Flying to New Heights for Military/Aerospace
### Military / Aerospace

**Vishay Intertechnology** is one of the largest manufacturers of passive components and semiconductors for high-reliability military and aerospace applications. Qualification standards include MIL, ESCC, EN, and CECC.

#### ICs

**DG409xx and DG408xx**

*Analog Multiplexers*

- High-reliability multiplexers
- **Features**
  - Low $R_{D(SON)}$: 100 Ω
  - Low charge injection: $Q = 20$ pC
  - Fast transition time: $t_{TRANS} = 160$ ns
  - Low power: 10 µA
  - RoHS-compliant
- **Applications**
  - Data acquisition systems
  - Battery-powered systems
  - Instrumentation

#### RESISTORS

**BCR Back-Contact Thin Film Resistors**

- Single-value chip resistors
- **Features**
  - Wire bondable (only one wire bond required)
  - Small size: 0.020 inches square
  - Resistance range: 10 Ω to 1 MΩ
  - Tantalum nitride material (self-passivating)
  - Oxidized silicon substrate for good power dissipation
- **Applications**
  - Hybrids using epoxy die / wire bonding
  - High-precision and custom analog applications
  - Impedance tuning networks

#### MOSFETs

**2N6660 JAN/JANTX/JANTXV Military MOSFETs**

*JAN-qualified n-channel 60 V MOSFETs in TO-205AD package*

- **Features**
  - Typical on-resistance: 1.3 Ω
  - Low threshold: 1.7 V
  - Low input capacitance: 35 pF
  - Fast switching speed: 8 ns
  - Low input (100 nA) and output (1 µA) leakage
- **Applications**
  - Direct logic-level interface: TTL and CMOS
  - Drivers: relays, solenoids, lamps, etc.
  - Battery-operated systems

#### RESISTORS

**ROT/SF Series Precision Rotational Transducers**

*Conductive plastic, servo mounting, eight different sizes available*

- **Features**
  - Very tight linearity down to ± 0.015 % (models 200SF and 300SF)
  - Lifespan up to more than 50 million cycles
  - Custom features include redundancy up to 6 electrical signals
  - Mechanical features include spring return, locking position, gears on shaft
  - Integrated switches and output by flying leads are available
- **Applications**
  - Side stick transmitter damper units
  - Throttle command units
  - Brake pedal transmitter units

#### INDUCTORS

**MS21426 and MS7508x Military Axial-Leaded Inductors**

*MIL-PRF-15305 qualified*

- **Features**
  - Wide inductance range in small package (0.1 µH to 100 µH)
  - Precision performance, excellent reliability
  - Epoxy molded construction provides superior moisture protection
  - Finest electromagnetic shield available
- **Applications**
  - Navigation systems
  - Communication systems
  - Guidance systems

#### RESISTORS

**ERC Series Non-Hermetic and HDN Series Hermetically Sealed Axial Metal Film Resistors**

-Qualified to MIL-PRF-55182: C, E, H, J, and K
- **Features**
  - ERC: “S” level reliability. Epoxy coating provides superior moisture protection (insulation resistance is 109 Ω after moisture test)
  - HDN: “S” level reliability; hermetic glass package impervious to harsh environments
  - Standard leads: RNC – solderable/weldable (ERC), RNR – solderable (HDN)
  - Values 10 Ω to 4.99 MΩ; Tolerances to 0.1 %
  - ERC and HDN: Group A testing available if required
- **Applications**
  - Aerial: aircraft, satellites, and missiles
  - Ground: weapons and vehicles
  - Nautical: ships and sea-based systems
### RESISTORS

**Thin Film E/H Series and Thick Film RCWPM Series Chip Resistors and Jumpers**

Qualified to M/D55342 and M32159 (jumpers)

**Features**
- Established reliability: verified failure rates M, P, R, S, T (depending on series)
- Operating temperature: + 150 °C
- Tolerances down to 0.1 % (E/H) and 1 % (RCWPM)
- TCR: ± 25 ppm/°C (E/H); ± 100 ppm/°C (RCWPM)
- Resistance range up to 6.19 MΩ (E/H) and 22 MΩ (RCWPM)

**Applications**
- Aerial: aircraft, satellites, and missiles
- Ground: weapons and vehicles
- Nautical: ships and sea-based systems

**RESISTORS**

**P, RV, PFRR, PRA Resistors and Arrays**

High-precision SMD thin film wraparound chip resistors and arrays

**Features**
- TCR down to 5 ppm/°C (- 55 °C; + 155 °C) absolute and 2 ppm/°C tracking
- Tolerance down to ± 0.01 % absolute; tolerance ratio down to 0.01 % (PRA)
- Load life stability: 0.05 % (at Pn, 70 °C, 1000 h) and 0.02 % on ratio (PRA)
- ESCC 4001/023 (PFRR), CECC 40401-010 (RV), R Failure Rate (0.01% /1000 h): PFRR
- High-temperature options available (230 °C)

**Applications**
- Aircraft flight command computers
- Black boxes
- Operational amplifier gain adjustment

### CAPACITORS

**CDR Series Established-Reliability MLCCs**

Qualified to MIL-PRF-55681

**Features**
- Capacitance range: 1 pF to 0.47 µF
- Case sizes: 0805 to 1825 (DSCC for 0402 and 0603)
- BP and BX dielectrics
- Termination codes U, Z, W, Y, and M
- S-level qualified

**Applications**
- Avionics
- Satellites, missiles, and weapons systems
- Sonar, positioning systems, and instrumentation

### RESISTORS

**MS1 …. EN803 E8**

Lead-bearing mini-MELF resistors with established reliability

**Features**
- Approved to EN 140401-803, version E
- Established reliability, failure rate level E8
- Stable metal film on high quality ceramic
- SnPb termination plating, Pb contents > 5 %
- Meets Belcore, MIL, and ESCC plating requirements

**Applications**
- Avionics
- Command and control systems
- Instrumentation

### DISPLAYS

**Information Display Products / LCD Displays and Modules**

Liquid crystal displays

**Features**
- Character type modules: 8 to 40 characters in 1-, 2-, 4-line configurations
- Graphic type modules: wide variety of pixel matrices available
- Passive color type modules: 1/4 VGA format
- Color TFT displays: sizes from 3 in. to 8 in. diagonal
- Organic light emitting diode (OLED) modules in character and graphic sizes

**Applications**
- Instrumentation and controls
- Avionics
- Military systems

View datasheets for these products at www.vishay.com/ref/ma