



# CFK2162-P1

800 to 900 MHz +34 dBm Power GaAs FET





# **Product Specifications July 1997**(1 of 4)

#### **Features**

- ☐ High Gain
- **□** +34 dBm Power Output
- ☐ Proprietary Power FET Process
- □ >45% Linear Power Added Efficiency
- □ +29 dBm with 30 dBc Third Order Products
- ☐ Surface Mount SO-8 Power Package

#### **Applications**

- ☐ ISM Band Base Stations and Terminals
- □ Cellular Base Stations and Terminals
- **☐** Wireless Local Loop

#### **Description**

The CFK2162-P1 is a high-gain FET intended for driver amplifier applications in high-power systems, and output stage usage in medium power applications at power levels up to +34 dBm. The device is easily matched and provides excellent

**Specifications** (TA = 25°C) The following specifications are guaranteed at room temperature in Celeritek test fixture at 850 MHz.

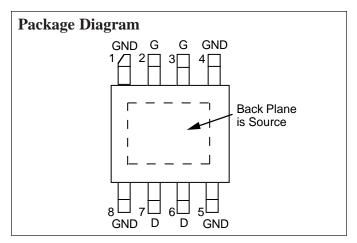
Parameters	Conditions	Min	Тур	Max	Units
$\overline{\mathbf{V_d}} = 8\mathbf{V}, \mathbf{I_d} =$	800 mA (Quiescent)			•	
P <sub>-1dB</sub>		33.0	34.0	_	dBm
SSG		19.0	20.0	_	dB
3rd Order Products (1)		26	30	_	dBc
Efficiency	@ P1dB	_	43		%
$\overline{V_d} = 5V, I_d =$	350 mA (Quiescent)				
P <sub>-1dB</sub>		_	30.0	_	dBm
SSG		_	18.0	_	dB
$V_d = 5V, I_d =$	= 1200 mA (Quiescent)	•		,	
P <sub>-1dB</sub>		_	33.0	—	dBm
SSG			19.0	_	dB

Parameters	Conditions	Min	Тур	Max	Units
$g_{\mathbf{m}}$	Vds = 2.0V, Vgs = 0V	_	1700	_	mS
$\overline{I_{dss}}$	Vds = 2.0V, Vgs = 0V	_	2.8	_	A
$\overline{V_{\mathbf{p}}}$	Vds = 3.0V, $Ids = 65  mA$	_	-1.8		Volts
$BV_{GD}^{(3)}$	Igd = 6.5  mA	18	20	_	Volts
$\Theta_{JL}$ (2)	@150°C TCH	_	10	_	°C/W

#### Notes:

- 1. Sum to two tones with 1 MHz spacing = 29 dBm.
- 2. See thermal considerations information on page 4.
- 3. Max (+V<sub>d</sub>) and (-V<sub>g</sub>) under linear operation. Max potential difference across the device in RF compression (2V<sub>d</sub> + |-V<sub>g</sub>|) not to exceed the minimum breakdown voltage (V<sub>br</sub>) of +18V.

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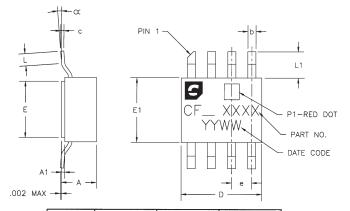


linearity at 2 Watts. Manufactured in Celeritek's proprietary power FET process, this device is assembled in an industry standard surface mount SO-8 power package that is compatible with high volume, automated board assembly techniques.

#### **Absolute Maximum Ratings**

Parameter	Symbol	Rating
Drain-Source Voltage	$v_{DS}$	12V <sup>(3)</sup>
Gate-Source Voltage	$v_{GS}^{DS}$	-5V
Drain Current	$I_{DS}$	Idss
Continuous Dissipation	$P_{T}$	10W
Channel Temperature	$T_{CH}$	175°C
Storage Temperature	$T_{STG}$	$-65^{\circ}$ C to $+175^{\circ}$ C

#### **SO-8 Power Package Physical Dimensions**



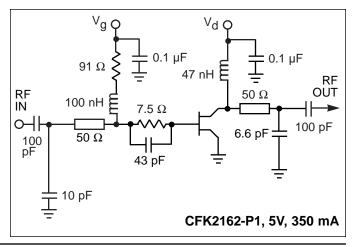
DIMENSION	MINIMUM	NOMINAL	MAXIMUM
Α		.086[2.184]	.100[2.540]
A1	.005[.1270]	.008[.2032]	.011[.2794]
b	.017[.4318]	.020[.5080]	.023[.5842]
C-	.007[.1778]	.008[2032]	.009[.2286]
D	.195[4.953]	.200[5.080]	.205[5.207]
E	.135[3.429]	.140[3.556]	.145[3.683]
E1	.155[3.937]	.160[4.064]	.165[4.191]
е		.050[1.270]	
L	.020[.5080]		.040[1.016]
L1	.055[1.397]	.065[1.651]	.075[1.905]
α	0,		8,

DIMENSIONS IN INCHES [MILIMETERS]

Phone: (408) 986-5060

0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 2.5 3.0 3.5 4.0  0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 2.5 3.0 3.5 4.0  0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 2.5 3.0 0.6 0.7 0.8 0.9 0.9 0.0 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0	Nag 0.946 0.945 0.946 0.947 0.946 0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94  0.95 0.951 0.951 0.951 0.951	-162.45 -162.45 -162.45 -171.49 -174.16 -176.06 -177.58 -178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76  -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72 178.92	Mag  4.973 4.973 3.657 3.22 2.885 2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25°  5.311 4.491 3.878 3.406 3.044 2.767 2.561	Ang  86.73 86.73 79.26 76.4 73.75 71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66  CC, Vds = 5 V, 1  84.94 80.91 77.66 74.74 72.23 70.37 68.34	\$\frac{\mag}{0.017}\$ 0.017 0.017 0.019 0.018 0.018 0.018 0.019 0.019 0.02 0.02 0.025 0.025 0.025 0.022 0.020 0.023  \$\frac{\text{Ids} = 1200 mA}{0.014}\$ 0.014 0.013 0.014 0.013 0.014 0.013	11.14 11.14 8.47 7.15 9.37 6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	Nag  0.739 0.739 0.746 0.749 0.748 0.747 0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74  0.747 0.75 0.75 0.75 0.75 0.749 0.749	Ang 172.95 172.95 170.91 170.28 169.73 169.56 169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51
0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 0.5 2.0 2.5 3.0 3.5 4.0 0.6 0.7 0.8 0.9 1.0 1.1 1.2 0.1 1.1 0.1 1.2 0.8 0.9 1.0 1.1 1.2 0.1 1.1 0.1 1.2 0.1 1.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	0.945 0.946 0.947 0.946 0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.951 0.951 0.951 0.951	-162.45 -171.49 -174.16 -176.06 -177.58 -178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76	4.973 3.657 3.22 2.885 2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	86.73 79.26 76.4 73.75 71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 CC, Vds = 5 V, 1 84.94 80.91 77.66 74.74 72.23 70.37	0.017 0.019 0.018 0.018 0.019 0.019 0.019 0.02 0.025 0.025 0.022 0.02 0.023 Ids = 1200 mA) 0.014 0.013 0.014 0.013 0.014	11.14 8.47 7.15 9.37 6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.739 0.746 0.749 0.748 0.747 0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74	172.95 170.91 170.28 169.73 169.56 169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51
0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 2.5 3.0 3.5 4.0 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 0.3 1.4 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 0.6 0.7 0.8 0.9 0.9 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.946 0.947 0.946 0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951	-171.49 -174.16 -176.06 -177.58 -178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76	3.657 3.22 2.885 2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	79.26 76.4 73.75 71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 C, Vds = 5 V, 1 84.94 80.91 77.66 74.74 72.23 70.37	0.019 0.018 0.018 0.019 0.019 0.02 0.02 0.025 0.025 0.022 0.02 0.023 Ids = 1200 mA) 0.014 0.013 0.014 0.013 0.014	8.47 7.15 9.37 6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.746 0.749 0.748 0.747 0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74 0.747	170.91 170.28 169.73 169.56 169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 2.5 3.0 3.5 4.0 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 2.0 2.5 3.0 0.6 0.7 0.8 0.9 0.9 0.0 0.8 0.9 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.947 0.946 0.946 0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951	-174.16 -176.06 -177.58 -178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	3.22 2.885 2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	76.4 73.75 71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 <b>CC, Vds = 5 V,</b> 1 84.94 80.91 77.66 74.74 72.23 70.37	0.018 0.018 0.019 0.019 0.02 0.02 0.025 0.025 0.022 0.02 0.023 Ids = 1200 mA) 0.014 0.013 0.014	7.15 9.37 6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.749 0.748 0.747 0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74	170.28 169.73 169.56 169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
1.0	0.946 0.946 0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951	-176.06 -177.58 -178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	2.885 2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	73.75 71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 1.66 1.65 1.66 1.7 84.94 80.91 77.66 74.74 72.23 70.37	$0.018 \\ 0.018 \\ 0.019 \\ 0.019 \\ 0.02 \\ 0.02 \\ 0.025 \\ 0.025 \\ 0.022 \\ 0.02 \\ 0.023$ $1ds = 1200 \text{ mA}$ $0.014 \\ 0.013 \\ 0.014 \\ 0.013 \\ 0.014$	9.37 6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.748 0.747 0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75 0.75	169.73 169.56 169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
1.0	0.946 0.946 0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951	-176.06 -177.58 -178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	2.885 2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	73.75 71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 1.66 1.65 1.66 1.7 84.94 80.91 77.66 74.74 72.23 70.37	$0.018 \\ 0.018 \\ 0.019 \\ 0.019 \\ 0.02 \\ 0.02 \\ 0.025 \\ 0.025 \\ 0.022 \\ 0.02 \\ 0.023$ $1ds = 1200 \text{ mA}$ $0.014 \\ 0.013 \\ 0.014 \\ 0.013 \\ 0.014$	9.37 6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.748 0.747 0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75 0.75	169.73 169.56 169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
1.1	0.945 0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951 0.951	-178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	2.623 2.424 2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	71.82 69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 <b>C</b> , <b>Vds</b> = <b>5 V</b> , 1 84.94 80.91 77.66 74.74 72.23 70.37	$0.018 \\ 0.019 \\ 0.019 \\ 0.02 \\ 0.02 \\ 0.025 \\ 0.025 \\ 0.022 \\ 0.023$ $1ds = 1200 \text{ mA}$ $0.014 \\ 0.013 \\ 0.014 \\ 0.013 \\ 0.014$	6.8 6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.746 0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75	169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
1.3	0.944 0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951 0.951	-178.58 -179.55 179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	69.66 67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 <b>C</b> , <b>Vds</b> = <b>5 V</b> , 1 84.94 80.91 77.66 74.74 72.23 70.37	$0.019 \\ 0.019 \\ 0.02 \\ 0.02 \\ 0.025 \\ 0.025 \\ 0.022 \\ 0.02 \\ 0.023$ $1ds = 1200 \text{ mA}$ $0.014 \\ 0.013 \\ 0.014 \\ 0.013 \\ 0.014$	6.59 6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.742 0.739 0.73 0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75	169.16 168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
1.4	0.942 0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.952 0.951 0.951 0.951	179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	2.27 2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	67.7 65.68 63.25 46.63 24.9 10.11 6.12 1.66 <b>*C, Vds = 5 V,</b> 1 84.94 80.91 77.66 74.74 72.23 70.37	0.019 0.02 0.02 0.025 0.025 0.022 0.02 0.023 Ids = 1200 mA) 0.014 0.013 0.014 0.013 0.014	6.53 7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57	0.739 0.73 0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75	168.8 168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
1.4	0.938 0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.951 0.951 0.951	179.53 178.31 166.09 144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	2.154 2.055 1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	65.68 63.25 46.63 24.9 10.11 6.12 1.66 <b>CC, Vds = 5 V,</b> 1 84.94 80.91 77.66 74.74 72.23 70.37	0.02 0.02 0.025 0.025 0.022 0.02 0.023 Ids = 1200 mA) 0.014 0.013 0.014 0.013 0.014	7.04 4.93 -1.23 -19.64 -27.73 -21.78 -20.57 13.61 15.25 13.21 13.59 14.39	0.73 0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75	168.03 167.15 155.54 137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
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2.0	0.918 0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.952 0.951 0.951 0.951	-165 -169.94 -179.35 -179.34 -179.34 -179.72	1.777 1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	46.63 24.9 10.11 6.12 1.66 <b>C, Vds = 5 V,</b> 1 84.94 80.91 77.66 74.74 72.23 70.37	0.025 0.025 0.022 0.02 0.023 (ds = 1200 mA) 0.014 0.013 0.014 0.013 0.014	-1.23 -19.64 -27.73 -21.78 -20.57 13.61 15.25 13.21 13.59 14.39	0.694 0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75	137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
2.5	0.915 0.941 0.957 0.94 0.95 0.951 0.951 0.952 0.951 0.951 0.951	144.67 132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	1.448 1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	24.9 10.11 6.12 1.66 <b>C, Vds = 5 V,</b> 3 84.94 80.91 77.66 74.74 72.23 70.37	0.025 0.022 0.02 0.023 (ds = 1200 mA) 0.014 0.013 0.014 0.013 0.014	-19.64 -27.73 -21.78 -20.57 	0.703 0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75 0.75	137.27 128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
3.0	0.941 0.957 0.94 0.95 0.951 0.951 0.952 0.951 0.951 0.951	132.34 134.66 138.76 -165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	1.033 0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	10.11 6.12 1.66 <b>C, Vds = 5 V,</b> 3 84.94 80.91 77.66 74.74 72.23 70.37	$0.022 \\ 0.02 \\ 0.023$ $1ds = 1200 \text{ mA}$ $0.014 \\ 0.013 \\ 0.014 \\ 0.013 \\ 0.014$	-27.73 -21.78 -20.57 13.61 15.25 13.21 13.59 14.39	0.76 0.787 0.74 0.747 0.75 0.75 0.75 0.75 0.75	128.69 132.92 136.51 17.19 170.93 170.03 169.43 168.92
3.5 (0.6 (0.7 (0.8 (0.9 (0.9 (0.1 (0.1 (0.1 (0.1 (0.1 (0.1 (0.1 (0.1	0.957 0.94 0.95 0.951 0.951 0.952 0.951 0.951 0.951	-165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	0.803 0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	6.12 1.66 <b>C</b> , <b>Vds</b> = <b>5 V</b> , 1 84.94 80.91 77.66 74.74 72.23 70.37	0.02 0.023 $ 1ds = 1200  mA $ $ 0.014 0.013 0.014 0.013 0.014$	-21.78 -20.57 13.61 15.25 13.21 13.59 14.39	0.787 0.74 0.747 0.75 0.75 0.75 0.75 0.749	132.92 136.51 17.19 170.93 170.03 169.43 168.92
4.0 C  0.6 C  0.7 C  0.8 C  0.9 C  1.0 C  1.1 C  1.2 C  1.3 C  1.4 C  2.5 C  3.0 C  3.5 C  4.0 C  0.6 C	0.94 0.95 0.951 0.951 0.952 0.951 0.951 0.951	-165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	0.803 (TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	1.66 C, Vds = 5 V, 1 84.94 80.91 77.66 74.74 72.23 70.37	0.023 Ids = 1200 mA) 0.014 0.013 0.014 0.013 0.014	-20.57 13.61 15.25 13.21 13.59 14.39	0.747 0.747 0.75 0.75 0.75 0.749	17.19 170.93 170.03 169.43 168.92
0.6 0.7 0.8 0.9 0.1.0 0.1.1 0.1.1 1.2 0.1.3 1.4 0.1.5 0.2.5 0.3.5 0.3.5 0.4.0 0.6 0.6 0.6	0.95 0.951 0.951 0.952 0.951 0.951 0.951	-165 -169.94 -173.53 -176.07 -177.94 -179.34 179.72	(TA = 25° 5.311 4.491 3.878 3.406 3.044 2.767	84.94 80.91 77.66 74.74 72.23 70.37	0.014 0.013 0.014 0.013 0.014 0.013 0.014	13.61 15.25 13.21 13.59 14.39	0.747 0.75 0.75 0.75 0.75 0.749	17.19 170.93 170.03 169.43 168.92
0.7	0.951 0.951 0.952 0.951 0.951 0.951	-169.94 -173.53 -176.07 -177.94 -179.34 179.72	4.491 3.878 3.406 3.044 2.767	80.91 77.66 74.74 72.23 70.37	0.013 0.014 0.013 0.014	15.25 13.21 13.59 14.39	0.75 0.75 0.75 0.749	170.93 170.03 169.43 168.92
0.7	0.951 0.951 0.952 0.951 0.951 0.951	-169.94 -173.53 -176.07 -177.94 -179.34 179.72	4.491 3.878 3.406 3.044 2.767	80.91 77.66 74.74 72.23 70.37	0.013 0.014 0.013 0.014	15.25 13.21 13.59 14.39	0.75 0.75 0.75 0.749	170.93 170.03 169.43 168.92
0.8 0.9 0.9 1.0 1.1 1 1.2 1.3 1.4 1.5 0.2.0 0.5 2.5 3.0 0.3.5 4.0 0.6	0.951 0.952 0.951 0.951 0.951	-173.53 -176.07 -177.94 -179.34 179.72	3.878 3.406 3.044 2.767	77.66 74.74 72.23 70.37	0.014 0.013 0.014	13.21 13.59 14.39	0.75 0.75 0.749	170.03 169.43 168.92
0.9	0.952 0.951 0.951 0.951	-176.07 -177.94 -179.34 179.72	3.406 3.044 2.767	74.74 72.23 70.37	0.013 0.014	13.59 14.39	0.75 0.749	169.43 168.92
1.0 C 1.1 C 1.2 C 1.3 C 1.4 C 1.5 C 2.0 C 2.5 C 3.0 C 3.5 C 4.0 C 1.6 C	0.951 0.951 0.951	-177.94 -179.34 179.72	3.044 2.767	72.23 70.37	0.014	14.39	0.749	168.92
1.1 0 1.2 0 1.3 0 1.4 0 1.5 0 2.0 0 2.5 0 3.0 0 3.5 0 4.0 0	0.951 0.951	-179.34 179.72	2.767	70.37	0.014			100.72
1.2	0.951	179.72	2.561	60.24			0 /49	168.72
1.3	0.551	179.72		6X 34	0.014	14.6	0.745	168.29
1.4 C 1.5 C 2.0 C 2.5 C 3.0 C 3.5 C 4.0 C	0.951	1/89/	2.391	66.48	0.015	13.62	0.741	167.98
1.5	0.949	177.92	2.272	64.41	0.015	14.21	0.734	167.24
2.0 (C) 2.5 (C) 3.0 (C) 3.5 (C) 4.0 (C)	0.946	176.83	2.169	61.99	0.016	14.13	0.728	166.28
2.5 (C) 3.0 (C) 3.5 (C) 4.0 (C)	0.929	165.15	1.88	45.76	0.02	7.43	0.69	154.9
3.0 (0 3.5 (0 4.0 (0	0.925	144.23	1.529	24.16	0.022	-7.75	0.698	136.7
3.5 4.0 0.6	0.947	131.72	1.09	9.25	0.018	-17.77	0.757	127.79
0.6	0.961	133.41	0.853	4.59	0.017	-13.03	0.779	131.26
0.6	0.945	137.83	0.85	0.36	0.021	-8.72	0.77	134.73
	0.743	137.03			$\frac{0.021}{\text{Ids} = 800 \text{ mA}}$	-0.72	0.73	134.73
	0.941	-164.65	5.654	83.55	0.015	10.74	0.676	174.61
	0.944	-169.57	4.772	79.47	0.014	10.38	0.682	173.44
0.8	0.946	-172.92	4.131	75.86	0.015	9.99	0.685	172.69
	0.947	-175.57	3.625	72.68	0.013	10.72	0.687	172.32
1.0	0.947	-177.32	3.25	70.11	0.015	8.2	0.688	171.96
1.1	0.946	-178.65	2.944	67.96	0.015	8.47	0.688	172.02
1.2	0.947	-179.63	2.717	65.66	0.015	9.51	0.687	171.82
1.3	0.945	179.49	2.535	63.48	0.015	7.84	0.684	171.67
1.4	0.943	178.52	2.397	61.32	0.015	8.5	0.68	171.07
	0.944	177.34	2.85	58.65	0.016	9.62	0.674	170.41
2.0	0.941	165.04	12.949	41.52	0.019	-1.07	0.639	159.85
	0.923	143.82	1.579	19.18	0.019	-12.64	0.653	139.83
	0.92	131.73	1.116	3.58	0.02	-12.04	0.722	132.33
		134.09	0.857	-1.39	0.018	-21.43 -16.54	0.762	132.33
4.0	0.944	134.07	0.841	-1.39 -6.32	0.016	-10.54 -10.57	0.723	140.71

**RF Match** Data shown in the performance graphs was taken in the test circuits shown at right and on page 3. Layout is important for proper operation. Phase length of input and output  $50\Omega$  line varies as a function of exact desired frequency of operation. Output shunt inductor effects output performance. Celeritek recommends the use of a high impedance printed inductor Lambda/4 in length. Please contact the factory for an evaluation board and/or more detailed application support.







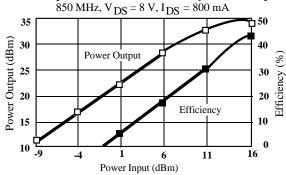


### **Product Specifications - July 1997**

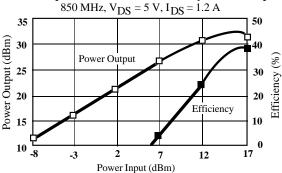
(3 of 4)

## **Typical Performance**

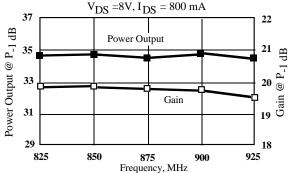
Power Output & Power Added Efficiency vs Power Input



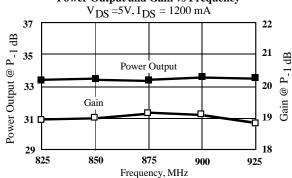
Power Output & Power Added Efficiency vs Power Input



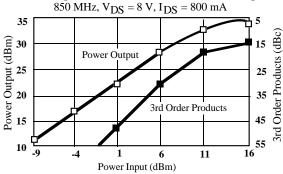
Power Output and Gain vs Frequency



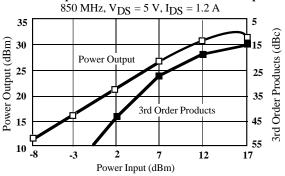
Power Output and Gain vs Frequency

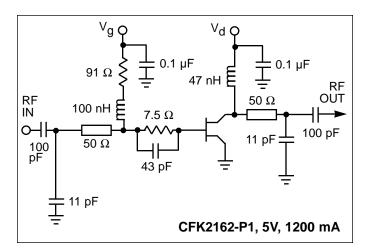


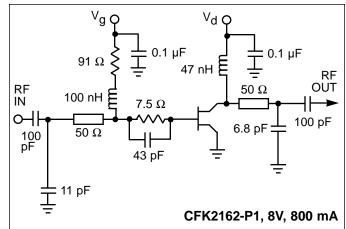
Power Output & 3rd Order Products vs Power Input



Power Output & 3rd Order Products vs Power Input





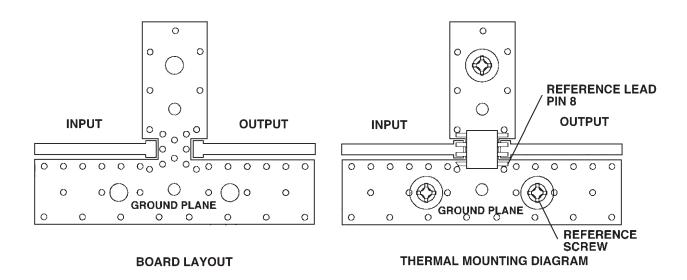


Phone: (408) 986-5060

#### **Thermal Considerations**

The data shown was taken on a 31 mil thick FR-4 board with 1 ounce copper on both sides. The board was mounted to a base-plate with 3 screws as shown. The screws bring the top side copper temperature to the same value as the baseplate. The thermal resistance to the indicated reference lead,  $\Theta_{II}$ , is  $10^{\circ}\text{C/W}$ . The thermal resistance to the reference screw is  $12^{\circ}\text{C/W}$ .

- 1. Use 1 or 2 ounce copper if possible.
- 2. Solder all eight leads of the CFK2162-P1 package to the appropriate electrical connection.
- 3. Solder the copper pad on the backside of the CFK2162-P1 package to the ground plane.
- 4. Use a large ground pad area with many plated through-holes as shown.
- 5. If possible, use at least one screw no more than 0.2 inches from the CFK2162-P1 package to provide a low thermal resistance path to the baseplate of the package.



#### **Ordering Information**

The CFK2162-P1 power stage is available in a SO-8 surface mount package. Devices are available in tape and reel. Ordering part numbers are listed.

Part Number for Ordering Function Package

CFK2162-P1 800 - 900 MHz Power Stage SO-8 surface mount power package

CFK2162-P1-000T 800 - 900 MHz Power Stage SO-8 surface mount power package in tape and reel

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