500        | 1.30       | 1.32        | -1.8       | 0.135               | -1.8          |
| 2000        | 1.37       | 1.43        | -2.5       | 0.119               | -2.4          |
| 2500        | 1.32       | 1.37        | -2.2       | 0.142               | -2.2          |

MODEL: GC2530 Vcc = +15V Icc = 5.99 Ma  
Vc = 4.0v

| FREQ<br>MHZ | VSWR<br>IN | VSWR<br>OUT | GAIN<br>DB | GROUP DELAY<br>NSEC | REV/ISO<br>DB |
|-------------|------------|-------------|------------|---------------------|---------------|
| 100         | 1.78       | 1.77        | -12.0      | 0.130               | -12.0         |
| 500         | 1.69       | 1.67        | -11.8      | 0.130               | -11.8         |
| 1000        | 1.68       | 1.65        | -11.6      | 0.097               | -11.6         |
| 1500        | 1.61       | 1.56        | -11.3      | 0.096               | -11.3         |
| 2000        | 1.36       | 1.34        | -10.9      | 0.100               | -10.8         |
| 2500        | 1.30       | 1.25        | -10.0      | 0.118               | -10.1         |

MODEL: GC2530 Vcc = +15V Icc = 6.12 Ma  
Vc = 2.5v

| FREQ<br>MHZ | VSWR<br>IN | VSWR<br>OUT | GAIN<br>DB | GROUP DELAY<br>NSEC | REV/ISO<br>DB |
|-------------|------------|-------------|------------|---------------------|---------------|
| 100         | 1.47       | 1.45        | -28.9      | 0.093               | -28.8         |
| 500         | 1.24       | 1.21        | -27.9      | 0.093               | -27.9         |
| 1000        | 1.23       | 1.19        | -27.4      | 0.057               | -27.4         |
| 1500        | 1.18       | 1.14        | -26.9      | 0.061               | -26.9         |
| 2000        | 1.12       | 1.12        | -26.4      | 0.082               | -26.4         |
| 2500        | 1.28       | 1.30        | -25.2      | 0.081               | -25.2         |

MODEL: GC2530 Vcc = +15V Icc = 6.13 Ma  
Vc = 0v

| FREQ<br>MHZ | VSWR<br>IN | VSWR<br>OUT | GAIN<br>DB | GROUP DELAY<br>NSEC | REV/ISO<br>DB |
|-------------|------------|-------------|------------|---------------------|---------------|
| 100         | 1.43       | 1.41        | -55.7      | 0.326               | -55.9         |
| 500         | 1.14       | 1.11        | -46.5      | 0.326               | -46.6         |
| 1000        | 1.16       | 1.12        | -39.9      | 0.069               | -40.0         |
| 1500        | 1.18       | 1.15        | -36.1      | 0.072               | -36.2         |
| 2000        | 1.28       | 1.29        | -33.7      | 0.082               | -33.8         |
| 2500        | 1.52       | 1.54        | -31.2      | 0.086               | -31.2         |

MODEL: GC2530 Vcc = +12V Icc = 4.84Ma  
Vc = 2.5v

| FREQ<br>MHZ | VSWR<br>IN | VSWR<br>OUT | GAIN<br>DB | GROUP DELAY<br>NSEC | REV/ISO<br>DB |
|-------------|------------|-------------|------------|---------------------|---------------|
| 100         | 1.51       | 1.50        | -17.5      | 0.121               | -17.5         |
| 500         | 1.34       | 1.32        | -17.1      | 0.121               | -17.0         |
| 1000        | 1.32       | 1.30        | -16.7      | 0.090               | -16.7         |
| 1500        | 1.27       | 1.23        | -16.3      | 0.092               | -16.3         |
| 2000        | 1.07       | 1.06        | -15.9      | 0.100               | -15.8         |
| 2500        | 1.05       | 1.05        | -14.9      | 0.110               | -14.8         |

