

# ELM6472-10F

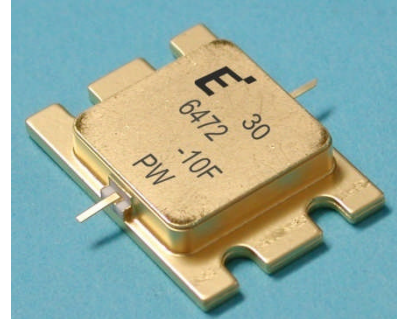
## C-Band Internally Matched FET

### FEATURES

- High Output Power: P1dB=40.5dBm(Typ.)
- High Gain: G1dB=9.5dB(Typ.)
- High PAE:  $\eta_{add}$ =36%(Typ.)
- Broad Band: 6.4~7.2GHz
- Impedance Matched Zin/Zout = 50 $\Omega$
- Hermetically Sealed Package

### DESCRIPTION

The ELM6472-10F is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50 $\Omega$  system.



### ABSOLUTE MAXIMUM RATINGS (Case Temperature Tc=25°C)

| Item                    | Symbol           | Rating      | Unit |
|-------------------------|------------------|-------------|------|
| Drain-Source Voltage    | V <sub>DS</sub>  | 15          | V    |
| Gate-Source Voltage     | V <sub>GS</sub>  | -5          | V    |
| Total Power Dissipation | P <sub>T</sub>   | 42.8        | W    |
| Storage Temperature     | T <sub>stg</sub> | -55 to +125 | °C   |
| Channel Temperature     | T <sub>ch</sub>  | 175         | °C   |

### RECOMMENDED OPERATING CONDITION (Case Temperature Tc=25°C)

| Item                 | Symbol          | Condition              | Limit       | Unit |
|----------------------|-----------------|------------------------|-------------|------|
| DC Input Voltage     | V <sub>DS</sub> |                        | $\leq 10$   | V    |
| Forward Gate Current | I <sub>GF</sub> | R <sub>G</sub> =50 ohm | $\leq 27.0$ | mA   |
| Reverse Gate Current | I <sub>GR</sub> | R <sub>G</sub> =50 ohm | $\geq -5.8$ | mA   |

### ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25°C)

| Item                                 | Symbol           | Condition                                                                                                            | Limit |      |      | Unit |
|--------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------|-------|------|------|------|
|                                      |                  |                                                                                                                      | Min.  | Typ. | Max. |      |
| Drain Current                        | I <sub>DSS</sub> | V <sub>DS</sub> =5V, V <sub>GS</sub> =0V                                                                             | -     | 4.0  | 5.6  | A    |
| Trans conductance                    | g <sub>m</sub>   | V <sub>DS</sub> =5V, I <sub>DS</sub> =2.4A                                                                           | -     | 4.0  | -    | S    |
| Pinch-off Voltage                    | V <sub>p</sub>   | V <sub>DS</sub> =5V, I <sub>DS</sub> =240mA                                                                          | -0.5  | -1.5 | -3.0 | V    |
| Gate-Source Breakdown Voltage        | V <sub>GSO</sub> | I <sub>GS</sub> =-240uA                                                                                              | -5.0  | -    | -    | V    |
| Output Power at 1dB G.C.P.           | P <sub>1dB</sub> | V <sub>DS</sub> =10V<br>f= 6.4 ~ 7.2 GHz<br>I <sub>DS</sub> DC=2.6A (typ.)<br>Z <sub>S</sub> =Z <sub>L</sub> =50 ohm | 39.5  | 40.5 | -    | dBm  |
| Power Gain at 1dB G.C.P.             | G <sub>1dB</sub> |                                                                                                                      | 8.5   | 9.5  | -    | dB   |
| Drain Current                        | I <sub>DSr</sub> |                                                                                                                      | -     | 2.6  | 3.0  | A    |
| Power-added Efficiency               | $\eta_{add}$     |                                                                                                                      | -     | 36   | -    | %    |
| Gain Flatness                        | $\Delta G$       |                                                                                                                      | -     | -    | 1.2  | dB   |
| 3rd Order Intermodulation Distortion | IM <sub>3</sub>  | f=7.2 GHz<br>$\Delta f$ =10MHz, 2-tone Test<br>P <sub>out</sub> =29dBm (S.C.L.)                                      | -44   | -46  | -    | dBc  |
| Thermal Resistance                   | R <sub>th</sub>  | Channel to Case                                                                                                      | -     | 3.0  | 3.5  | °C/W |
| Channel Temperature Rise             | $\Delta T_{ch}$  | 10V x I <sub>DSr</sub> X R <sub>th</sub>                                                                             | -     | -    | 100  | °C   |

CASE STYLE : IK

S.C.L. : Single Carrier Level

G.C.P.: Gain Compression Point

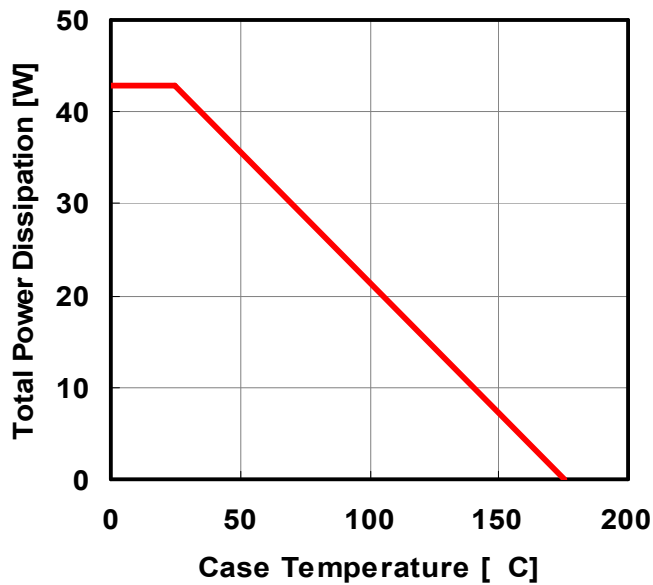
|     |            |              |
|-----|------------|--------------|
| ESD | Class IIIA | 4000 ~ 8000V |
|-----|------------|--------------|

Note : Based on JEDEC JESD22-A114 (C=100pF, R=1500 $\Omega$ )

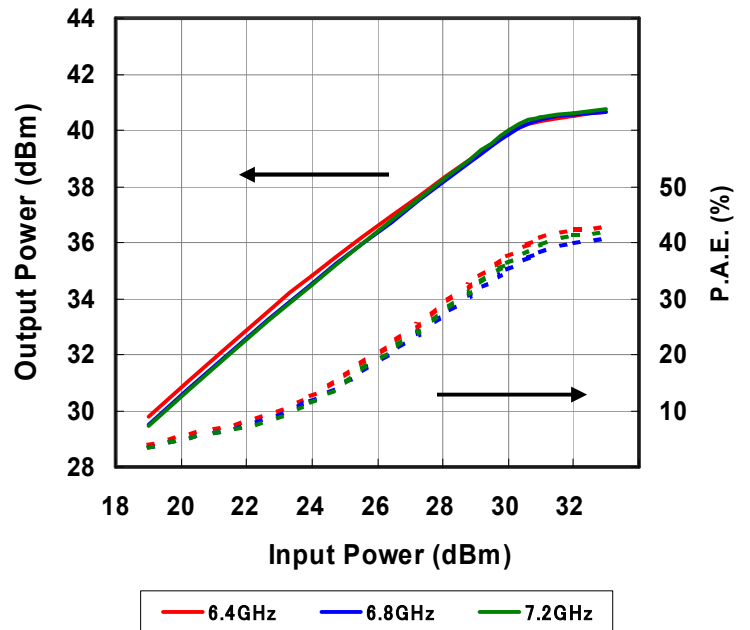
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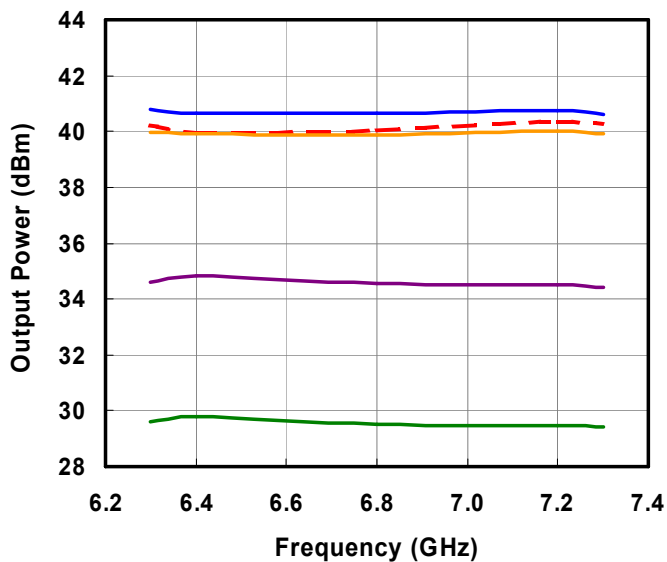
Power Derating Curve



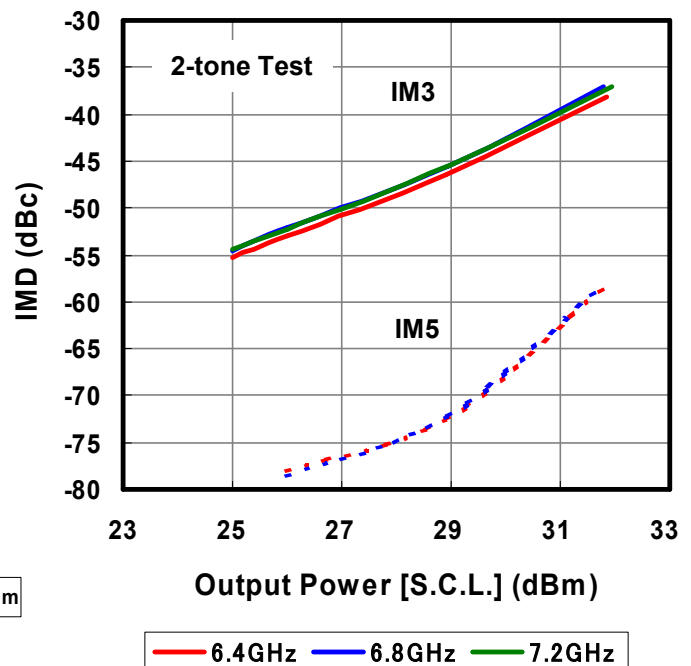
Input Power vs. Output Power & P.A.E  
VDS=10V, IDS(DC)=2.6A



frequency vs. Output Power  
VDS=10V, IDS(DC)=2.6A



Output Power vs. IMD  
VDS=10V, IDS(DC)=2.6A, Δf=10MHz

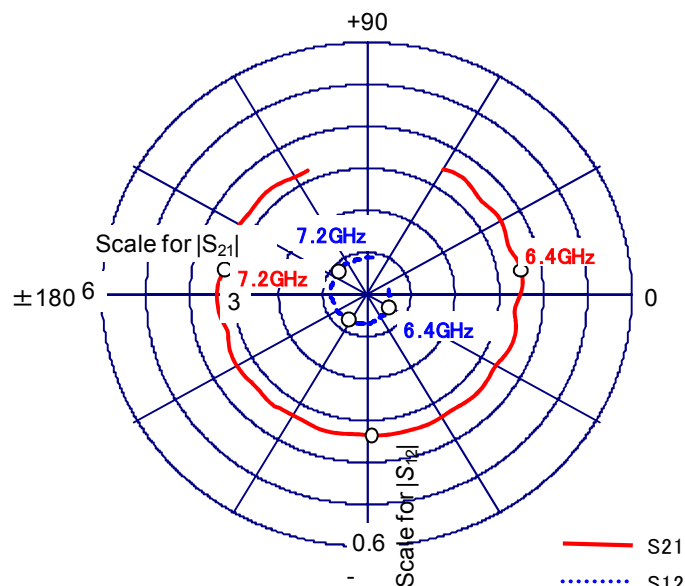
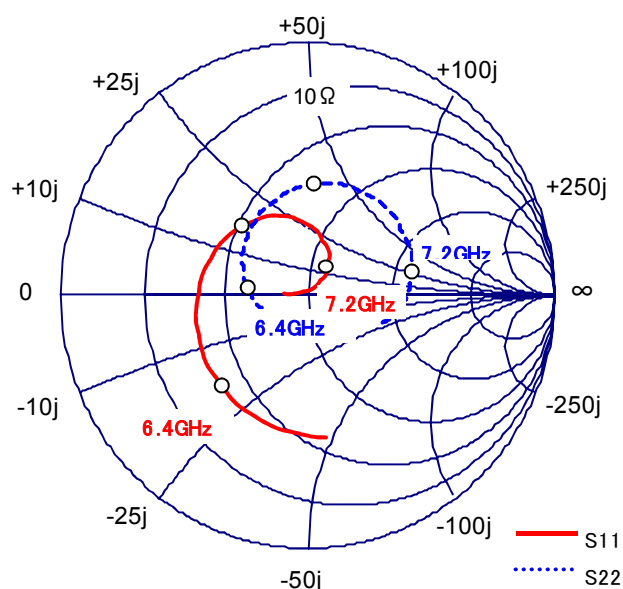


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## C-Band Internally Matched FET

### S-PARAMETER



VDS=10.0V , IDS=2.6A

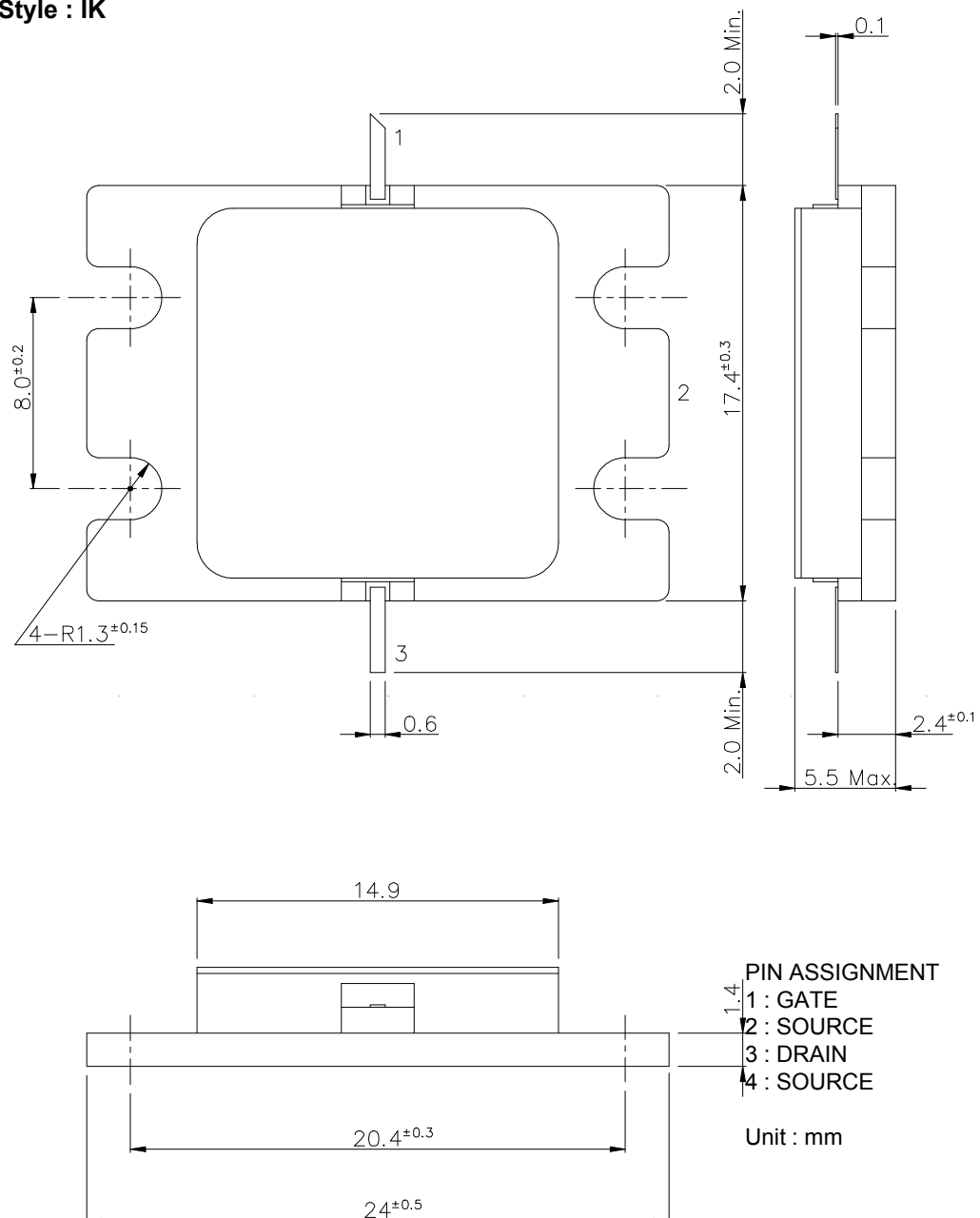
| Freq<br>[GHz] | S11   |        | S21   |        | S12   |        | S22   |        |
|---------------|-------|--------|-------|--------|-------|--------|-------|--------|
|               | MAG   | ANG    | MAG   | ANG    | MAG   | ANG    | MAG   | ANG    |
| 6.2           | 0.566 | -82.6  | 3.424 | 60.0   | 0.048 | 16.0   | 0.128 | -103.6 |
| 6.3           | 0.531 | -108.2 | 3.470 | 34.0   | 0.054 | -7.2   | 0.170 | -156.7 |
| 6.4           | 0.494 | -135.1 | 3.533 | 7.7    | 0.057 | -32.8  | 0.245 | 170.3  |
| 6.5           | 0.466 | -159.6 | 3.476 | -16.3  | 0.061 | -57.1  | 0.313 | 145.0  |
| 6.6           | 0.437 | 176.9  | 3.420 | -40.6  | 0.066 | -78.3  | 0.366 | 123.9  |
| 6.7           | 0.414 | 154.1  | 3.395 | -64.8  | 0.071 | -100.6 | 0.414 | 104.3  |
| 6.8           | 0.378 | 131.7  | 3.364 | -89.6  | 0.074 | -126.6 | 0.444 | 85.1   |
| 6.9           | 0.339 | 110.0  | 3.364 | -114.4 | 0.079 | -148.3 | 0.469 | 66.7   |
| 7.0           | 0.279 | 88.7   | 3.369 | -140.1 | 0.081 | -173.4 | 0.475 | 48.0   |
| 7.1           | 0.215 | 70.0   | 3.304 | -165.4 | 0.084 | 160.8  | 0.464 | 30.5   |
| 7.2           | 0.135 | 54.3   | 3.292 | 168.3  | 0.086 | 137.2  | 0.432 | 12.0   |
| 7.3           | 0.036 | 55.9   | 3.307 | 141.9  | 0.086 | 111.8  | 0.381 | -6.0   |
| 7.4           | 0.096 | 173.9  | 3.241 | 114.8  | 0.090 | 82.9   | 0.312 | -22.1  |

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■ Package Out Line  
Case Style : IK



# **ELM6472-10F**

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**For further information please contact :**

**Eudyna Devices USA Inc.**

2355 Zanker Rd.  
San Jose, CA 95131-1138, U.S.A.  
Phone: (408) 232-9500  
FAX: (408) 428-9111  
www.fcsi.fujitsu.com

**Eudyna Devices Europe Ltd.**

150 Edinburgh Avenue,  
Slough, Berkshire, SL1 4SS,  
United Kingdom  
Phone: +44 (0) 1753-849950  
FAX: +44 (0) 1753-577128

**Eudyna Devices Asia Pte. Ltd. Hong Kong Branch**

Rm.1906B, 19/F, Tower 6, China Hong Kong City,  
33 Canton Road,  
Tsim Sha Tsui, Kowloon,  
Hong Kong  
Tel: (852) 2377-0227  
Fax: (852) 2377-3921

**Eudyna Devices International s.r.l**

Via Toglio 8/2-20158 Milano Italy  
TEL:+39-02-37052921  
Fax :+39-02-37052920

**Eudyna Devices Inc.**

**Yokohama (HQ)**

1,Kanai-cho,Sakae-ku,Yokohama,  
Kanagawa, 244-0845,Japan  
Tel +81-45-853-8156  
Fax +81-45-853-8170

**Eudyna Devices Inc.**

**Yamanashi Plant**

1000 Kamisukiawara, Showa-cho, Nakakoma-gun,  
Yamanashi, 409-3883, Japan  
(Kokubo Industrial Park)  
Tel +81-55-275-4411  
Fax +81-55-275-9461

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Eudyna Devices Compound Semiconductor Products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment.

For safety, observe the following procedures:

- Do not put these products into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

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