



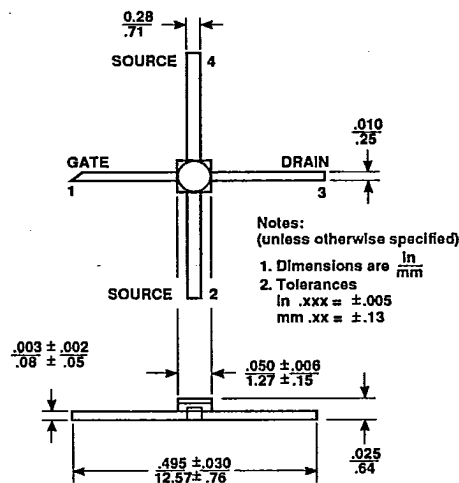
ATF-26350 (AT-10650-3)
2-16 GHz General Purpose
Gallium Arsenide FET

T-31-25

Features

- Low Noise Figure: 2.3 dB typical at 12 GHz
- High Associated Gain: 8.0 dB typical at 12 GHz
- High Output Power: 18.0 dBm typical $P_{1\text{ dB}}$ at 12 GHz
- Hermetic Gold-Ceramic Microstrip Package

Avantek 50 mil Package



Description

Avantek's ATF-26350 is a high performance gallium arsenide Schottky-barrier-gate field effect transistor housed in a hermetic, high reliability package. Its noise figure makes this device appropriate for use in low noise amplifiers operating 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.

Noise Parameters: $V_{DS} = 3\text{ V}$, $I_{DS} = 10\text{ mA}$

Freq. GHz	NF _o dB	Gamma Opt Mag	Ang	R _N /50
6.0	1.8	.49	82	.72
8.0	2.0	.50	118	.52
12.0	2.3	.55	-165	.13
14.0	2.5	.72	-119	.96

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

Symbol	Parameters and Test Conditions	Units	Min.	Typ.	Max.
NF _o	Optimum Noise Figure: $V_{DS} = 3\text{ V}$, $I_{DS} = 10\text{ mA}$ $f = 8.0\text{ GHz}$ $f = 12.0\text{ GHz}$ $f = 14.0\text{ GHz}$	dB		2.0 2.3 2.5	2.5
GA	Gain @ NF _o : $V_{DS} = 3\text{ V}$, $I_{DS} = 10\text{ mA}$ $f = 8.0\text{ GHz}$ $f = 12.0\text{ GHz}$ $f = 14.0\text{ GHz}$	dB	7.0	11.0 8.0 7.0	
$P_{1\text{ dB}}$	Output Power @ 1 dB Gain Compression: $V_{DS} = 5\text{ V}$, $I_{DS} = 30\text{ mA}$ $f = 14.0\text{ GHz}$	dBm		18.0	
G_1 dB	1 dB Compressed Gain: $V_{DS} = 5\text{ V}$, $I_{DS} = 30\text{ mA}$ $f = 14.0\text{ GHz}$	dB		8.0	
g_m	Transconductance: $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$	mmho	20	40	
I_{DSS}	Saturated Drain Current: $V_{DS} = 3\text{ V}$, $V_{GS} = 0\text{ V}$	mA	25	50	90
V_p	Pinchoff Voltage: $V_{DS} = 3\text{ V}$, $I_{DS} = 1\text{ mA}$	V	-3.0	-1.7	-0.8

AVANTEK INC

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}
Power Dissipation ^{2,3}	P _T	275 mW
Channel Temperature	T _{CH}	175°C
Storage Temperature	T _{STG}	-65°C to +175°C

Thermal Resistance: $\theta_{jc} = 325^\circ\text{C/W}$; T_{CH} = 150°CLiquid Crystal Measurement; 1 μm Spot Size⁴

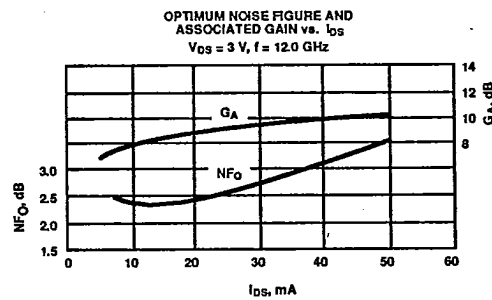
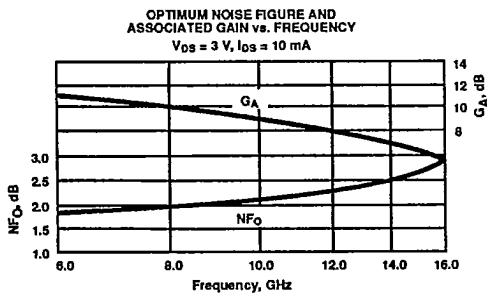
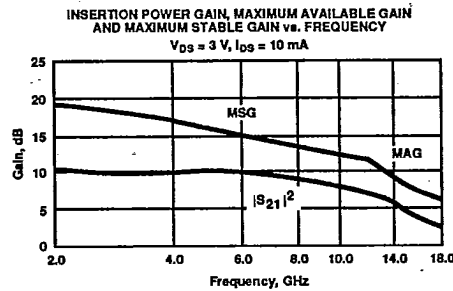
Notes:

- Operation of this device above any one of these parameters may cause permanent damage.
- Case Temperature = 25°C.
- Derate at 3 mW/°C for T_{CASE} > 86°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.

Typical Performance, T_A = 25°C

(unless otherwise noted)

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

Freq. GHz	S ₁₁		dB	S ₂₁		dB	S ₁₂		dB	S ₂₂	
	Mag	Ang		Mag	Ang		Mag	Ang		Mag	Ang
2.0	.94	-38	10.2	3.24	145	-27.3	.043	59	.76	-.22	
3.0	.88	-56	10.0	3.18	129	-25.4	.054	49	.73	-.30	
4.0	.86	-73	9.9	3.12	113	-23.9	.064	37	.70	-.41	
5.0	.81	-91	9.7	3.06	97	-22.5	.075	27	.66	-.51	
6.0	.77	-108	9.5	3.00	81	-21.4	.085	19	.63	-.62	
7.0	.71	-129	9.3	2.92	65	-20.1	.099	9	.58	-.72	
8.0	.65	-153	9.0	2.82	48	-19.3	.109	-6	.52	-.83	
9.0	.63	-176	8.6	2.68	31	-18.9	.114	-19	.48	-.96	
10.0	.62	164	7.8	2.45	14	-18.7	.116	-23	.44	-112	
11.0	.61	148	7.0	2.25	0	-18.8	.115	-29	.42	-128	
12.0	.61	130	6.5	2.12	-14	-18.9	.113	-36	.40	-140	
13.0	.60	114	6.0	1.99	-28	-19.2	.110	-49	.39	-152	
14.0	.60	98	5.5	1.88	-42	-19.3	.108	-57	.36	-171	
15.0	.60	85	4.7	1.71	-56	-19.5	.106	-63	.36	165	
16.0	.59	73	3.9	1.57	-69	-19.3	.108	-73	.40	141	
17.0	.59	65	3.2	1.44	-81	-19.2	.110	-79	.45	131	
18.0	.58	54	2.5	1.33	-95	-18.8	.115	-85	.49	123	

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