TOSHIBA

MICROWAVE SEMICONDUCTOR *TECHNICAL DATA*

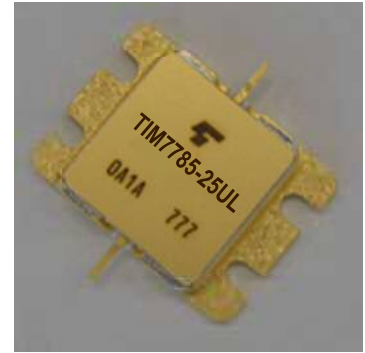*MICROWAVE POWER GaAs FET*

TIM7785-25UL

FEATURES

· **BROAD BAND INTERNALLY MATCHED FET**

· **HIGH POWER**

   P1dB= 44.5dBm at 7.7GHz to 8.5GHz

· **HIGH GAIN**

   G1dB= 8.5dB at 7.7GHz to 8.5GHz

· **LOW INTERMODULATION DISTORTION**

   IM3= -47dBc at Pout= 33.5dBm (Single Carrier Level)

· **HERMETICALLY SEALED PACKAGE**

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Gain Compression Point	P1dB	VDS= 10V IDSset= 5.2A f= 7.7 to 8.5GHz	dBm	43.5	44.5	—
Power Gain at 1dB Gain Compression Point	G1dB		dB	7.5	8.5	—
Drain Current	IDS1		A	—	6.8	7.6
Gain Flatness	ΔG		dB	—	—	±0.6
Power Added Efficiency	ηadd		%	—	36	—
3rd Order Intermodulation Distortion	IM3	Two-Tone Test Po= 33.5dBm, Δf= 5MHz (Single Carrier Level)	dBc	-44	-47	
Drain Current	IDS2		A	—	5.2	6.0
Channel Temperature Rise	ΔTch	$(VDS \times IDS + Pin - P1dB) \times Rth(c\text{-}c)$	°C	—	—	80

Recommended Gate Resistance (Rg): 28 Ω

ELECTRICAL CHARACTERISTICS   (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	VDS= 3V IDS= 8.0A	S	—	5.0	—
Pinch-off Voltage	VGSoff	VDS= 3V IDS= 80mA	V	-1.0	-2.5	-4.0
Saturated Drain Current	IDSS	VDS= 3V VGS= 0V	A	—	14.4	—
Gate-Source Breakdown Voltage	VGSO	IGS= -280μA	V	-5	—	—
Thermal Resistance	Rth(c-c)	Channel to Case	°C/W	—	1.2	1.5

MICROWAVE SEMICONDUCTOR TECHNICAL DATA

ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	VDS	V	15
Gate-Source Voltage	VGS	V	-5
Drain Current	IDS	A	20.0
Total Power Dissipation (Tc= 25°C)	PT	W	100
Channel Temperature	Tch	°C	175
Storage Temperature	Tstg	°C	-65 to +175

PACKAGE OUTLINE (2-16G1B)
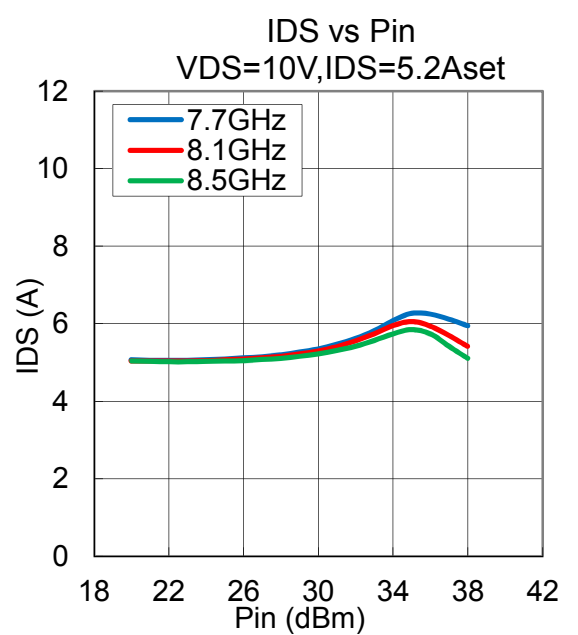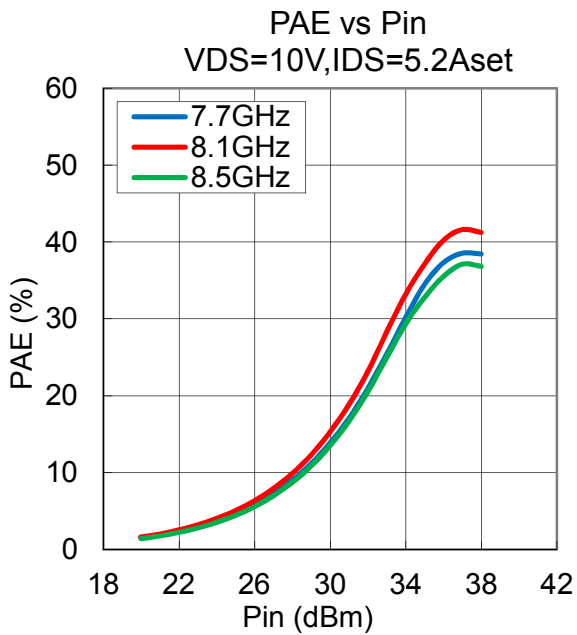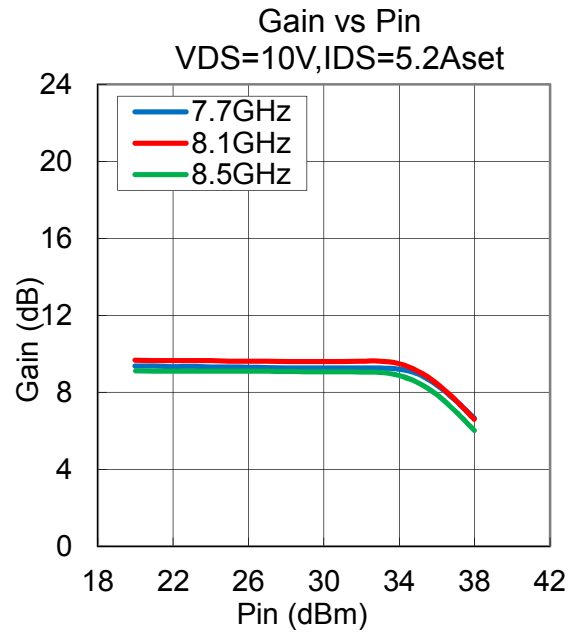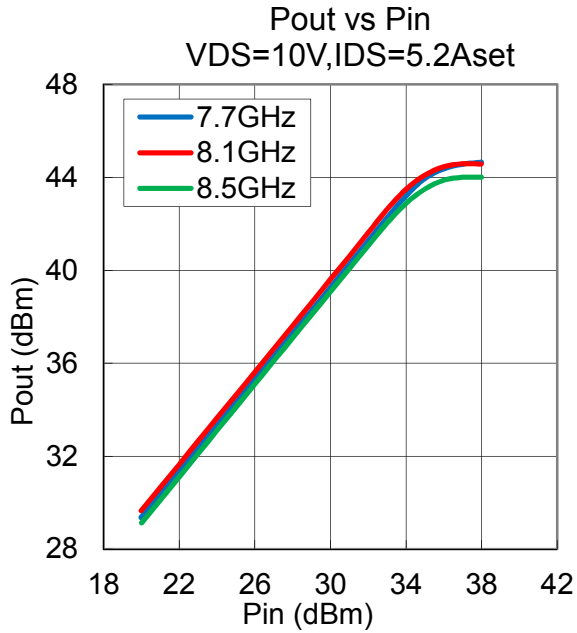

Unit in mm

① Gate
② Source
③ Drain
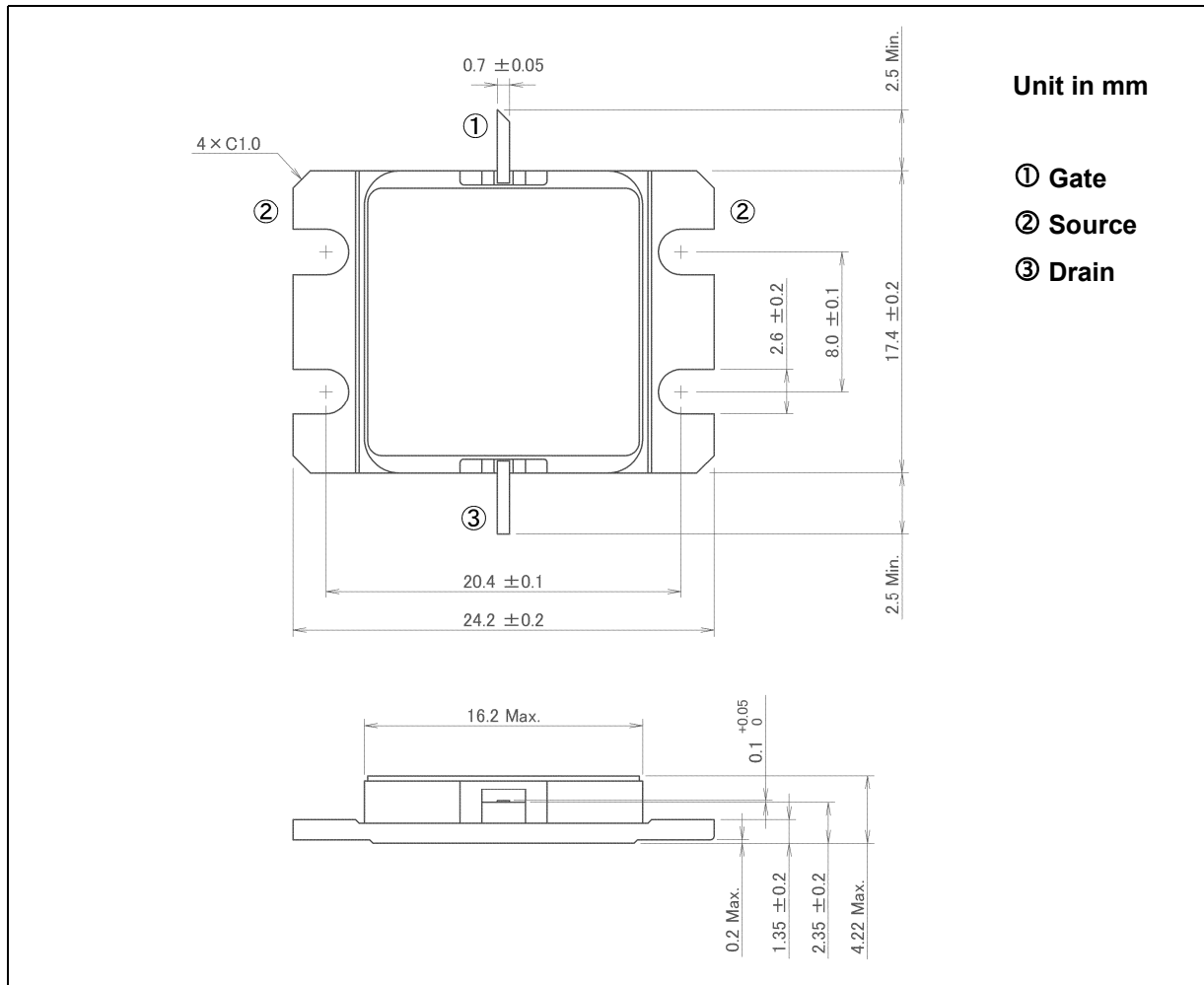
HANDLING PRECAUTIONS FOR PACKAGE MODEL

Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.

TYPICAL RF PERFORMANCE
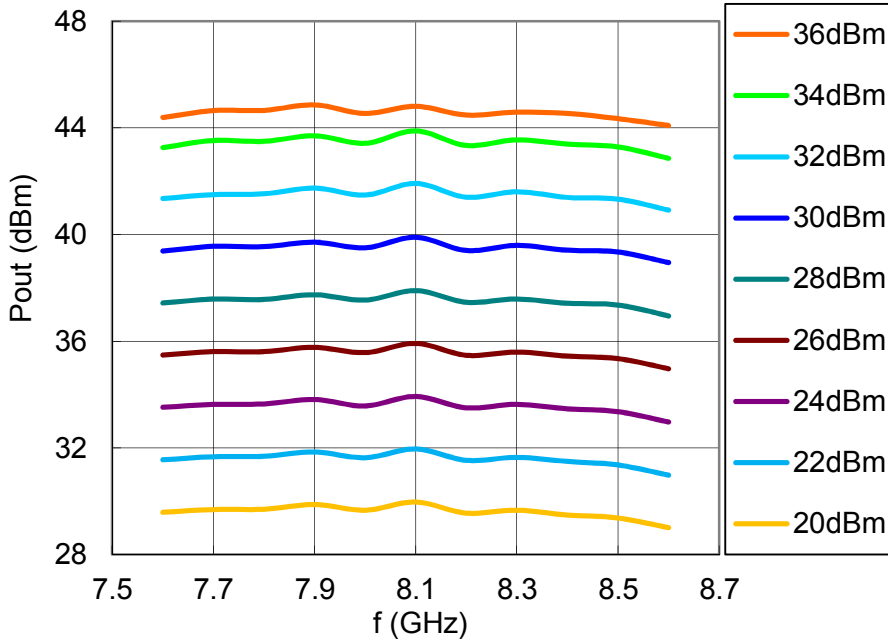
·Pout , Gain , PAE , IDS vs. Pin

VDS= 10 V, IDSset= 5.2 A, f= 7.7, 8.1, 8.5 GHz, Ta= +25 ℃

·Pout vs. Frequency

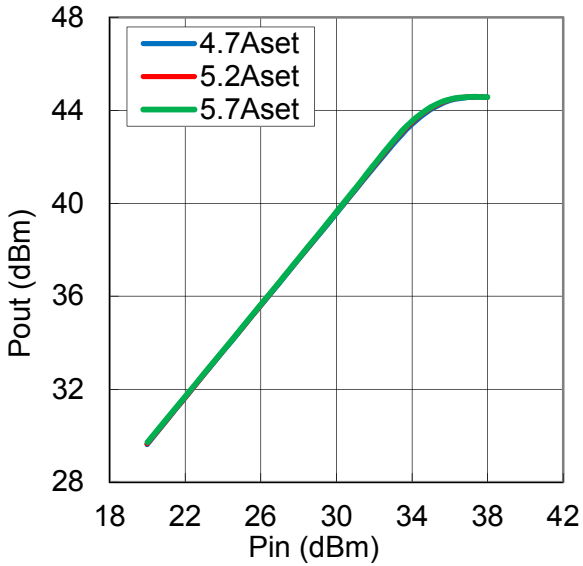VDS= 10 V, IDSset= 5.2 A, Ta= +25 ℃
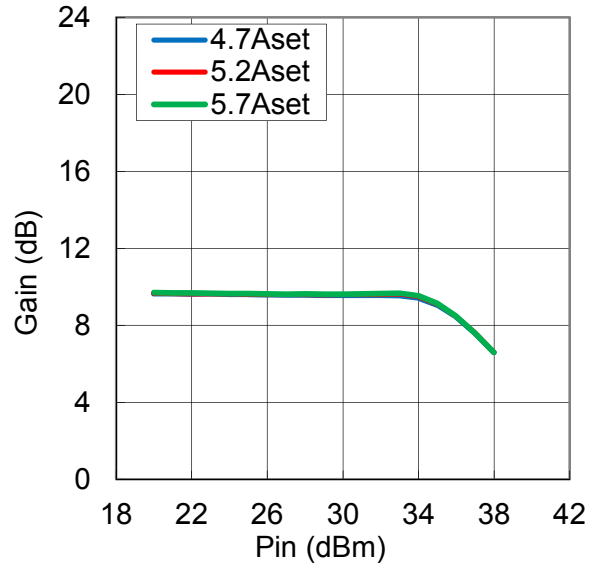

Pout vs Freq
VDS=10A IDS=5.2Aset

·Pout , Gain , PAE , IDS vs. Pin vs. IDSset

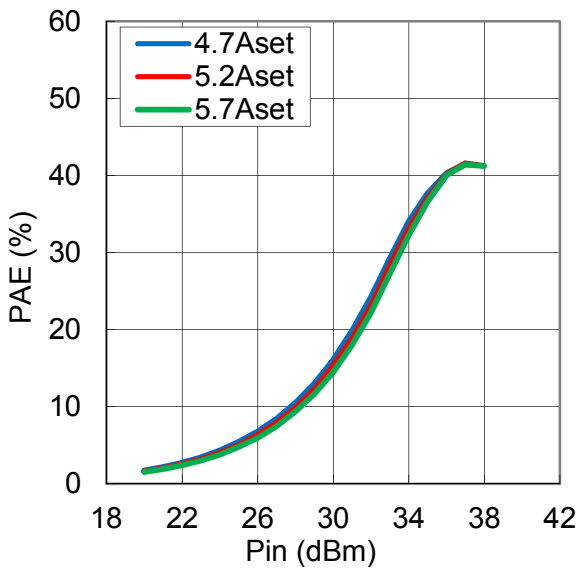VDS= 10 V, IDSset= 4.7, 5.2, 5.7 A, f= 8.1 GHz, Ta= +25 ℃

Pout vs Pin
VDS=10V,f=8.1GHz
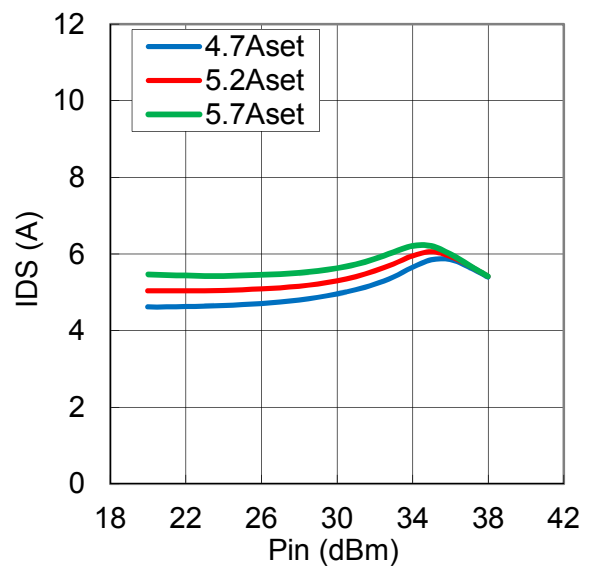

Gain vs Pin
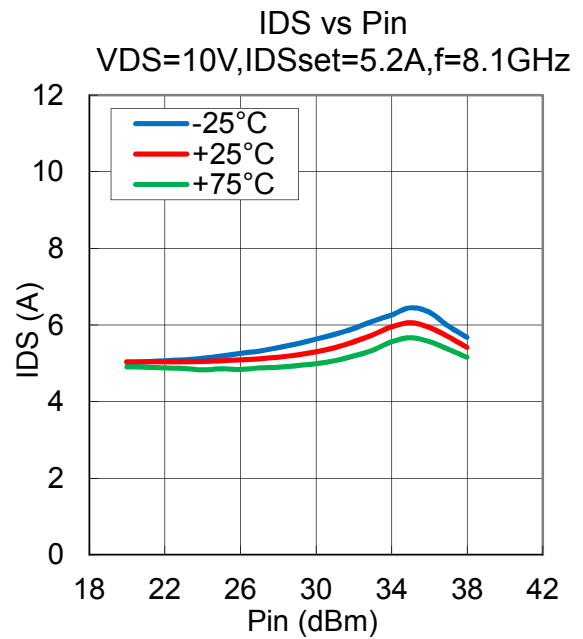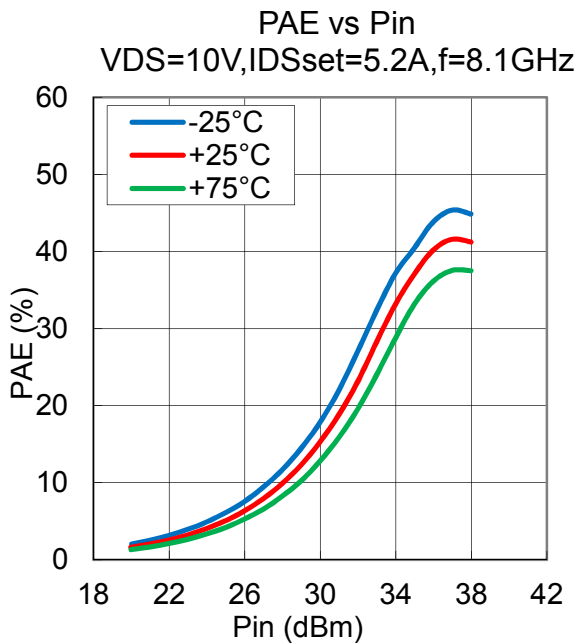VDS=10V,f=8.1GHz

PAE vs Pin
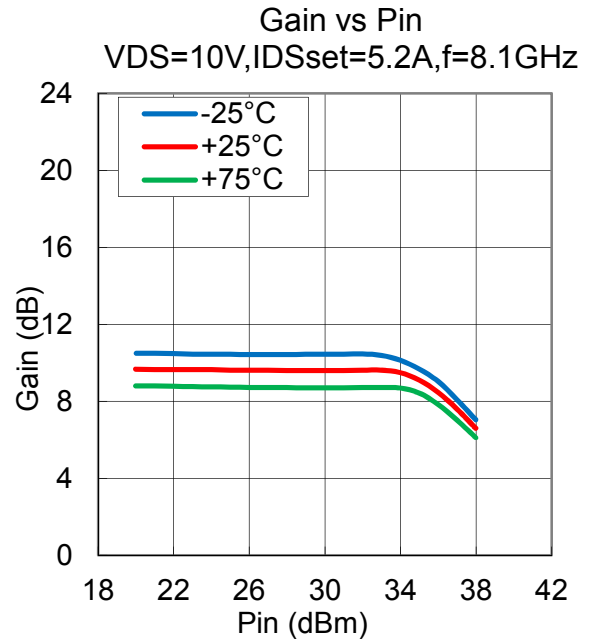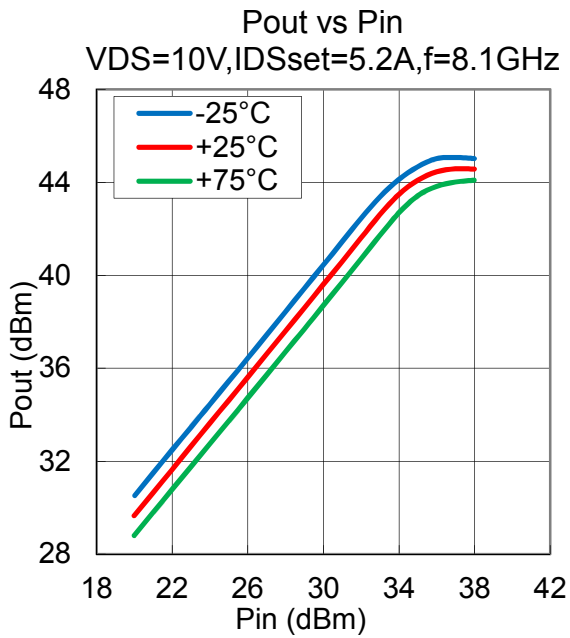VDS=10V,f=8.1GHz

IDS vs Pin
VDS=10V,f=8.1GHz

·**Pout , Gain , PAE , IDS vs. Pin vs. Temperature**

VDS= 10 V, IDSset= 5.2 A, f= 8.1 GHz, Ta= -25, +25, +75 ℃

Pout vs Pin
VDS=10V,IDSset=5.2A,f=8.1GHz

Gain vs Pin
VDS=10V,IDSset=5.2A,f=8.1GHz

PAE vs Pin
VDS=10V,IDSset=5.2A,f=8.1GHz

IDS vs Pin
VDS=10V,IDSset=5.2A,f=8.1GHz

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