

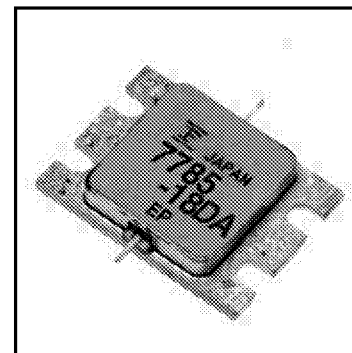
FLM7785-18DA

Internally Matched Power GaAs FETs



FEATURES

- High Output Power: $P_{1dB} = 42.5\text{dBm}$ (Typ.)
- High Gain: $G_{1dB} = 7.0\text{dB}$ (Typ.)
- High PAE: $\eta_{add} = 29\%$ (Typ.)
- Low $IM_3 = -45\text{dBc}@P_o = 31.5\text{dBm}$
- Broad Band: 7.7 ~ 8.5GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\Omega$
- Hermetically Sealed



DESCRIPTION

The FLM7785-18DA is a power GaAs FET that is internally matched for standard communication bands to provide optimum power and gain in a 50 ohm system.

Fujitsu's stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25^\circ\text{C}$)

Item	Symbol	Condition	Rating	Unit
Drain-Source Voltage	V_{DS}		15	V
Gate-Source Voltage	V_{GS}		-5	V
Total Power Dissipation	P_T	$T_C = 25^\circ\text{C}$	83.3	W
Storage Temperature	T_{stg}		-65 to +175	$^\circ\text{C}$
Channel Temperature	T_{ch}		175	$^\circ\text{C}$

Fujitsu recommends the following conditions for the reliable operation of GaAs FETs:

1. The drain-source operating voltage (V_{DS}) should not exceed 10 volts.
2. The forward and reverse gate currents should not exceed 18.0 and -8.4 mA respectively with gate resistance of 25 Ω .

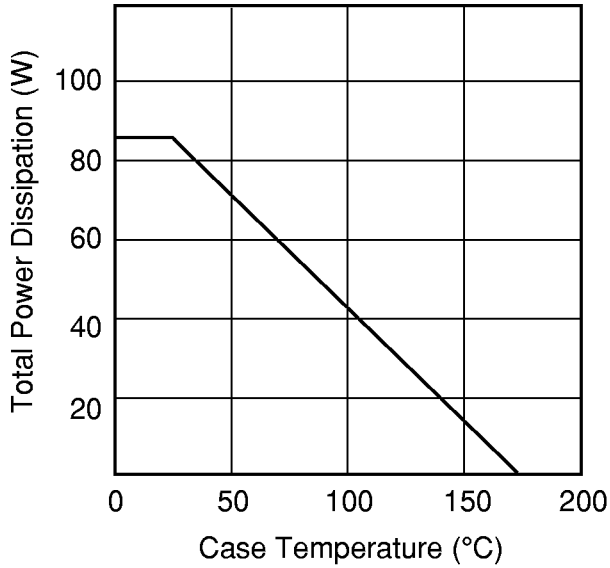
ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^\circ\text{C}$)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}$	-	8.55	12.75	mA
Transconductance	g_m	$V_{DS} = 5\text{V}, I_{DS} = 5100\text{mA}$	-	4350	-	mS
Pinch-off Voltage	V_p	$V_{DS} = 5\text{V}, I_{DS} = 450\text{mA}$	-1.0	-2.0	-3.5	V
Gate Source Breakdown Voltage	V_{GSO}	$I_{GS} = -450\mu\text{A}$	-5	-	-	V
Output Power at 1dB G.C.P.	P_{1dB}	$V_{DS} = 10\text{V},$ $I_{DS} = 0.55 I_{DSS}$ (Typ.), $f = 7.7 \sim 8.5 \text{GHz},$ $Z_S = Z_L = 50 \text{ohm}$	41.5	42.5	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		6.0	7.0	-	dB
Drain Current	I_{dsr}		-	4700	5800	mA
Power-added Efficiency	η_{add}		-	29	-	%
Gain Flatness	ΔG		-	-	± 0.6	dB
3rd Order Intermodulation Distortion	IM_3		$f = 8.5 \text{GHz}, \Delta f = 10 \text{MHz}$ 2-Tone Test $P_{out} = 31.5\text{dBm S.C.L.}$	-42	-45	-
Thermal Resistance	R_{th}	Channel to Case	-	1.6	1.8	$^\circ\text{C}/\text{W}$
Channel Temperature Rise	ΔT_{ch}	$10\text{V} \times I_{dsr} \times R_{th}$	-	-	80	$^\circ\text{C}$

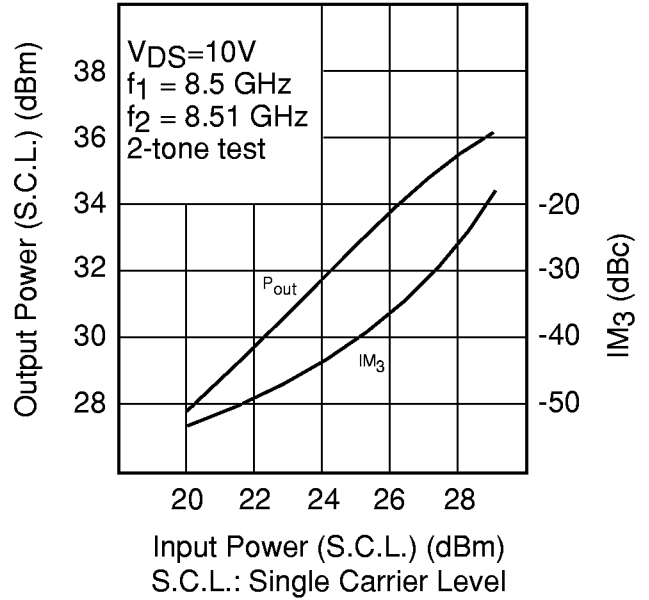
CASE STYLE: IK

G.C.P.: Gain Compression Point, S.C.L.: Single Carrier Level

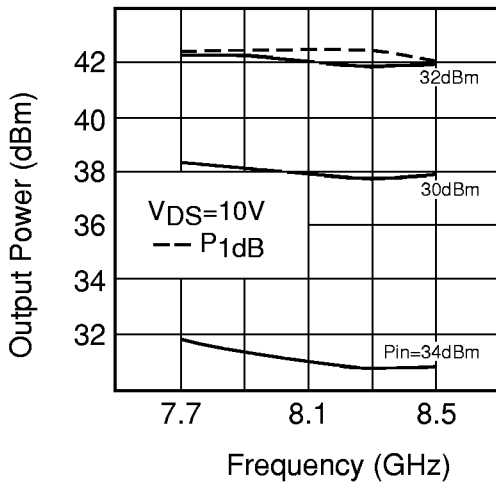
POWER DERATING CURVE



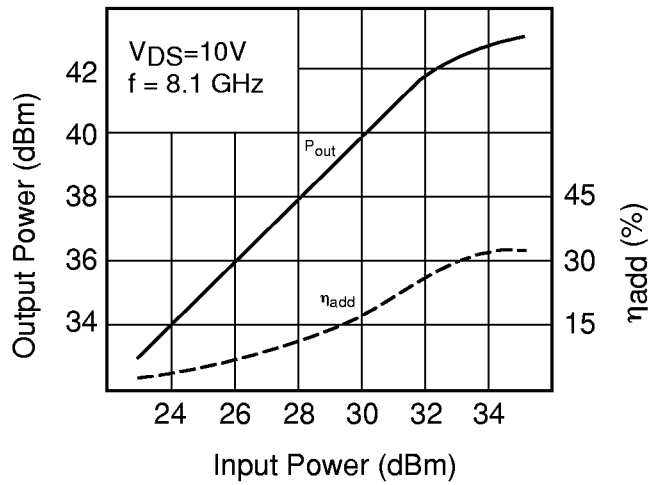
OUTPUT POWER & IM₃ vs. INPUT POWER



OUTPUT POWER vs. FREQUENCY

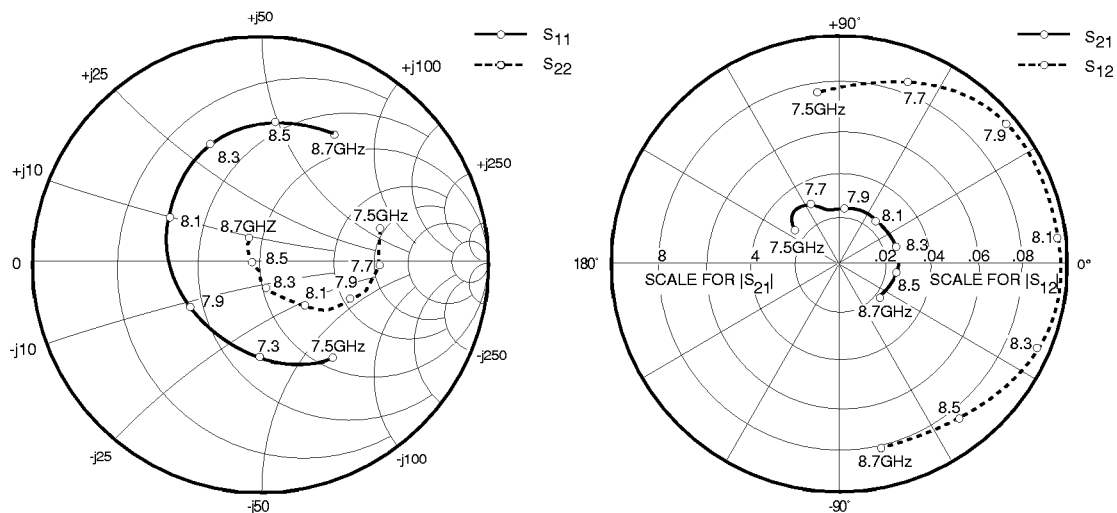


OUTPUT POWER vs. INPUT POWER



FLM7785-18DA

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S-PARAMETERS

$V_{DS} = 10V, I_{DS} = 4800mA$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
7500	.515	-53.6	2.361	142.8	.078	96.4	.536	15.9
7600	.467	-69.4	2.976	129.3	.084	82.8	.515	6.1
7700	.414	-89.2	3.057	115.8	.087	70.0	.514	-1.1
7800	.367	-114.8	2.453	99.9	.092	54.6	.474	-14.3
7900	.357	-146.8	2.503	84.6	.096	40.9	.417	-21.3
8000	.381	-178.6	2.518	67.8	.096	24.4	.362	-33.2
8100	.439	153.0	2.498	51.1	.097	7.4	.268	-44.6
8200	.506	130.6	2.475	35.0	.096	-8.2	.199	-51.6
8300	.563	112.4	2.458	19.4	.093	-23.4	.116	-72.0
8400	.616	97.1	2.612	4.5	.089	-38.0	.038	-80.1
8500	.635	84.1	2.478	-9.8	.085	-51.6	.027	168.2
8600	.650	71.8	2.339	-23.4	.081	-64.6	.086	117.4
8700	.658	61.8	2.246	-36.2	.081	-75.9	.114	107.8

Case Style "IK"
Metal-Ceramic Hermetic Package

