

DTOs

Multi-Band DTOs

Simulator Applications

To obtain broadband frequency coverage, as well as to improve settling speed, two or more VCOs are combined, as shown in Fig. 7. A high-isolation RF switch is required to suppress all but the desired VCO. A switched lowpass filter is included in the output to reduce harmonic levels. The harmonic level for catalog units is specific at -20 dBc. However, -55 dBc suppression is available as an option.

General Microwave offers multi-band DTOs covering the 0.5-2, 2-6, 6-18 and 2-18 GHz frequency ranges. The units feature high speed, high accuracy and low phase noise. The specifications are summarized on page 177. The modular design of the DTOs enables the user to select narrower frequency coverage if desired. Please consult the factory for individual requirements.

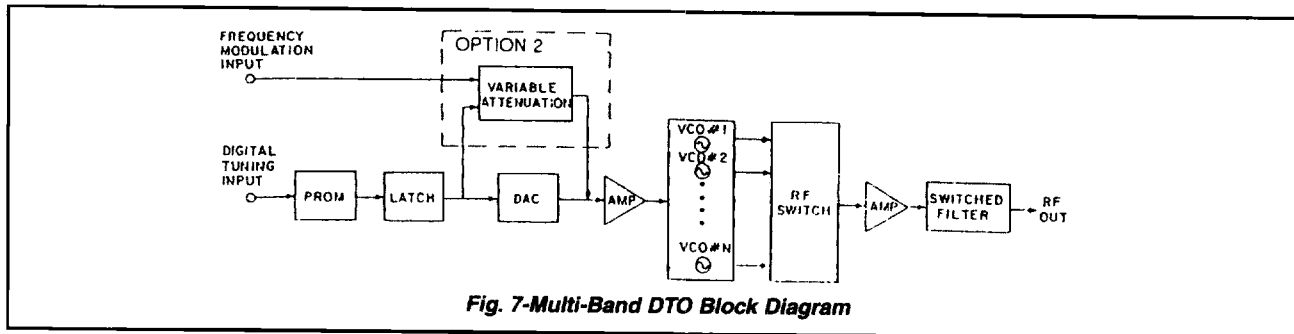
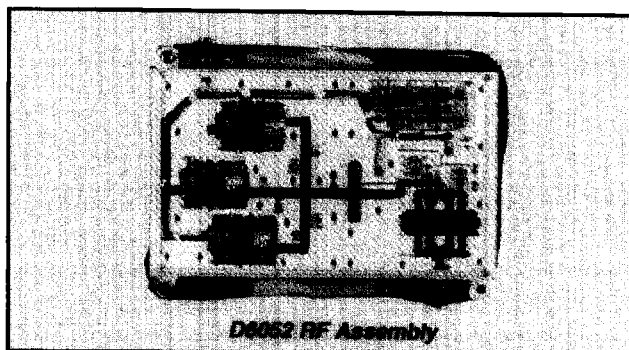
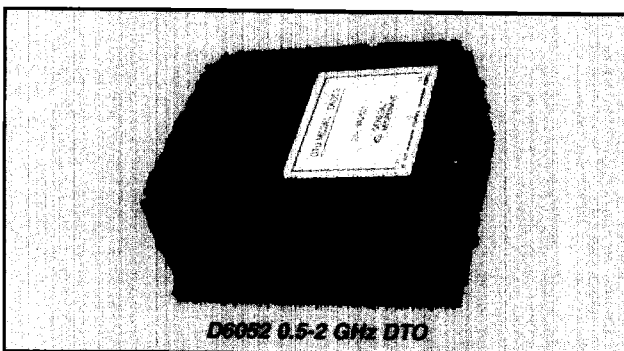
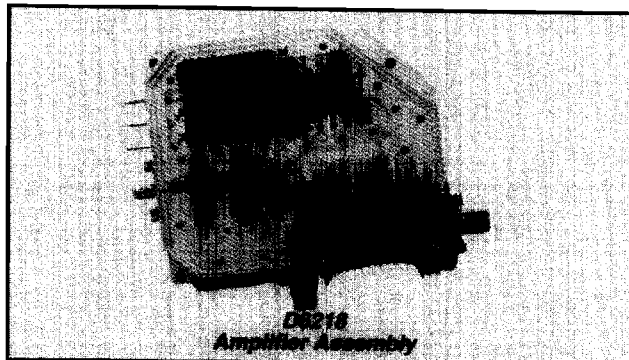
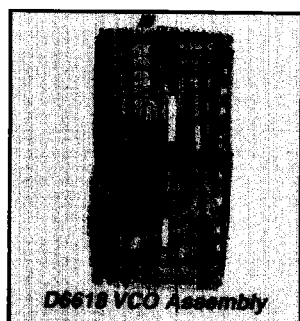
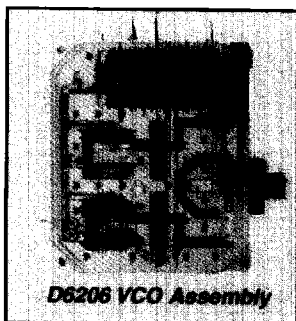
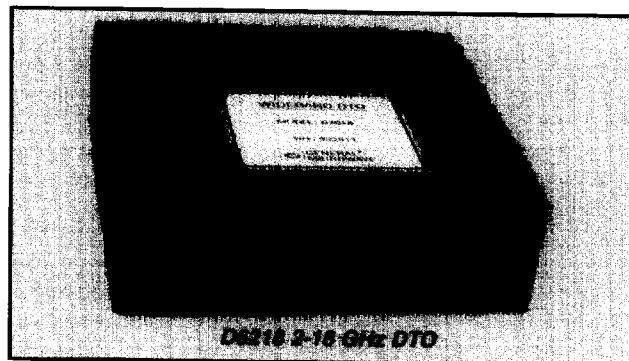


Fig. 7-Multi-Band DTO Block Diagram



MULTI-BAND DTO SPECIFICATIONS

| PARAMETER | MODEL | | | |
|--|--|-------|--|---|
| | D6052 | D6206 | D6618 | D6218 |
| FREQUENCY RANGE (GHz) | 0.5-2 | 2-6 | 6-18 | 2-18 |
| ACCURACY @ +25°C, max (MHz) | ±2 | | | |
| FREQUENCY DRIFT, max (MHz/°C) | ±0.1 | | | |
| FREQUENCY SETTling ⁽¹⁾ , max (MHz) within 1 µsec Standard Unit | ±1.5 | | ±2 (6-12 GHz) ±3 (12-18 GHz) | ±1.5 (2-6 GHz) ±2 (6-12 GHz) ±3 (12-18 GHz) |
| Option 1 Unit | ±1 | | | |
| MODULATION ⁽²⁾ | DC to 10 | | | |
| Bandwidth, min (MHz) | DC to 10 | | | |
| Sensitivity Variation | 4:1 | | | |
| Standard Unit, typ | 4:1 | | | |
| Option 2 Unit, max | 1.1:1 | | | |
| Frequency Deviation Bandwidth, min @ 2V P-P (MHz) | 100 | 200 | 500 | |
| RF POWER | | | | |
| Output, min (dBm) | +10 | | | |
| Variation, incl. temp. and freq., max (dB) | ±2 | | ±2.5 | |
| PHASE NOISE, max. (dBc/Hz) @ 100 kHz offset | -65 | | | |
| RESIDUAL FM, P-P @ -3 dBc, max (kHz) | 50 | 75 | 150 | |
| HARMONICS, max (dBc) | | | | |
| Standard Unit | -20 | | | |
| Option 3 Unit | N/A | | -55 | |
| 1/2, 3/2, max (dBc) | N/A | | -55 | |
| SPURIOUS, max (dBc) | -60 | | | |
| PULLING, VSWR 2:1, max (MHz) | 1 | | | |
| PUSHING, max (kHz/V) | 250 | | 500 | |
| NOMINAL LSB ⁽³⁾ (MHz) | 0.5 | | | |
| MONOTONICITY | Guaranteed | | | |
| CONNECTORS | | | | |
| Power | 9 Pin, D Type Male ⁽²⁾ | | | |
| Control | 37 Pin, D Type Male ⁽²⁾ | | | |
| RF Output | SMA female | | | |
| Modulation Input | SMC male | | | |
| POWER SUPPLY REQUIREMENT | | | | |
| Voltage @ Current | +15V ±0.5V @ 350 mA max -15V ±0.5V @ 250 mA max +5V ±0.5V @ 150 mA max +28V ±2V @ 1000 mA max | | +15V ±0.5V @ 1000 mA max -15V ±0.5 @ 300 mA max +5V ±0.5V @ 500 mA max +28V ±2V @ 3000 mA max | |
| Turn-ON Current @ 28 volts | 3 amps max | | 6 amps max | |
| ENVIRONMENTAL | | | | |
| Operating Temperature (°C) | 0 to +70 | | | |
| Storage Temperature (°C) | -20 to +100 | | | |
| MECHANICAL DIMENSIONS | | | | |
| Inches | 5.70 x 4.80 x 2.50 | | 6.48 x 6.23 x 2.00 | |
| Millimeters | 144.8 x 121.9 x 63.5 | | 164.6 x 158.2 x 50.8 | |

- (1) Δf relative to f after 1 sec.
- (2) Mating connectors furnished
- (3) 16 Bit TTL input, including VCO control.
See pages 178 and 179.
- (4) 50 Ohm input impedance

AVAILABLE OPTIONS

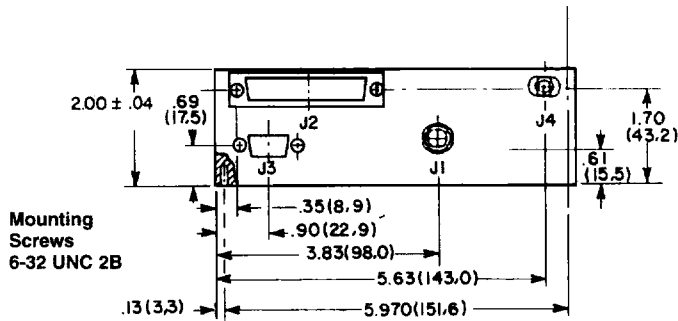
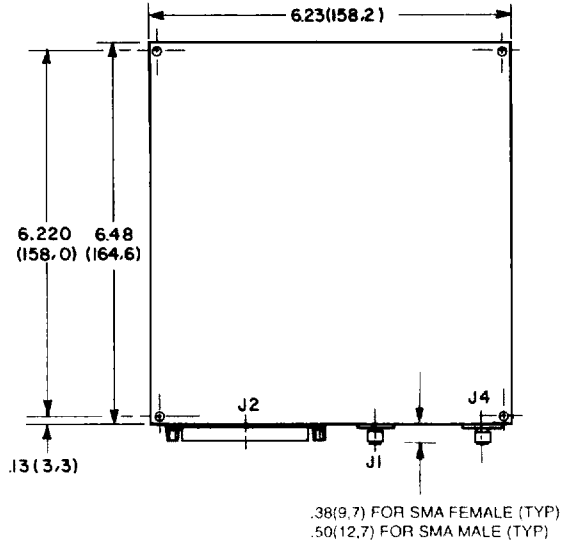
| Option No. | Description |
|------------|--|
| 1 | Fast Frequency Settling |
| 2 | Reduced Modulation Sensitivity Variation |
| 3 | Improved Harmonic Suppression |



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DIMENSIONS AND WEIGHT



**MODELS D6618 and D6218
Control Connector (J2)**

| PIN NO. | FUNCTION |
|---------|----------------------------------|
| 1 | A14 Tuning Word (MSB) |
| 2 | A12 Tuning Word |
| 3 | A10 Tuning Word |
| 4 | A8 Tuning Word |
| 5 | A6 Tuning Word |
| 6 | A4 Tuning Word |
| 7 | A2 Tuning Word |
| 8 | V _o VCO Control Bit |
| 9 | L1 Batch 1 (Strobe) |
| 10 | L3 Latch 3 |
| 11 | OE Memory Output Enable |
| 12 | D1 Data Bus |
| 13 | D3 Data Bus |
| 14 | D5 Data Bus |
| 15 | D7 Data Bus |
| 16 | W2 Write 2 |
| 17 | OET2 Output Enable Transceiver 2 |
| 18 | G Ground |
| 19 | WE Write Enable |
| 20 | A13 Tuning Word |
| 21 | A11 Tuning Word |
| 22 | A9 Tuning Word |
| 23 | A7 Tuning Word |
| 24 | A5 Tuning Word |
| 25 | A3 Tuning Word |
| 26 | A1 Tuning Word |
| 27 | A0 Tuning Word (LSB) |
| 28 | L2 Latch 2 |
| 29 | G Ground |
| 30 | D0 Data Bus |
| 31 | D2 Data Bus |
| 32 | D4 Data Bus |
| 33 | D6 Data Bus |
| 34 | W1 Write 1 |
| 35 | OET1 Output Enable Transceiver 1 |
| 36 | OET3 Output Enable Transceiver 3 |
| 37 | G Ground |

**MODELS D6618 and D6218
Power Connector (J3)**

| PIN NO. | FUNCTION | PIN NO. | FUNCTION |
|---------|---------------|---------|---------------|
| 1 | +5V | 6 | +5V (return) |
| 2 | -15V | 7 | +15V (return) |
| 3 | +15V | 8 | +28V (return) |
| 4 | +28V (return) | 9 | +28V |
| 5 | +28V | | ---- |

NOTES: For Normal Operation of the DTO

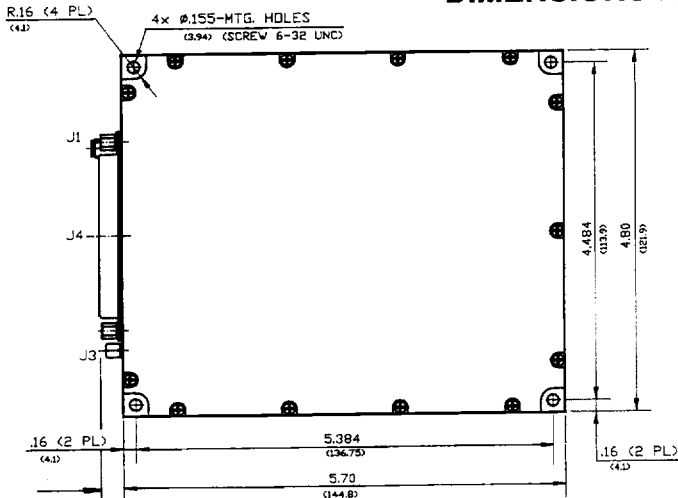
- PIN nos. 9,10 and 28 should be connected together.
- PIN no. 11 should be grounded.
- PIN nos. 12, 13, 14, 15, 16, 17, 19, 30, 31, 32, 33, 34, 35 and 36 are for *FACTORY PROGRAMMING ONLY* and should not be used.

Model D6218 and D6618 Wt: 3.35 lbs (1.52 kg) approx.

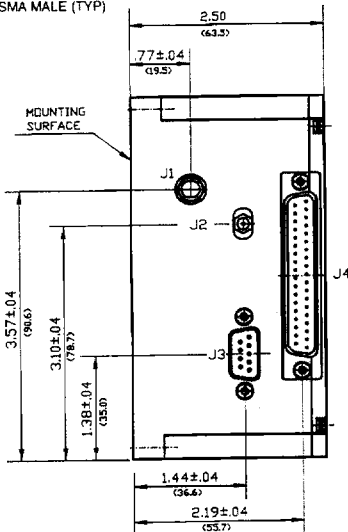


Dimensional Tolerances, unless otherwise indicated: .xx ± .02; .xxx ± .005

DIMENSIONS AND WEIGHTS



.38(9.7) FOR SMA FEMALE (TYP)
 .50(12.7) FOR SMA MALE (TYP)



| MODELS D6052 and D6206 Control Connector (J4) | |
|---|----------------------------------|
| PIN NO. | FUNCTION |
| 1 | A13 Tuning Word (MSB) |
| 2 | A11 Tuning Word |
| 3 | A9 Tuning Word |
| 4 | A7 Tuning Word |
| 5 | A5 Tuning Word |
| 6 | A3 Tuning Word |
| 7 | A1 Tuning Word |
| 8 | V1 VCO Control (MSB) |
| 9 | L1 Latch 1 (Strobe) |
| 10 | L3 Latch 3 |
| 11 | OE Memory Output Enable |
| 12 | D1 Data Bus |
| 13 | D3 Data Bus |
| 14 | D5 Data Bus |
| 15 | D7 Data Bus |
| 16 | W2 Write 2 |
| 17 | OET2 Output Enable Transceiver 2 |
| 18 | G Ground |
| 19 | WE Write Enable |
| 20 | A12 Tuning Word |
| 21 | A10 Tuning Word |
| 22 | A8 Tuning Word |
| 23 | A6 Tuning Word |
| 24 | A4 Tuning Word |
| 25 | A2 Tuning Word |
| 26 | A0 Tuning Word (LSB) |
| 27 | V0 VCO Control (LSB) |
| 28 | L2 Latch 2 |
| 29 | G Ground |
| 30 | D0 Data Bus |
| 31 | D2 Data Bus |
| 32 | D4 Data Bus |
| 33 | D6 Data Bus |
| 34 | W1 Write 1 |
| 35 | OET1 Output Enable Transceiver 1 |
| 36 | OET3 Output Enable Transceiver 3 |
| 37 | G Ground |

| MODELS D6052 and D6206 Power Connector (J3) | | | |
|---|---------------|---------|---------------|
| PIN NO. | FUNCTION | PIN NO. | FUNCTION |
| 1 | +5V | 6 | +5V (return) |
| 2 | -15V | 7 | +15V (return) |
| 3 | +15V | 8 | +28V (return) |
| 4 | +28V (return) | 9 | +28V |
| 5 | +28V | | ----- |

NOTES: For Normal Operation of the DTO

- PIN nos. 9,10 and 28 should be connected together.
- PIN no. 11 should be grounded.
- PIN nos. 12, 13, 14, 15, 16, 17, 19, 30, 31, 32, 33, 34, 35 and 36 are for *FACTORY PROGRAMMING ONLY* and should not be used.

Model D6052 & D6206 Weight: 2.18lbs (990 grams) approx.

