TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

TIM7785-35SL

FEATURES

- **LOW INTERMODULATION DISTORTION**
  IM3=-45 dBc at Po= 35.0dBm,
  Single Carrier Level
- **HIGH POWER**
  P1dB=45.5dBm at 7.7GHz to 8.5GHz
- **HIGH GAIN**
  G1dB=6.0dB at 7.7GHz to 8.5GHz
- **BROAD BAND INTERNALLY MATCHED FET**
- **HERMETICALLY SEALED PACKAGE**

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Gain Compression Point	P_{1dB}	V_{DS}=10V f = 7.7 to 8.5GHz	dBm	45.0	45.5	—
Power Gain at 1dB Gain Compression Point	G_{1dB}		dB	5.0	6.0	—
Drain Current	I_{DS1}		A	—	8.0	9.0
Gain Flatness	ΔG		dB	—	—	±0.8
Power Added Efficiency	η_{add}		%	—	33	—
3rd Order Intermodulation Distortion	IM_3	Two-Tone Test Po=35.0dBm (Single Carrier Level)	dBc	-42	-45	—
Drain Current	I_{DS2}		A	—	8.0	9.0
Channel Temperature Rise	ΔT_{ch}	(VDS X IDS + Pin – P1dB) X Rth(c-c)	°C	—	—	100

Recommended Gate Resistance(Rg): 28 Ω (Max.)

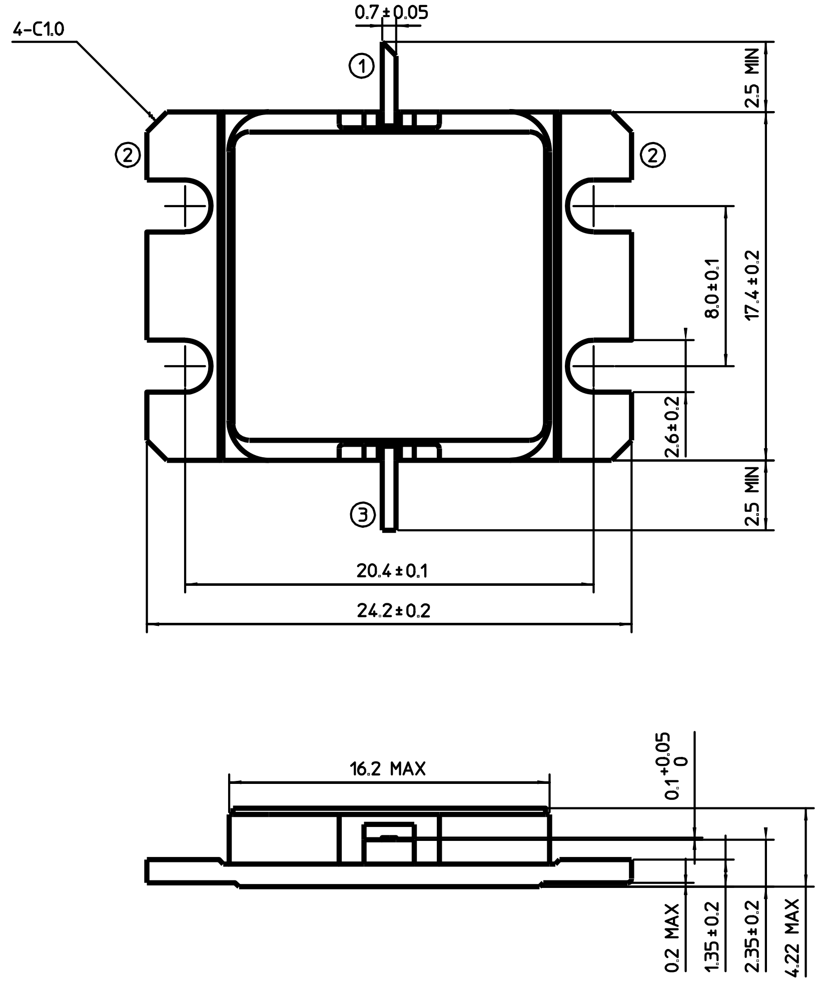
ELECTRICAL CHARACTERISTICS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT	MIN.	TYP.	MAX.
Transconductance	gm	V_{DS}= 3V I_{DS}= 10.5A	mS	—	6500	—
Pinch-off Voltage	V_{GSoff}	V_{DS}= 3V I_{DS}= 140mA	V	-1.0	-2.5	-4.0
Saturated Drain Current	I_{DSS}	V_{DS}= 3V V_{GS}= 0V	A	—	20	—
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS}= -420μA	V	-5	—	—
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	°C/W	—	1.0	1.3

ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	20
Total Power Dissipation (Tc= 25 °C)	P_T	W	115.4
Channel Temperature	T_{ch}	°C	175
Storage	T_{stg}	°C	-65 to +175

PACKAGE OUTLINE (2-16G1B)



Unit in mm

(1) Gate

(2) Source

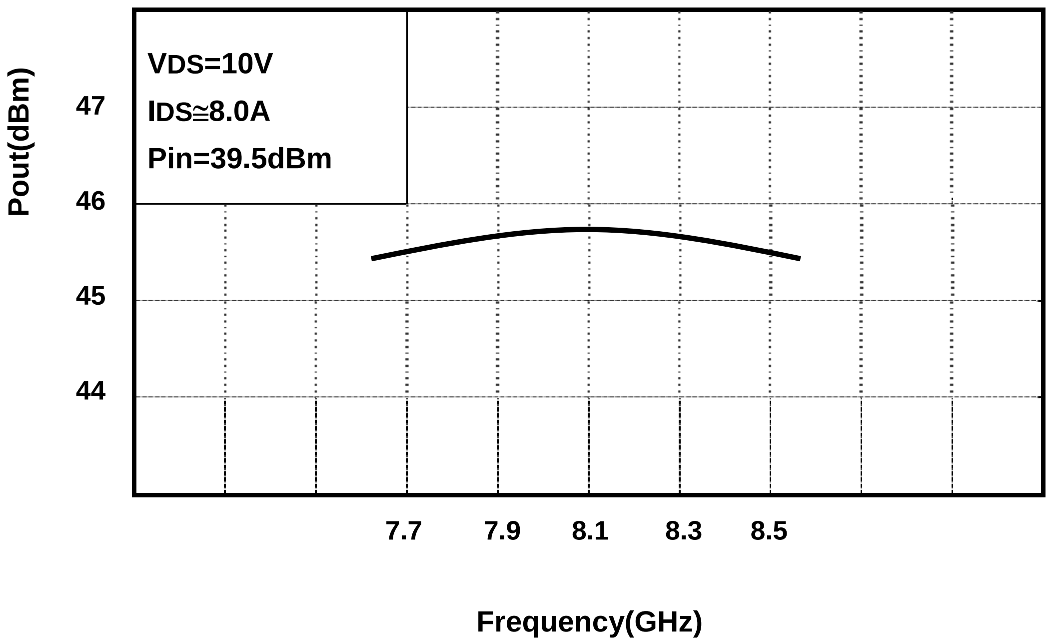
(3) Drain

HANDLING PRECAUTIONS FOR PACKAGE MODEL

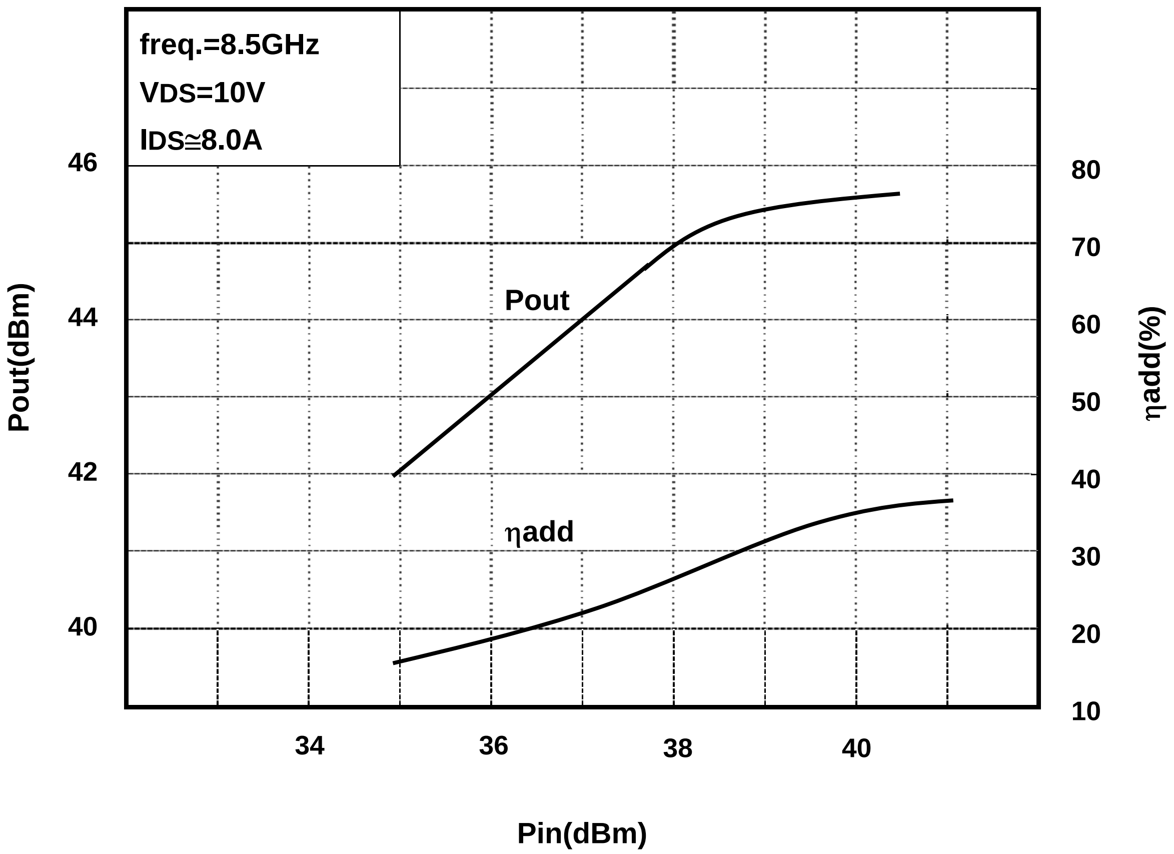
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

RF PERFORMANCE

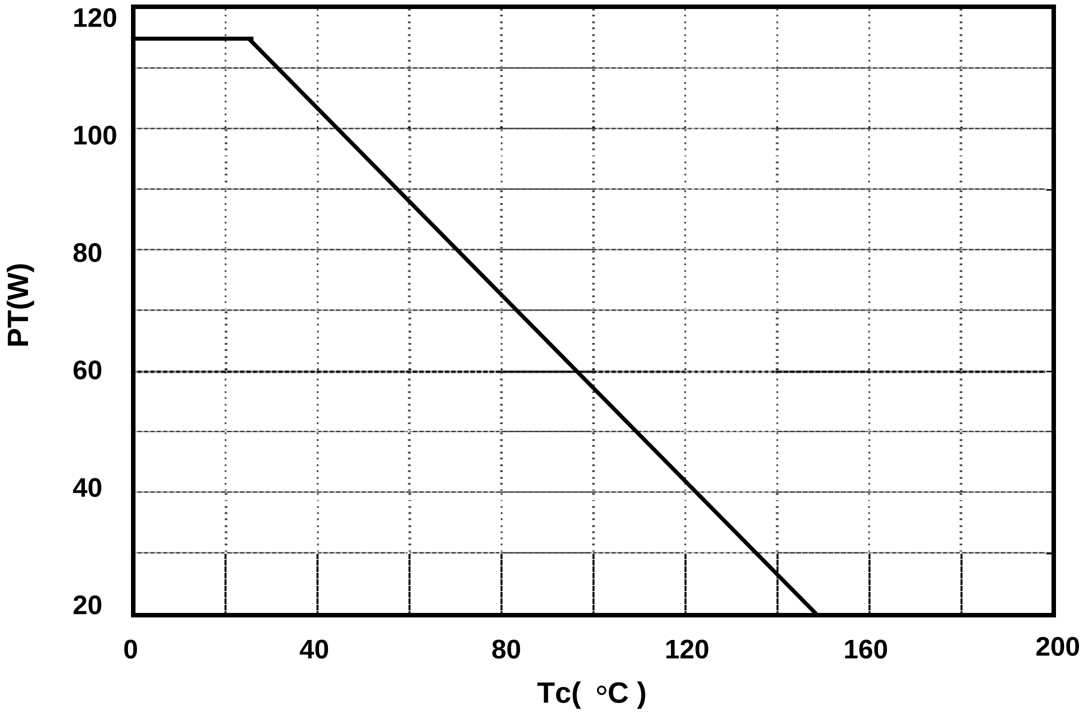
Output Power (Pout) vs. Frequency



Output Power(Pout) vs. Input Power(Pin)



Power Dissipation(PT) vs. Case Temperature(Tc)



IM3 vs. Output Power Characteristics