



ATF-26836
2-16 GHz General Purpose
Gallium Arsenide FET

T-31-25

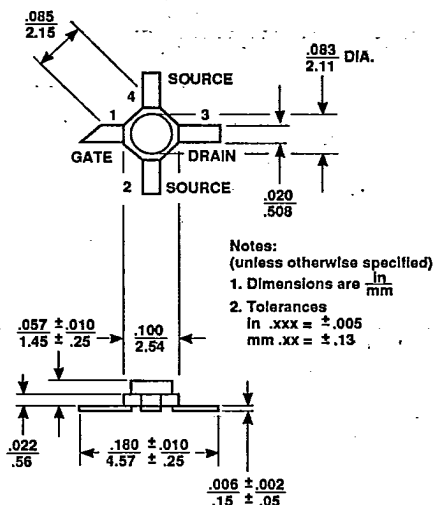
Features

- High f_{MAX} : 60 GHz typical
- High Output Power: 18.0 dBm typical $P_{1\text{ dB}}$ at 12 GHz
- High Gain: 9.0 dB typical G_{SS} at 12 GHz
- Cost Effective Ceramic Microstrip Package
- Tape-and-Reel Packaging Option Available²

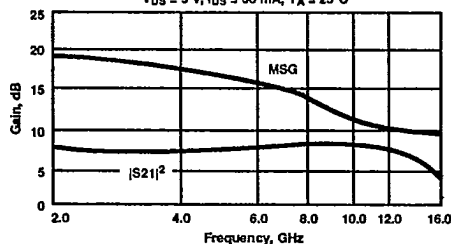
Description

Avantek's ATF-26836 is a high performance gallium arsenide Schottky-barrier-gate field effect transistor housed in a cost effective microstrip package. This device is designed for use in oscillator applications up to 25 GHz and general purpose amplifier applications in the 2-16 GHz frequency range.

This GaAs FET device has a nominal 0.3 micron gate length with a total gate periphery of 250 microns. Proven gold based metallization systems and nitride passivation assure a rugged, reliable device.

Avantek 36 micro-X Package¹

INSERTION POWER GAIN, MAXIMUM AVAILABLE GAIN
AND MAXIMUM STABLE GAIN vs. FREQUENCY
 $V_{DS} = 5\text{ V}$, $I_{DS} = 30\text{ mA}$, $T_A = 25^\circ\text{C}$

Electrical Specifications, $T_A = 25^\circ\text{C}$

Symbol	Parameters and Test Conditions	Units	Min.	Typ.	Max.
f_{MAX}	Maximum Frequency of Oscillation: $V_{DS} = 5\text{ V}$, $I_{DS} = 30\text{ mA}$	GHz		60	
G_{SS}	Tuned Small Signal Gain: $V_{DS} = 5\text{ V}$, $I_{DS} = 30\text{ mA}$ $f = 12.0\text{ GHz}$	dB	7.0	9.0	
$P_{1\text{ dB}}$	Output Power @ 1 dB Gain Compression: $V_{DS} = 5\text{ V}$, $I_{DS} = 30\text{ mA}$ $f = 12.0\text{ GHz}$	dBm	15.0	18.0	
NFO	Optimum Noise Figure: $V_{DS} = 3\text{ V}$, $I_{DS} = 10\text{ mA}$ $f = 12.0\text{ GHz}$	dB		2.2	
G_A	Gain @ NFO: $V_{DS} = 3\text{ V}$, $I_{DS} = 10\text{ mA}$ $f = 12.0\text{ GHz}$	dB		6.0	
g_m	Transconductance: $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$	mmho	15	35	
I_{DSS}	Saturated Drain Current: $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$	mA	20	50	100
V_p	Pinchoff Voltage: $V_{DS} = 3\text{ V}$, $I_{DS} = 1\text{ mA}$	V	-3.5	-1.5	-0.5

Notes: 1. Long leaded 35 micro-X package available upon request.

2. Refer to PACKAGING section "Tape-and-Reel Packaging for Surface Mount Semiconductors".

AVANTEK INC

ATF-26836, 2-16 GHz
General Purpose Gallium Arsenide FET

Absolute Maximum Ratings

Parameter	Symbol	Absolute Maximum ¹
Drain-Source Voltage	V _{DS}	+7 V
Gate-Source Voltage	V _{GS}	-4 V
Drain Current	I _{DS}	I _{DSS}
Total Power Dissipation ^{2,3}	P _T	275 mW
Channel Temperature	T _{CH}	175°C
Storage Temperature ⁴	T _{STG}	-65°C to +175°C

Thermal Resistance: $\theta_{JC} = 350^\circ\text{C/W}$; T_{CH} = 150°C
Liquid Crystal Measurement; 1 μm Spot Size⁵

Notes:

- Operation of this device above any one of these parameters may cause permanent damage.
- Case Temperature = 25°C.
- Derate at 2.9 mW/°C for T_{CASE} > 79°C.
- Storage above +150°C may tarnish the leads of this package difficult to solder into a circuit. After a device has been soldered into a circuit, it may be safely stored up to 175°C.
- The small spot size of this technique results in a higher, though more accurate determination of θ_{JC} than do alternate methods. See MEASUREMENTS section for more information.

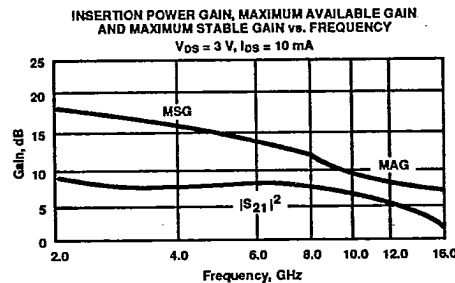
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Part Number Ordering Information

Part Number	Devices Per Reel	Reel Size
ATF-26836-TR1	1000	7"
ATF-26836-TR2	4000	13"
ATF-26836-STR	1	STRIP

Typical Performance, T_A = 25°C

(unless otherwise noted)

Typical Scattering Parameters: Common Emitter, Z₀ = 50 Ω T_A = 25°C, V_{DS} = 3 V, I_{DS} = 10 mA

Freq. GHz	S ₁₁		S ₂₁			S ₁₂		S ₂₂			K
	Mag	Ang	dB	Mag	Ang	dB	Mag	Ang	Mag	Ang	
2.0	.94	-38	8.2	2.57	138	-27.1	.044	60	.74	-26	0.39
3.0	.90	-55	7.8	2.45	120	-24.9	.057	51	.71	-35	0.51
4.0	.84	-72	7.6	2.41	102	-22.9	.072	44	.71	-44	0.59
5.0	.75	-92	8.0	2.50	82	-20.6	.093	30	.66	-53	0.76
6.0	.64	-117	8.1	2.55	61	-19.3	.109	15	.60	-64	0.91
7.0	.52	-155	8.3	2.60	37	-18.1	.124	5	.51	-78	0.98
8.0	.49	163	7.9	2.47	14	-17.5	.133	-12	.41	-92	1.05
9.0	.52	126	7.2	2.30	-7	-16.9	.143	-21	.30	-106	1.07
10.0	.56	100	6.4	2.10	-28	-16.8	.144	-32	.24	-125	1.11
11.0	.61	78	5.6	1.91	-47	-17.1	.140	-41	.18	-154	1.16
12.0	.67	58	4.7	1.71	-66	-17.1	.139	-49	.15	168	1.16
13.0	.69	45	3.9	1.57	-83	-17.3	.137	-61	.17	134	1.20
14.0	.72	35	3.0	1.42	-98	-17.2	.138	-66	.19	107	1.20
15.0	.72	22	2.5	1.33	-115	-17.2	.138	-77	.23	89	1.24
16.0	.72	13	2.0	1.26	-128	-17.4	.135	-85	.27	71	1.31

T_A = 25°C, V_{DS} = 5 V, I_{DS} = 30 mA

2.0	.94	-44	9.0	2.82	130	-30.2	.031	65	.80	-31	0.28
3.0	.86	-63	8.5	2.65	110	-28.4	.038	56	.80	-43	0.49
4.0	.78	-81	8.0	2.51	89	-26.9	.045	47	.79	-52	0.72
5.0	.68	-97	7.9	2.49	71	-25.5	.053	41	.78	-58	0.89
6.0	.57	-118	8.1	2.53	51	-24.4	.060	39	.76	-67	0.98
7.0	.43	-151	8.5	2.65	28	-22.4	.076	38	.73	-80	0.90
8.0	.37	165	8.5	2.66	3	-20.6	.093	30	.69	-99	0.82
9.0	.40	122	8.0	2.52	-20	-18.0	.126	15	.64	-119	0.67
10.0	.47	96	7.7	2.42	-42	-16.4	.152	3	.66	-140	0.47
11.0	.55	75	7.5	2.37	-66	-15.1	.176	-4	.63	-166	0.39
12.0	.61	53	7.4	2.35	-88	-13.8	.205	-19	.64	168	0.30
13.0	.71	33	7.4	2.34	-116	-13.2	.220	-39	.71	132	0.11
14.0	.71	10	6.7	2.17	-143	-13.5	.212	-58	.78	104	0.06
15.0	.65	-10	5.7	1.93	-170	-14.0	.200	-72	.85	79	0.04
16.0	.58	-30	4.2	1.62	166	-14.9	.180	-93	.98	61	-0.23

A model for this device is available in the DEVICE MODELS section.