



T-31-25

components, but particularly in the manufacture of power amplifiers. The company has developed proprietary techniques for mapping thermal profiles of FETs mounted on circuits. This technique provides information on the quality of the die attach on the completed circuit, prior to installation in the case.

Junction temperature measurement techniques also available include:

- Infra-Red Microscope
- Electro-Fluorescent Fiber-Optic Probe
- Liquid Crystal

Reliability and reproducibility are increased through the amplifier alignment technique of removing or changing bonds, rather than adding tuning elements. The circuit construction consists of an all-gold metal system on alumina substrates.

To achieve the highest level of reliability under operational conditions, all military products are screened to the Table I requirements. This 100% screening is based on MIL-STD-883 testing requirements.

Test	Method	Test Condition
Pre-Cap Visual Inspection	2017	Modified, QA Doc 950501
Vacuum Bake/ Weld Seal	1008	B, 16 hrs @ +125°C inert atmosphere
Temperature Cycling	1010	-55°C to +95°C 30 min. cycles, 5 times
Pre Burn-In Electrical Test		Celeritek GTP
Burn-In	1015	B, 48 hrs @ +85°C
Post Burn-In Electrical Test		Celeritek GTP
Seal Test	1014	A and C
Final Electrical Test		Celeritek GTP
Final QA External Visual	2009	Celeritek 950502

For those customers and programs requiring full compliance to MIL-STD-883 screening, Celeritek offers additional screening to Table II requirements as an option.

In addition to these standard screening programs, custom screening procedures for specific customer requirements are available.

Celeritek products are designed and manufactured to meet the testing requirements of MIL-E-5400 (airborne), MIL-E-16400 (shipboard) and the EMI requirements of MIL-STD-461.

Test	Method	Test Condition
Stabilization Bake	1008	B, 24 hrs @ +150°C
Temperature Cycling	1010	B, -65°C to +150°C 10 cycles
Acceleration	2001	B, 5K gs, Y1 axis
Burn-In	1015	B, 160 hrs @ +125°C
Fine Leak	1014	A1 1 x 10 ⁻⁷ atm cc/sec He

PRODUCT SPECIFICATIONS

Specification sheets describing standard products and special capabilities are available.

- GaAs FETs and MMICs
- 0.5 to 8.0 GHz Low-Noise Amplifiers
0.5-4 GHz • 2-4 GHz • 2-6 GHz • 2-8 GHz • 4-8 GHz
- 2.0 to 8.0 GHz Power Amplifiers
2-4 GHz • 2-6 GHz • 2-8 GHz • 4-8 GHz
- 2.0 to 18 GHz Low-Noise Amplifiers
2-18 GHz • 6-13 GHz • 6-18 GHz • 8-18 GHz
- 6.0 to 18.0 GHz Power Amplifiers
6-13 GHz • 6-18 GHz • 8-18 GHz
- 18 to 40 GHz Amplifiers
18-26 GHz • 18-40 GHz • 26-40 GHz
- Connectorless (Drop-In) Amplifiers
0.5-4 GHz • 2-6 GHz • 2-8 GHz • 4-16 GHz • 6-18 GHz
- Microwave Front Ends for
Commercial Communications
- Microwave Integrated Assemblies for
Military Applications

CUSTOMER SERVICE

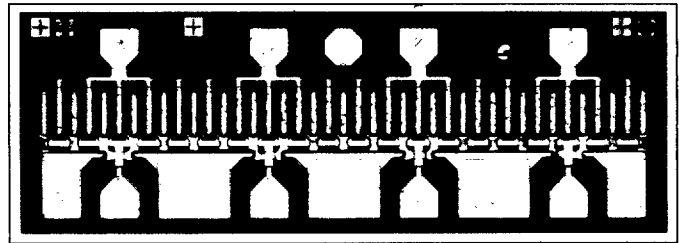
Through its *quality, reliability, service and value* (QRSV) philosophy, Celeritek is committed to providing the highest level of professional and technical service to our customers. This begins with timely quoting and ends with on-time delivery of reliable hardware which meets or exceeds performance specifications. Celeritek personnel are available to support program review meetings, provide ATP's, QTP's, and support other program management functions required by our customers.

The company believes it offers the technology, fast response time, quality, facilities, people and service to meet the requirements of the military and commercial electronics industry. The marketing and engineering staffs look forward to working with you.

GaAs FETs and MMICs

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- ❑ 0.3-micron GaAs MESFETs for Discrete Devices and MMICs
- ❑ High Gain: Up to 40 GHz
- ❑ Up to +28 dBm P₁ dB at 18 GHz
- ❑ Military High-Rel Screening
- ❑ 2-6 GHz MMIC Amplifiers with Low DC Current or Medium Power
- ❑ DC to 18 GHz MMIC SPDT with High Isolation/Low Insertion Loss
- ❑ 2-20 GHz Distributed Amplifier MMICs



CELERITEK GaAs FETs and MMICs

Celeritek GaAs FET and MMIC chips are fabricated from wafers that have ion-implanted or epitaxial active layers. Epitaxy can be from MBE, VPE or MOCVD processes. The gate structure is sub 1/2 micron long and refractory metals are

used. The resistors for the MMIC are active GaAs layers. For crossovers, air bridges are utilized. For good grounding, via hole technology is applied. Silicon Nitride is utilized as the dielectric of the MIM capacitor and as the surface protection and passivation.

Low-Noise and General Purpose GaAs FETs Typical Specifications at 25° C

Model	Frequency Range (GHz)	Gate Width (µm)	Test Frequency (GHz)	Noise Figure (dB)	Associated Gain (dB)	Power Output @ 1dB Compression (+dBm)	Material Type	Package
CF001-01	1-26	300	12	1.6	8.5	19	I/I	Chip/A/B
CF001-02	1-26	300	12	1.2	9.5	17	EPI	Chip/A/B
CF001-03	1-40	300	12	0.8	10.5	17	HEMT	Chip/A/B
CF003-01	1-26	600	12	1.8	8.0	22	I/I	Chip
CF003-02	1-26	600	12	1.4	9.0	20	EPI	Chip/A/B
CF003-03	1-26	600	12	1.0	10.0	20	HEMT	Chip/A/B
CF004-01	1-40	150	18	2.2	7.5	15	I/I	Chip
CF004-02	1-40	150	18	1.8	9.0	13	EPI	Chip
CF004-03	1-40	150	18	1.5	10.0	13	HEMT	Chip

Medium-Power GaAs FETs Typical Specifications at 25° C

Model	Frequency Range (GHz)	Gate Width (µm)	Test Frequency (GHz)	Associated Gain (dB)	Power Output @ 1dB Compression (+dBm)	Material Type	Package
CF003-01	1-20	600	12	9.0	22.0	I/I	Chip/C
CF003-02	1-20	600	12	10.0	20.0	EPI	Chip/A/B
CF003-03	1-20	600	12	11.0	20.0	HEMT	Chip/A/B
CF005-01	1-18	1200	12	8.5	25.0	I/I	Chip/C
CF005-11	1-18	1200	12	7.0	27.0	I/I	Chip/C
CF005-21	1-18	1200	12	6.5	27.0	I/I	Chip/C
CF010-01	1-18	2400	12	8.0	28.0	I/I	Chip/C

Dual-Gate GaAs FETs Typical Specifications at 25° C

Model	Frequency Range (GHz)	Gate Width (µm)	Test Frequency (GHz)	Noise Figure (dB)	Associated Gain (dB)	Power Output @ 1dB Compression (+dBm)	Material Type	Package
CF007-01	1-26	300	12	2.2	12.0	16.0	I/I	Chip

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