

# A2CP2596

## 20 TO 2500 MHz, 3 WATTS COUGARPAK™ AMPLIFIER

### Typical Values

<b>High Gain</b> .....	<b>+23.5 dB</b>
<b>High Output Power, P1dB</b> .....	<b>3.0 Watts</b>
<b>High Saturated Power, Psat.</b> .....	<b>6.0 Watts</b>
<b>High Third Order I.P.</b> .....	<b>+45 dBm</b>
<b>Thin Film Two-stage CougarPak™</b>	

### A2CP2596

## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50° C	-55 to +85° C
<b>Frequency (Min.)</b>	<b>10-2600 MHz</b>	<b>20-2500 MHz</b>	<b>20-2500 MHz</b>
<b>Small Signal Gain<sup>^</sup> (Min.)</b>	23.5 dB	22.0 dB	21.0 dB
<b>Gain Flatness (Max.)</b>	±0.6 dB	±0.8 dB	±1.0 dB
<b>Noise Figure (Max.)</b>			
100-300 MHz	4.8 dB	5.5 dB	8.0 dB
300-2500 MHz	4.3 dB	5.0 dB	5.5 dB
<b>SWR (Max.)</b> Input/Output	<1.8:1	2.0:1	2.0:1
<b>Power Output (Min.)</b>			
@ 1dB comp. 20-500 MHz	+36.5 dBm	+36.0 dBm	+35.0 dBm
500-2500 MHz	+34.5 dBm	+34.0 dBm	+34.0 dBm
<b>Reverse Isolation</b>	37 dB	—	—
<b>DC Current (Max.)</b>			
1st Stg: +15V	335 mA	350 mA	360 mA
Linear Oper. 2nd Stg: +28V	530 mA	560 mA	580 mA
Psat w/+20 dBm Input			
2nd Stage: +28V	700 mA	750 mA	760 mA

\* Measured in a 50-ohm system at +15/+28V. ^ 0.5 dB less under 50 MHz.

## INTERMODULATION PERFORMANCE

### Typical @ 25° C

<b>Second Order Harmonic Intercept Point</b> .....	<b>+51 dBm</b>
<b>Second Order Two Tone Intercept Point</b> .....	<b>+46 dBm</b>
<b>Third Order Two Tone Intercept Point</b> .....	<b>+45 dBm</b>

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## ABSOLUTE MAXIMUM RATINGS

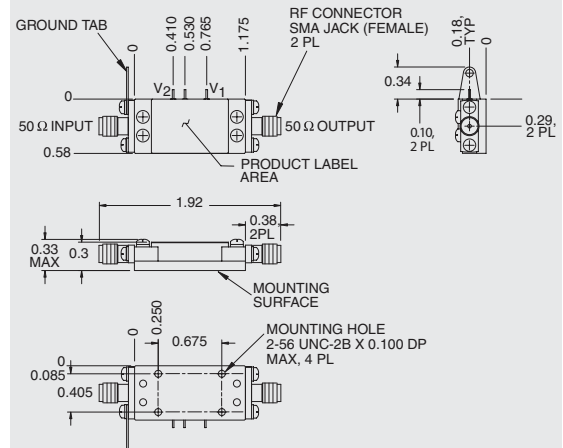
<b>Storage Temperature</b> .....	<b>-62 to +125° C</b>
<b>Maximum Case Temperature, +28V/+32V</b> .....	<b>+90° C/+75° C</b>
<b>Maximum DC Voltage</b> .....	<b>+33 Volts</b>
<b>Maximum Continuous RF Input Power</b> .....	<b>+20 dBm<sup>1</sup></b>
<b>Maximum Short Term Input Power (1 Minute Max.)</b> .....	<b>+22 dBm</b>
<b>Maximum Peak Power (3 μsec Max.)</b> .....	<b>+24 dBm</b>
<b>Burn-in Temperature, +28V</b> .....	<b>+85° C</b>
<b>Thermal Resistance<sup>2</sup> (θjc)</b> .....	<b>+4.3° C/Watt</b>
<b>Junction Temperature Rise Above Case (Tjc), +28V</b> .....	<b>+83° C</b>

<sup>1</sup> If no load or a short on output; decrease input power by +10 dBm.

<sup>2</sup> Thermal resistance is based on total power dissipation.

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### CougarPak™ SMA Package (two-stage)



Pin V<sub>1</sub>: +28V

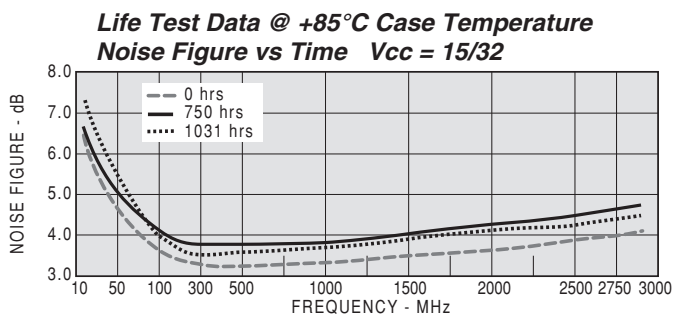
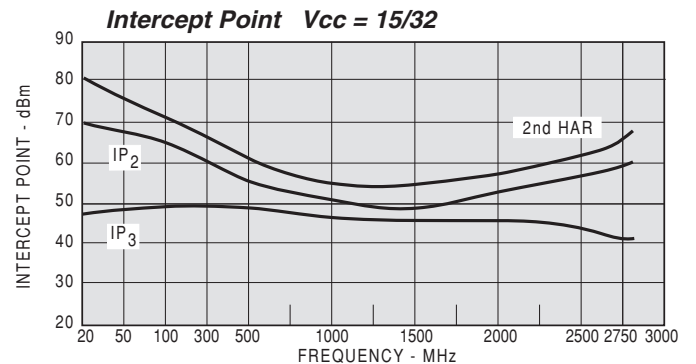
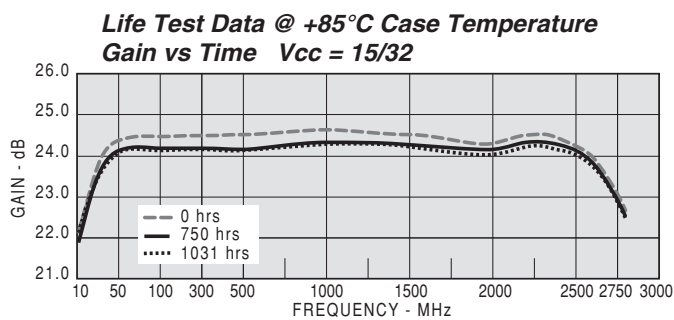
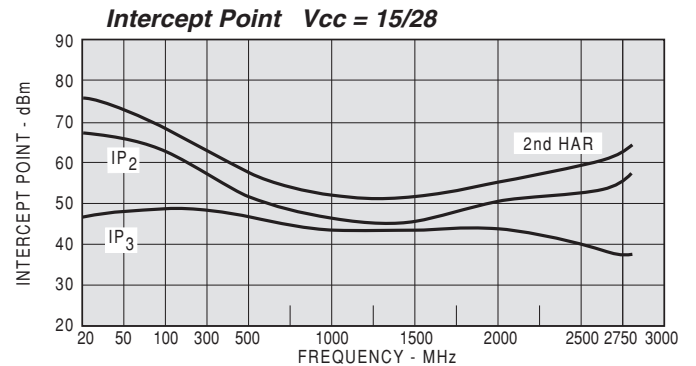
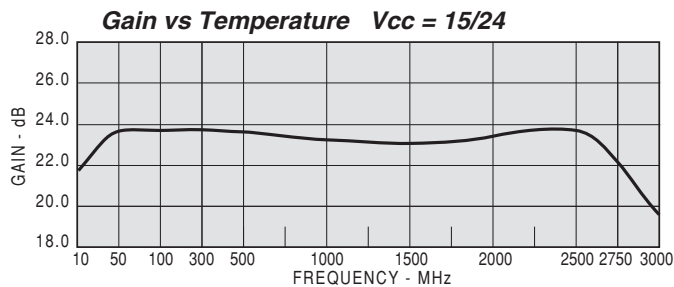
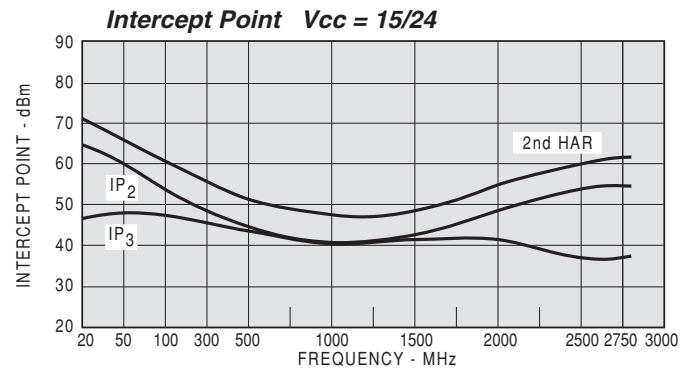
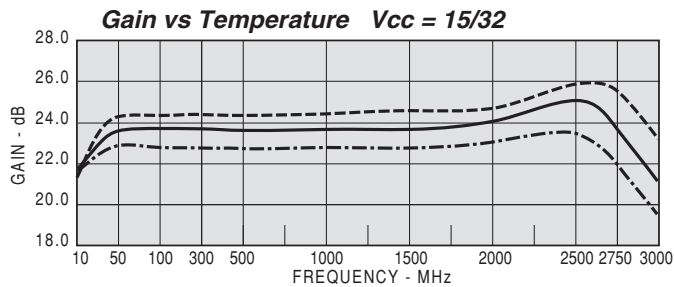
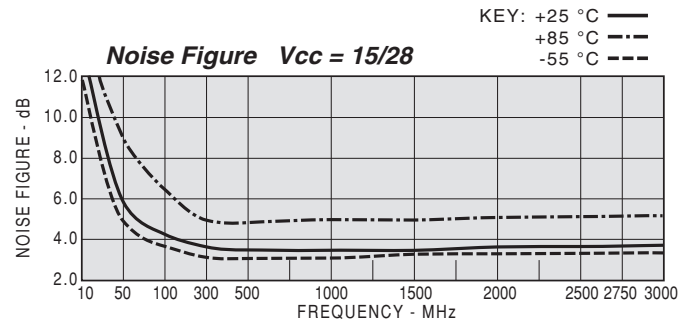
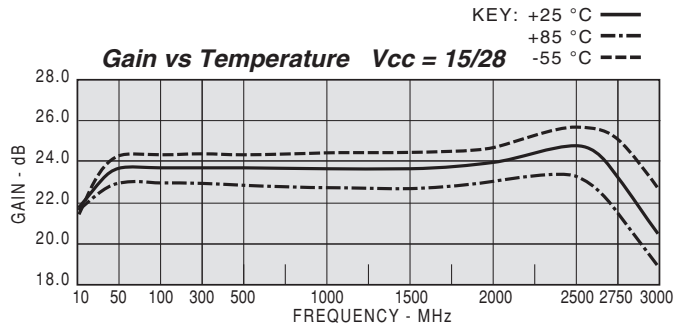
Pin V<sub>2</sub>: +15V

### HEAT SINK WARNING:

This amplifier requires an adequate heat sink to prevent damage. Maximum case temperature must not be exceeded. The package is designed to provide adequate heat transfer to proper aluminum heat sink.

DIMENSIONS ARE IN INCHES

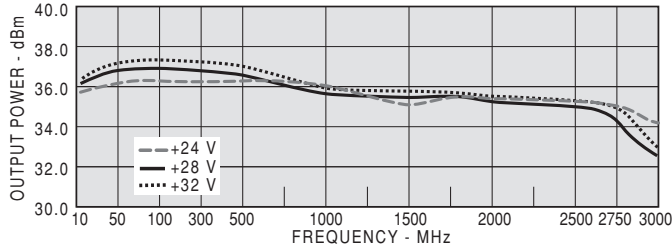
**TYPICAL PERFORMANCE**



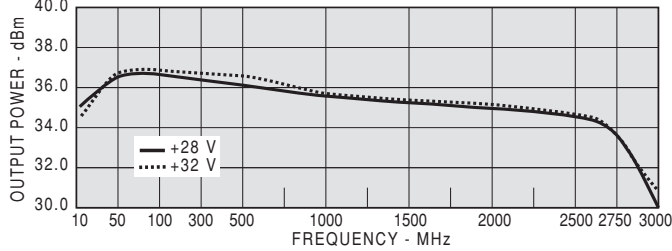


**TYPICAL PERFORMANCE**

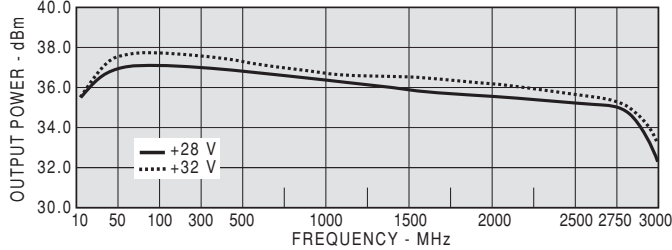
**Power Output at 1 dB Compression +25° C**



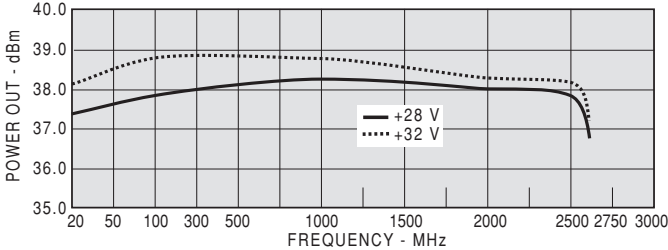
**Power Output at 1 dB Compression +85° C**



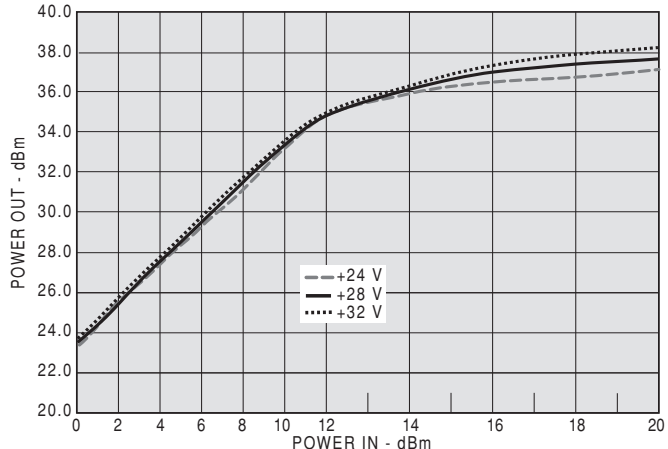
**Power Output at 1 dB Compression -55° C**



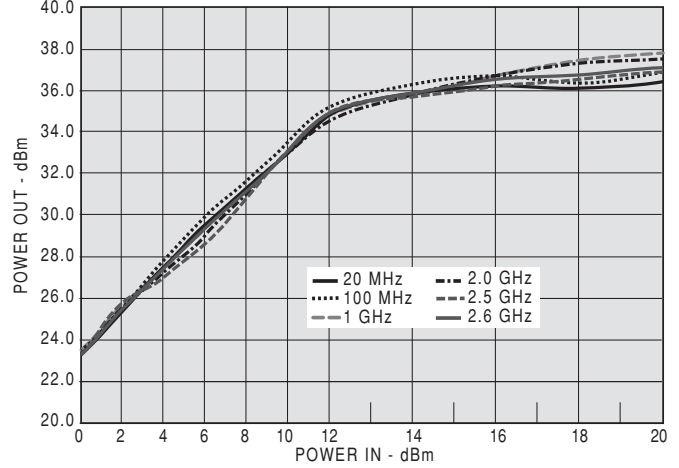
**Power Saturation at 20 dBm Vcc = 28/32**



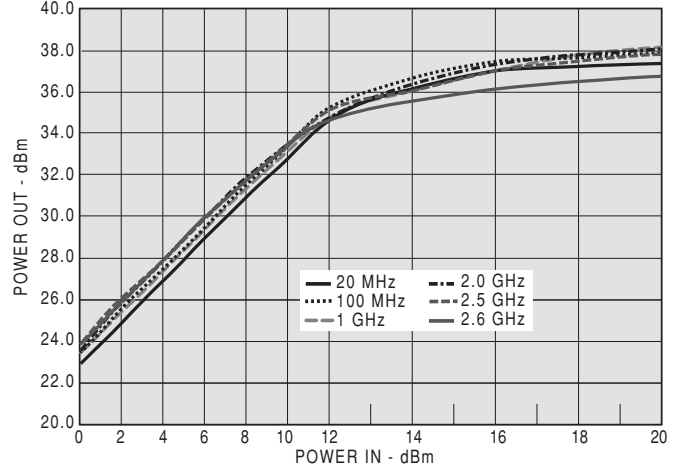
**Power Saturation Vcc = 24/28/32**



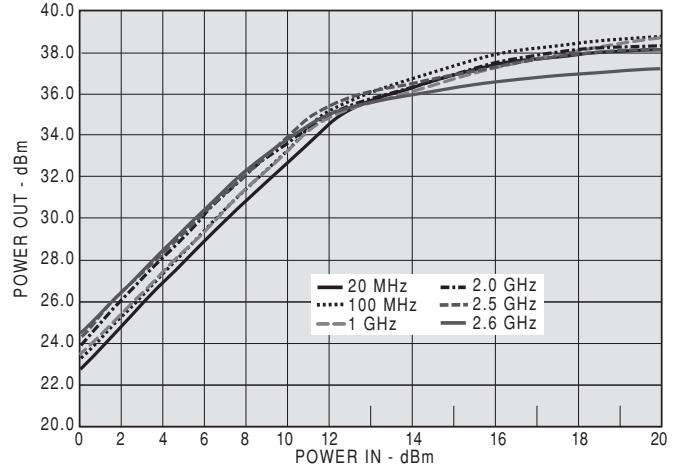
**Power Saturation Vcc = 15/24**



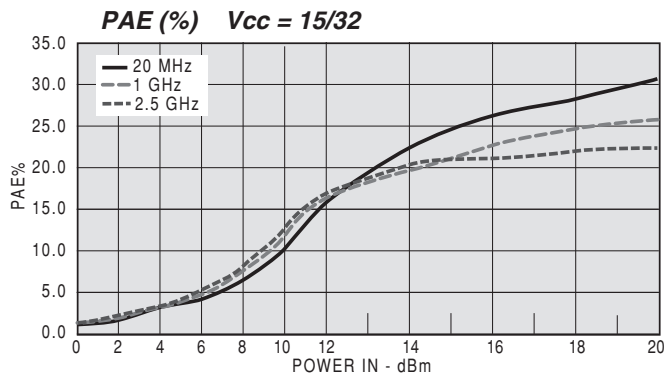
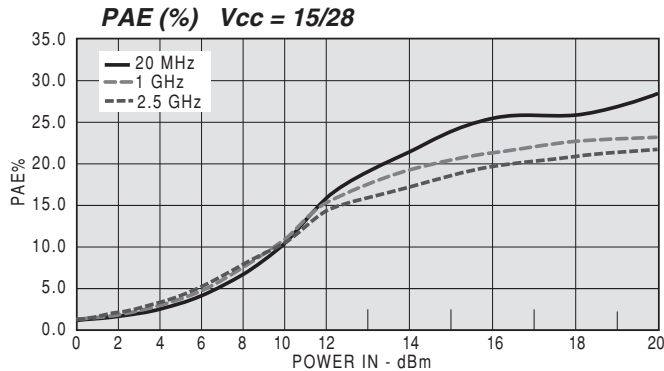
**Power Saturation Vcc = 15/28**



**Power Saturation Vcc = 15/32**



**TYPICAL PERFORMANCE**



**TYPICAL AUTOMATIC TEST DATA**

Model: A2CP2596			$V_{cc}=+15V / +28V$			$I_{cc}=336.0$	
FREQ	SWR	SWR	GAIN	PHASE	DELAY	REV/ISO	
GHZ	IN	OUT	DB	DEG	NSEC	DB	
10	1.21	1.52	21.80	65.00	29.00	-36.10	
20	1.11	1.18	23.42	30.00	6.60	-36.30	
50	1.23	1.16	23.82	5.00	1.30	-37.10	
100	1.25	1.17	23.85	-9.00	0.63	-37.30	
200	1.26	1.20	23.87	-29.00	0.51	-37.10	
300	1.26	1.26	23.86	-46.00	0.48	-37.20	
400	1.25	1.32	23.82	-63.00	0.45	-37.40	
500	1.25	1.38	23.81	-79.00	0.46	-37.50	
600	1.24	1.45	23.81	-95.00	0.45	-37.70	
700	1.25	1.50	23.83	-112.00	0.46	-37.40	
800	1.25	1.55	23.82	-128.00	0.45	-37.40	
900	1.26	1.58	23.85	-144.00	0.45	-37.20	
1000	1.27	1.60	23.82	-161.00	0.46	-37.30	
1200	1.32	1.60	23.85	166.00	0.47	-37.30	
1400	1.40	1.58	23.86	134.00	0.45	-37.00	
1600	1.51	1.61	23.88	100.00	0.46	-37.20	
1800	1.64	1.70	23.97	66.00	0.48	-36.70	
2000	1.73	1.80	24.19	31.00	0.51	-36.40	
2200	1.71	1.75	24.52	-5.00	0.53	-35.60	
2300	1.62	1.64	24.59	-25.00	0.55	-35.30	
2400	1.48	1.46	24.74	-46.00	0.59	-35.00	
2500	1.28	1.24	24.67	-68.00	0.64	-34.90	
2600	1.07	1.06	24.27	-91.00	0.64	-35.30	
2700	1.14	1.27	23.50	-115.00	0.58	-35.70	
2800	1.38	1.58	22.48	-135.00	0.57	-36.30	
2900	1.62	1.88	21.31	-156.00	0.55	-37.30	
3000	1.85	2.19	20.00	-172.00	0.40	-37.60	

Model: A2CP2596			$V_{cc}=+15V / +28V$			$I_{cc}=336.5$	
FREQ.	S11		S21		S12		S22
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG ANG.
5	0.38	-86.70	6.80	117.80	0.013	99.60	0.61 162.90
10	0.10	-109.70	12.30	65.10	0.016	41.90	0.21 118.80
20	0.05	20.80	14.82	30.40	0.015	14.80	0.08 140.10
50	0.10	7.40	15.52	5.30	0.014	1.40	0.07 174.20
100	0.11	-2.90	15.59	-9.40	0.014	-6.50	0.08 -172.50
200	0.12	-16.40	15.61	-29.00	0.014	-12.60	0.09 -158.90
300	0.11	-28.10	15.60	-46.40	0.014	-22.40	0.11 -153.30
400	0.11	-39.30	15.52	-62.90	0.014	-29.90	0.14 -153.80
500	0.11	-51.00	15.51	-79.20	0.013	-37.50	0.16 -156.30
600	0.11	-62.20	15.50	-95.40	0.013	-43.50	0.18 -161.30
700	0.11	-74.20	15.55	-111.80	0.014	-52.40	0.20 -165.80
800	0.11	-85.60	15.52	-128.00	0.013	-60.70	0.21 -171.10
900	0.11	-96.80	15.58	-144.30	0.014	-66.70	0.23 -176.30
1000	0.12	-107.20	15.53	-160.90	0.014	-74.40	0.23 178.70
1200	0.14	-126.40	15.58	166.20	0.014	-91.10	0.23 171.20
1400	0.17	-143.70	15.60	133.60	0.014	-105.60	0.23 168.30
1600	0.20	-160.40	15.63	100.10	0.014	-122.10	0.23 168.40
1800	0.24	-178.80	15.80	66.00	0.015	-138.90	0.26 166.00
2000	0.27	160.30	16.19	31.30	0.015	-154.60	0.29 156.70
2200	0.26	136.10	16.83	-5.00	0.017	-173.90	0.27 140.10
2300	0.24	122.00	16.96	-25.10	0.017	176.90	0.24 129.00
2400	0.19	105.80	17.26	-45.60	0.018	164.50	0.19 114.40
2500	0.12	87.30	17.12	-68.40	0.018	151.90	0.11 93.00
2600	0.03	60.70	16.34	-91.30	0.017	138.00	0.03 -3.40
2700	0.07	-120.20	14.95	-114.50	0.016	124.00	0.12 -89.70
2800	0.16	-143.00	13.30	-135.50	0.015	114.10	0.22 -111.30
2900	0.24	-160.00	11.63	-155.80	0.014	104.30	0.31 -126.40
3000	0.30	-175.10	10.00	-171.80	0.013	98.00	0.37 -138.10