

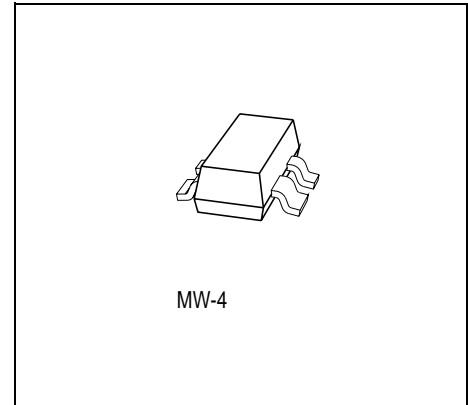
# GaAs HEMT

## Target Data Sheet

# CFH 77

- Very low noise
- Very high gain
- For low noise front end amplifiers up to 20 GHz
- For DBS down converters

ESD: **E**lectrostatic **d**ischarge sensitive device, observe handling precautions!



Type	Marking	Ordering Code (taped)	Package <sup>1)</sup>
CFH 77	t.b.d.	Q62702-G117	MW-4

<sup>1)</sup> Dimensions see **Page 5**.

Maximum Ratings	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	3.5	V
Drain-gate voltage	$V_{DG}$	4.5	V
Gate-source voltage	$V_{GS}$	- 3.0	V
Drain current	$I_D$	60	mA
Channel temperature	$T_{Ch}$	150	°C
Storage temperature range	$T_{stg}$	- 65 ... + 150	°C
Total power dissipation ( $T_S \leq 51 \text{ °C}$ ) <sup>1)</sup>	$P_{tot}$	180	mW

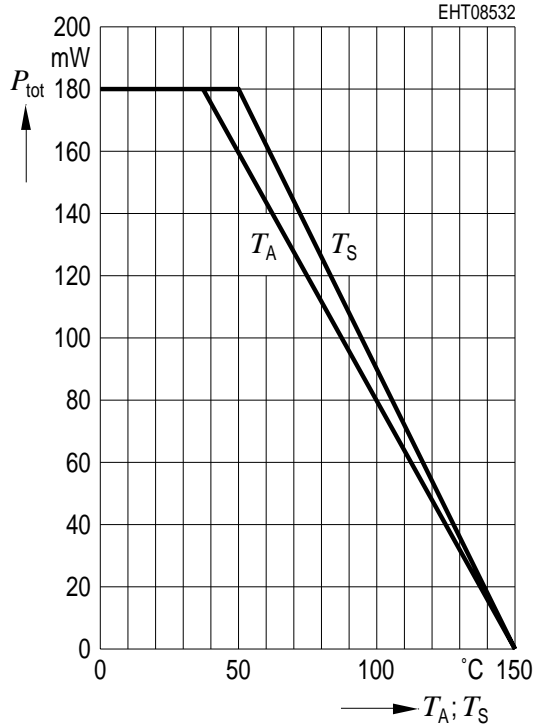
<sup>1)</sup>  $T_S$ : Temperature measured at soldering point.

Thermal Resistance	Symbol	Value	Unit
Channel-soldering point source	$R_{thChS}$	550	K/W

**Electrical Characteristics**
 $T_A = 25\text{ °C}$ , unless otherwise specified

Characteristics	Symbol	Limit Values			Unit	Test Conditions
		min.	typ.	max.		
Drain-source saturation current	$I_{DSS}$	15	30	60	mA	$V_{DS} = 2\text{ V}$ $V_{GS} = 0\text{ V}$
Pinch-off voltage	$V_{GS(P)}$	- 2	- 0.7	- 0.2	V	$V_{DS} = 2\text{ V}$ $I_D = 1\text{ mA}$
Gate leakage current	$I_G$	-	0.05	2	$\mu\text{A}$	$V_{DS} = 2\text{ V}$ $I_D = 15\text{ mA}$
Transconductance	$g_m$	50	65	-	mS	$V_{DS} = 2\text{ V}$ $I_D = 15\text{ mA}$
Noise figure	$F$	-	0.7	-	dB	$V_{DS} = 2\text{ V}$ $I_D = 15\text{ mA}$ $f = 12\text{ GHz}$
Associated gain	$G_a$	-	10.5	-	dB	$V_{DS} = 2\text{ V}$ $I_D = 15\text{ mA}$ $f = 12\text{ GHz}$

**Total Power Dissipation**  $P_{\text{tot}} = f(T_S; T_A)$ ,  
package mounted on alumina



**Typical Common Source Noise Parameters**

$I_D = 15 \text{ mA}$ ,  $U_{DS} = 2.0 \text{ V}$ ,  $Z_0 = 50 \Omega$

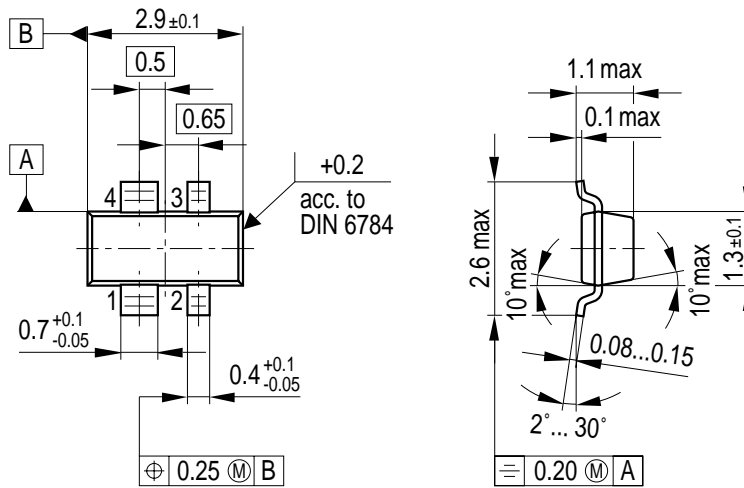
$f$ GHz	$F_{\text{min}}$ dB	$G_a$ dB	$G_{\text{opt}}$		$R_n$ $\Omega$	$r_n$ -	$N$ -	$F_{50 \Omega}$ dB
			MAG	ANG				
2	0.36	19.4	0.79	27	13.7	0.274	0.03	1.2
4	0.44	15.9	0.72	60	10.1	0.202	0.04	1.1
6	0.51	13.9	0.63	92	5.85	0.117	0.05	1.05
8	0.58	12.4	0.56	134	2.35	0.047	0.06	1.0
10	0.65	11.2	0.52	180	1.1	0.022	0.07	1.0
12	0.72	10.4	0.54	- 135	2.9	0.058	0.08	1.1
14	0.80	9.7	0.59	- 108	7.15	0.143	0.10	1.5

**Typical Common Source S-Parameters**
 $I_D = 15 \text{ mA}, U_D = 2.0 \text{ V}, Z_0 = 50 \Omega$ 

<i>f</i>	<b>S11</b>		<b>S21</b>		<b>S12</b>		<b>S22</b>	
	<b>GHz</b>	<b>MAG</b>	<b>ANG</b>	<b>MAG</b>	<b>ANG</b>	<b>MAG</b>	<b>ANG</b>	<b>MAG</b>
1	0.98	– 22.8	5.55	159.6	0.030	87.5	0.633	– 16.3
2	0.94	– 46.1	5.40	139.3	0.053	57.8	0.60	– 32.5
3	0.88	– 68.4	5.09	120.1	0.074	44.9	0.54	– 48.0
4	0.82	– 90.6	4.77	101.2	0.089	30.7	0.48	– 63.3
5	0.77	– 110.8	4.45	84.0	0.101	18.1	0.42	– 77.5
6	0.72	– 131.4	4.16	67.3	0.112	7.9	0.35	– 92.6
7	0.66	– 153.6	3.88	50.2	0.119	– 3.3	0.28	– 110.8
8	0.63	– 175.2	3.58	34.5	0.122	– 12.7	0.22	– 132.0
9	0.62	164.4	3.29	18.9	0.120	– 22.0	0.16	– 157.3
10	0.62	145.0	3.01	4.0	0.119	– 29.5	0.14	177.3
11	0.64	128.3	2.76	– 10.3	0.119	– 37.4	0.15	136.2
12	0.64	113.1	2.51	– 23.5	0.114	– 44.0	0.18	115.4
13	0.66	101.3	2.32	– 35.7	0.114	– 47.3	0.23	100.9
14	0.67	89.4	2.18	– 48.2	0.116	– 53.1	0.25	91.0
15	0.69	73.6	2.06	– 62.4	0.116	– 58.6	0.28	75.4
16	0.73	59.2	1.85	– 75.9	0.115	– 65.8	0.36	57.1
17	0.76	51.7	1.65	– 86.5	0.112	– 69.4	0.39	53.1
18	0.78	45.4	1.56	– 96.7	0.115	– 72.3	0.42	43.8
19	0.77	36.2	1.51	– 108.6	0.121	– 76.7	0.44	38.8

## Package Outlines

### MW-4 (Special Package)



GSO05553

Pin assignment:

- 1 = Source
- 2 = Drain
- 3 = Source
- 4 = Gate

### Sorts of Packing

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information".

SMD = Surface Mounted Device

Dimensions in mm