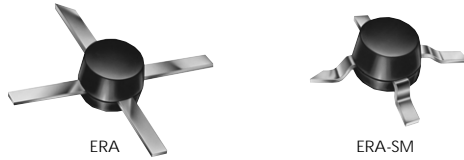


MONOLITHIC AMPLIFIERS

50Ω

BROADBAND DC to 8 GHz



+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The + suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

low power, up to +13.5 dBm output

all specifications at 25°C

| MODEL NO. | FREQ. GHz f _l - f _u | GAIN, dB Typical | | | | | | | MAXIMUM POWER (dBm) at 2 GHz* | | DYNAMIC RANGE at 2 GHz* | | VSWR (:1) Typ. | | | | ABSOLUTE MAX. RATING ³ | | DC OPERATING POWER ⁴ at Pin 3 | | | THERMAL RESISTANCE | CASE STYLE | C O N N E C T I O N | PRICE \$ | | | |
|-------------|--|---------------------|------|------|------|------|------|-----|-------------------------------|--------------|-------------------------|----------------|----------------|----------|-------------------------|----------|-----------------------------------|--------|--|-------------------------|------|---------------------------|------------|---------------------|----------|-------|-----|------|
| | | over frequency, GHz | | | | | | | Output (1 dB Comp) Typ. | Input Note 3 | NF (dB) Typ. | IP3 (dBm) Typ. | In | | Out | | I (mA) | P (mW) | Current (mA) | Device Volt. | | θ _{jc} Typ. °C/W | Note B | | | | | |
| | | 0.1 | 1 | 2 | 3 | 4 | 6 | 8 | | | | | Min. @ 2 GHz | DC-3 GHz | 3-f _u ** GHz | DC-3 GHz | | | | 3-f _u ** GHz | Typ. | | | | | Min | Max | |
| ERA-1(+) | DC-8 | 12.3 | 12.1 | 11.8 | 10.9 | 9.7 | 7.9 | 8.2 | 9 | 12.0 | 10.0 | 15 | 4.3 | 26 | 1.5 | 1.8 | 1.5 | 1.9 | 75 | 330 | 40 | 3.4 | 3.0 | 4.1 | 178 | VV105 | cb | 1.37 |
| ERA-2(+) | DC-6 | 16.2 | 15.8 | 15.2 | 14.4 | 13.1 | 11.2 | — | 13 | 13.0 | 11.0 | 15 | 4.0 | 26 | 1.3 | 1.4 | 1.2 | 1.6 | 75 | 330 | 40 | 3.4 | 3.0 | 4.1 | 155 | VV105 | cb | 1.52 |
| ERA-3(+) | DC-3 | 22.1 | 21.0 | 18.7 | 16.8 | — | — | — | 16 | 12.5 | 9 | 13 | 3.5 | 25 | 1.5 | — | 1.4 | — | 75 | 330 | 35 | 3.2 | 3.0 | 4.1 | 154 | VV105 | cb | 1.67 |
| ERA-1SM(+) | DC-8 | 12.3 | 12.1 | 11.8 | 10.9 | 9.7 | 7.9 | 8.2 | 9 | 12.0 | 10.0 | 15 | 4.3 | 26 | 1.5 | 1.8 | 1.5 | 1.9 | 75 | 330 | 40 | 3.4 | 3.0 | 4.1 | 183 | WW107 | cb | 1.42 |
| ERA-21SM(+) | DC-8 | 14.2 | 13.9 | 13.2 | 12.2 | 10.8 | 8.7 | 8.9 | 11.2 | 12.6 | 10.6 | 15 | 4.7 | 26 | 1.1 | 1.4 | 1.3 | 1.9 | 75 | 330 | 40 | 3.5 | 3.0 | 4.1 | 194 | WW107 | cb | 1.57 |
| ERA-2SM(+) | DC-6 | 16.2 | 15.8 | 15.2 | 14.4 | 13.1 | 11.2 | — | 13 | 13.0 | 11.0 | 15 | 4.0 | 26 | 1.3 | 1.4 | 1.2 | 1.6 | 75 | 330 | 40 | 3.4 | 3.0 | 4.1 | 160 | WW107 | cb | 1.57 |
| ERA-33SM(+) | DC-3 | 19.3 | 18.7 | 17.4 | 15.9 | — | — | — | 15 | 13.5 | 11.5 | 13 | 3.9 | 28.5 | 1.6 | — | 1.25 | — | 75 | 330 | 40 | 4.3 | 3.8 | 4.8 | 140 | WW107 | cb | 1.72 |
| ERA-3SM(+) | DC-3 | 22.1 | 21.0 | 18.7 | 16.8 | — | — | — | 16 | 12.5 | 9 | 13 | 3.5 | 25 | 1.5 | — | 1.4 | — | 75 | 330 | 35 | 3.2 | 3.0 | 4.1 | 186 | WW107 | cb | 1.72 |

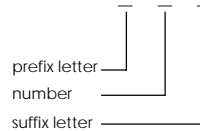
features

- for RoHS compliant version, add + to model prefix
- low thermal resistance
- miniature microwave amplifier
- available in drop-in & surface mount (sm) versions
- frequency range, DC to 8 GHz, usable to 10 GHz
- up to 18.5 dBm typ. (16.5 dBm min) output power

model identification

| Model | marking (see note below) | demo board |
|-------------------|--------------------------|------------|
| ERA-1, ERA-1SM(+) | 1 | ERA-01TB |
| ERA-2, ERA-2SM(+) | 2 | ERA-02TB |
| ERA-21SM(+) | 21 | ERA-21TB |
| ERA-3, ERA-3SM(+) | 3 | ERA-03TB |
| ERA-33SM(+) | 33 | ERA-33TB |
| ERA-4, ERA-4SM(+) | 4 | ERA-04TB |
| ERA-5, ERA-5SM(+) | E5 | ERA-05TB |
| ERA-50SM(+) | 50 | ERA-50TB |
| ERA-51SM(+) | 51 | ERA-51TB |
| ERA-6, ERA-6SM(+) | 6 | ERA-06TB |

Note: Prefix letter (optional) designates assembly location. Suffix letters (optional) are for wafer identification.

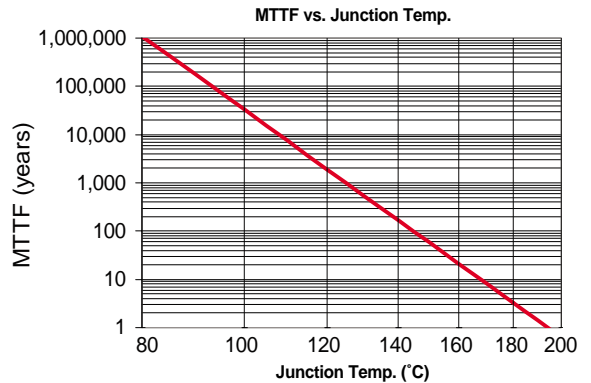


absolute maximum ratings

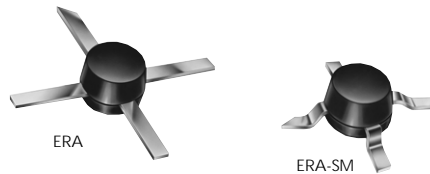
operating temperature: -45°C to 85°C
storage temperature: -65° to 150°C

NOTES:

- * at 1 GHz for ERA-4,5,6, 4SM, 5SM, 50SM, 51SM, 6SM
- ** f_u is the upper frequency limit for each model.
- † Gain and VSWR are specified at 1.5 GHz.
- ‡ Low frequency (f_l) cutoff determined by external coupling capacitors.
- A. Environmental specifications and re-flow soldering information available in General Information Section.
- B. Case Material: Plastic
- C. Prices and Specifications subject to change without notice.
- D. For Quality Control Procedures see Table of Contents, Section 0, "Mini-Circuits Guarantees Quality" article. For Environmental Specifications see Amplifier Selection Guide.
- 1. Model number designated by alphanumeric code marking.
- 2. ERA-SM models available on tape and reel.
- 3. Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.
- 4. Reliability predictions and normal operating conditions are applicable at current specified.
- 5. Protected by US Patent 6,943,629



Drop-In & Surface Mount

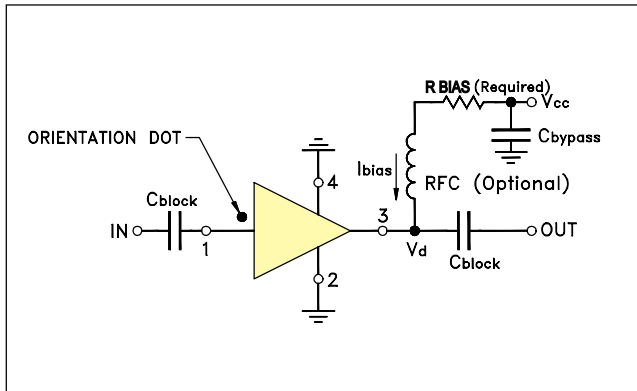


medium power, up to +18.4 dBm output

all specifications at 25°C

| MODEL NO. | FREQ. GHz $f_i - f_o$ | GAIN, dB Typical | | | | | | | MAXIMUM POWER (dBm) at 2 GHz* | | DYNAMIC RANGE at 2 GHz* | | VSWR (:1) Typ. | | | | ABSOLUTE MAX. RATING ³ | | DC OPERATING POWER ⁴ at Pin 3 | | | THERMAL RESISTANCE | CASE STYLE | CONNECTION | PRICE \$ | | | |
|---------------|--------------------------|---------------------|------|------|------|------|---|---|-------------------------------|--------|-------------------------|----------------|----------------|---|------------------------------|--------|-----------------------------------|--------------|--|---------------|--------|--------------------|------------|------------|----------|-------|----|------|
| | | over frequency, GHz | | | | | | | Output (1 dB Comp.) | Input | NF (dB) Typ. | IP3 (dBm) Typ. | In DC-3 GHz | 3-f _u ** 3-f _u ** | Out DC-3 3-f _u ** | I (mA) | P (mW) | Current (mA) | Device Volt. Min Max | θjc Typ. °C/W | Note B | | Qty. (30) | | | | | |
| | | 0.1 | 1 | 2 | 3 | 4 | 6 | 8 | Min. @ 2 GHz | Note 3 | | | | | | | | | | | | | | | | | | |
| ERA-6(+) | DC-4 | 12.6 | 12.5 | 12.2 | 11.7 | 11.3 | — | — | 10.5 | 17.9 | 16 | 20 | 4.5 | 36 | 1.3 | 1.2 | 1.6 | 1.8 | 120 | 650 | 70 | 5.0 | 4.6 | 5.6 | 170 | VV105 | cb | 3.85 |
| ERA-4(+) | DC-4 | 14.3 | 14.0 | 13.4 | 12.7 | 11.8 | — | — | 11 | 17.3 | 15 | 20 | 4.2 | 34 | 1.2 | 1.2 | 1.3 | 1.8 | 120 | 650 | 65 | 4.5 | 4.2 | 5.5 | 163 | VV105 | cb | 3.85 |
| ERA-5(+) | DC-4 | 20.2 | 19.5 | 18.5 | 16.7 | 14.3 | — | — | 16 | 18.4 | 16.5 | 13 | 4.3 | 32.5 | 1.3 | 1.3 | 1.2 | 1.3 | 120 | 650 | 65 | 4.9 | 4.2 | 5.5 | 133 | VV105 | cb | 3.85 |
| ERA-6SM(+) | DC-4 | 12.6 | 12.5 | 12.2 | 11.7 | 11.3 | — | — | 10.5 | 17.9 | 16 | 20 | 4.5 | 36 | 1.3 | 1.2 | 1.6 | 1.8 | 120 | 650 | 70 | 5.0 | 4.6 | 5.6 | 143 | WW107 | cb | 3.90 |
| ERA-4SM(+) | DC-4 | 14.3 | 14.0 | 13.4 | 12.7 | 11.8 | — | — | 11 | 17.3 | 15 | 20 | 4.2 | 34 | 1.2 | 1.2 | 1.3 | 1.8 | 120 | 650 | 65 | 4.5 | 4.2 | 5.5 | 196 | WW107 | cb | 3.90 |
| ERA-51SM(+) | DC-4 | 18.0 | 17.4 | 16.1 | 14.8 | 12.5 | — | — | 14 | 18.1 | 16.5 | 13 | 4.1 | 33 | 1.1 | 1.2 | 1.2 | 1.9 | 120 | 650 | 65 | 4.5 | 4.2 | 5.5 | 154 | WW107 | cb | 3.90 |
| ERA-5SM(+) | DC-4 | 20.2 | 19.5 | 17.6 | 15.6 | 14.0 | — | — | 16 | 18.4 | 16.5 | 13 | 4.3 | 32.5 | 1.3 | 1.3 | 1.2 | 1.3 | 120 | 650 | 65 | 4.9 | 4.2 | 5.5 | 133 | WW107 | cb | 3.90 |
| † ERA-50SM(+) | DC-1.5 | 20.7 | 19.4 | 18.3 | — | — | — | — | 16 | 17.2 | 16.0 | 13 | 3.5 | 32.5 | 1.3 | — | 1.2 | — | 120 | 650 | 60 | 4.4 | 4.0 | 4.9 | 177 | WW107 | cb | 2.95 |

typical biasing configuration



| Vcc | R BIAS | | | | | | | | |
|-----|---|-------------|----------|-------------|----------|-------------|-------------|-----------------|-------------|
| | "1%" Resistor Values (ohms) for Optimum Biasing of ERA models | | | | | | | | |
| | ERA-1, -1SM | ERA-2, -2SM | ERA-21SM | ERA-3, -3SM | ERA-33SM | ERA-4, -4SM | ERA-5, -5SM | ERA-50SM, -51SM | ERA-6, -6SM |
| 7 | 90.9 | 88.7 | 88.7 | 107 | 69.8 | 38.3 | 33.2 | 40.2 | 30.1 |
| 8 | 113 | 113 | 113 | 133 | 93.1 | 52.3 | 48.7 | 53.6 | 43.2 |
| 9 | 137 | 137 | 137 | 162 | 115 | 66.5 | 63.4 | 68.1 | 56.2 |
| 10 | 162 | 162 | 162 | 191 | 140 | 80.6 | 78.7 | 82.5 | 69.8 |
| 11 | 187 | 187 | 187 | 221 | 165 | 95.3 | 95.3 | 97.6 | 84.5 |
| 12 | 215 | 215 | 210 | 249 | 191 | 110 | 110 | 113 | 97.6 |
| 13 | 237 | 237 | 237 | 280 | 215 | 127 | 124 | 127 | 113 |
| 14 | 261 | 261 | 261 | 309 | 243 | 143 | 140 | 143 | 127 |
| 15 | 287 | 287 | 287 | 340 | 267 | 158 | 158 | 158 | 140 |
| 16 | 309 | 316 | 316 | 365 | 287 | 174 | 174 | 174 | 154 |
| 17 | 332 | 340 | 340 | 392 | 316 | 187 | 187 | 191 | 169 |
| 18 | 357 | 365 | 365 | 422 | 340 | 205 | 205 | 205 | 182 |
| 19 | 383 | 392 | 392 | 453 | 365 | 221 | 221 | 221 | 196 |
| 20 | 412 | 412 | 412 | 475 | 392 | 237 | 232 | 237 | 210 |

designers kits available

| KIT NO. | Model Type | No. of Units in Kit | Description | Price \$ per kit |
|----------|------------|---------------------|--------------------------|------------------|
| K1-ERA | ERA | 30 | 10 of each 1,2,3 | 49.95 |
| K2-ERA | ERA | 20 | 10 of each 4,5 | 69.95 |
| K1-ERASM | ERA-SM | 30 | 10 of each 1SM, 2SM, 3SM | 49.95 |
| K3-ERASM | ERA-SM | 30 | 10 of each 4SM, 5SM, 6SM | 99.95 |

pin connections

| PORT | cb |
|----------|-----|
| RF IN | 1 |
| RF OUT | 3 |
| DC | 3 |
| CASE GND | 2,4 |
| NOT USED | — |

NSN GUIDE

| MCL NO. | NSN |
|---------|------------------|
| ERA-1SM | 5962-01-459-9075 |
| ERA-2SM | 5962-01-459-7410 |
| ERA-5SM | 5962-01-459-9314 |