

### Low Distortion Internally Matched Power GaAs FETs (C-Band)

#### Features

- Low intermodulation distortion
  - $IM_3 = -45$  dBc at  $P_o = 25$  dBm,
  - Single carrier level
- High power
  - $P_{1dB} = 36$  dBm at 3.7 GHz to 4.2 GHz
- High gain
  - $G_{1dB} = 10.0$  dB at 3.7 GHz to 4.2 GHz
- Broad band internally matched
- Hermetically sealed package

#### RF Performance Specifications ( $T_a = 25^\circ \text{C}$ )

Characteristics	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	$P_{1dB}$	$V_{DS} = 10V$ $f = 3.7 \sim 4.2 \text{ GHz}$	dBm	35.0	36.0	—
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	9.0	10.0	—
Drain Current	$I_{DS1}$		A	—	1.1	1.5
Gain Flatness	$\Delta G$		dB	—	—	$\pm 0.6$
Power Added Efficiency	$\eta_{add}$		%	—	33	—
3rd Order Intermodulation Distortion	$IM_3$	Note 1	dBc	-42	-45	—
Drain Current	$I_{DS2}$		A	—	1.1	1.5
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th}(C-C)$	$^\circ\text{C}$	—	—	80

#### Electrical Characteristics ( $T_a = 25^\circ \text{C}$ )

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	$V_{DS} = 3V$ $I_{DS} = 1.5A$	mS	—	900	—
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3V$ $I_{DS} = 20mA$	V	-2	-3.5	-5.0
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3V$ $V_{GS} = 0V$	A	—	2.9	3.8
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -60\mu A$	V	-5	—	—
Thermal Resistance	$R_{th}(C-C)$	Channel to case	$^\circ\text{C/W}$	—	4	6

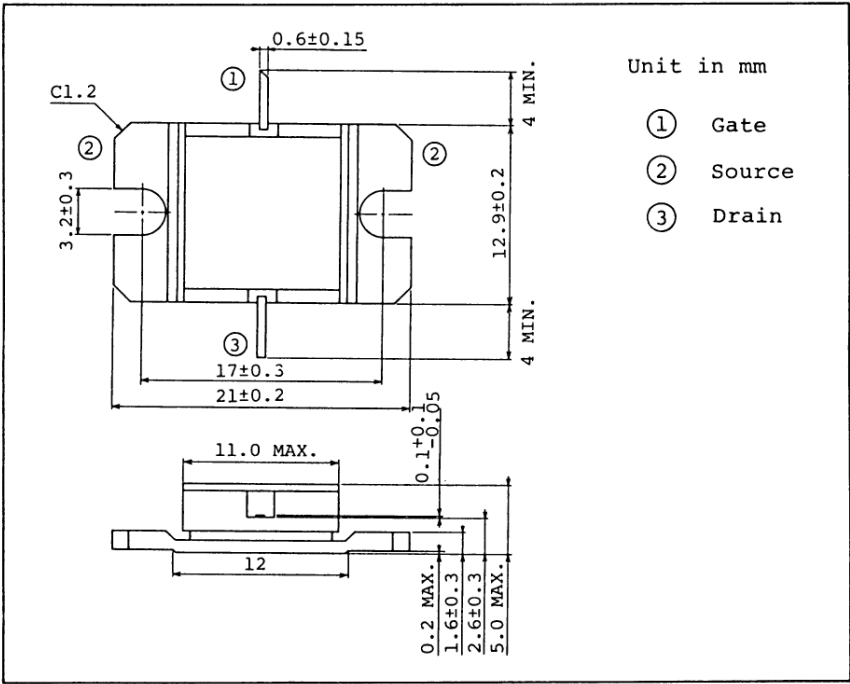
Note 1: 2 tone Test Pout = 25dBm Single Carrier Level.

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Absolute Maximum Ratings (Ta = 25° C)

Characteristic	Symbol	Unit	Rating
Drain-Source Voltage	$V_{DS}$	V	15
Gate-Source Voltage	$V_{GS}$	V	-5
Drain Current	$I_{DS}$	A	4
Total Power Dissipation (Tc = 25°C)	$P_T$	W	20
Channel Temperature	Tch	°C	175
Storage Temperature	Tstg	°C	-65~175

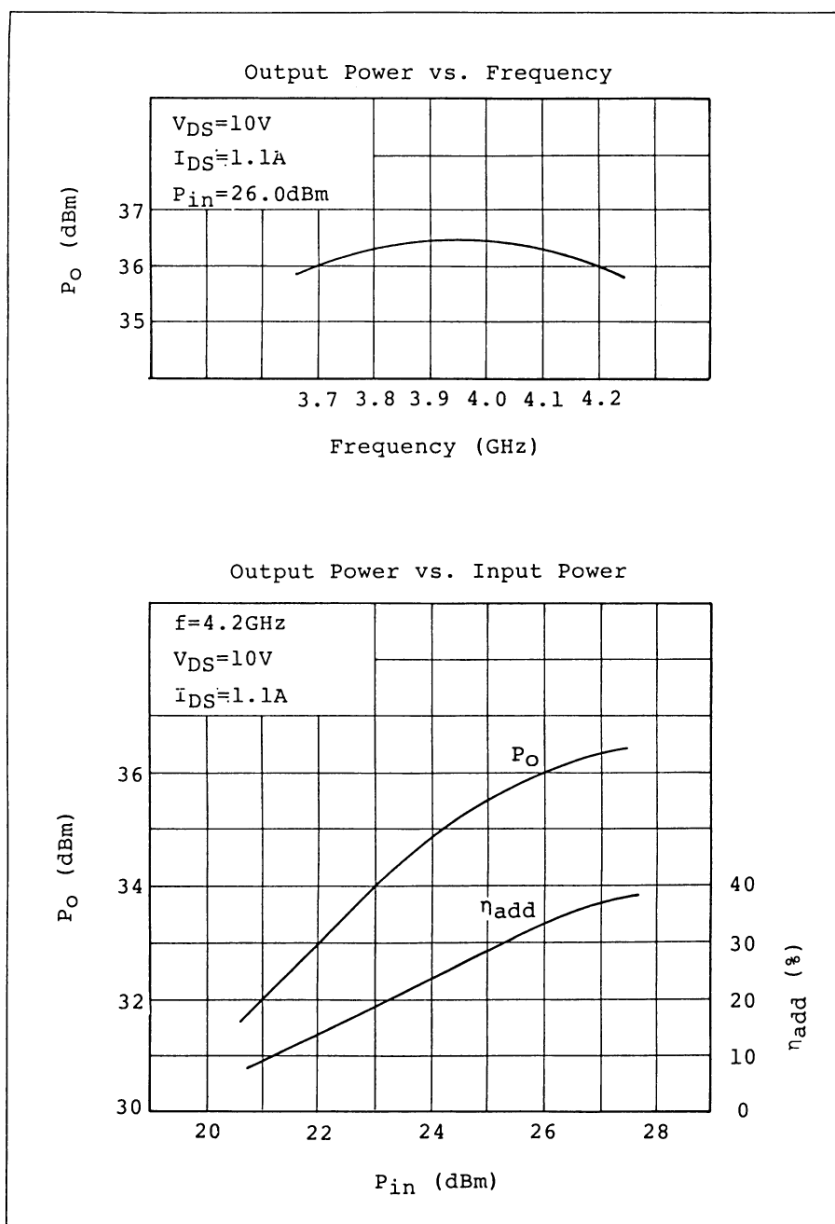
Package Outline (2-11D1B)



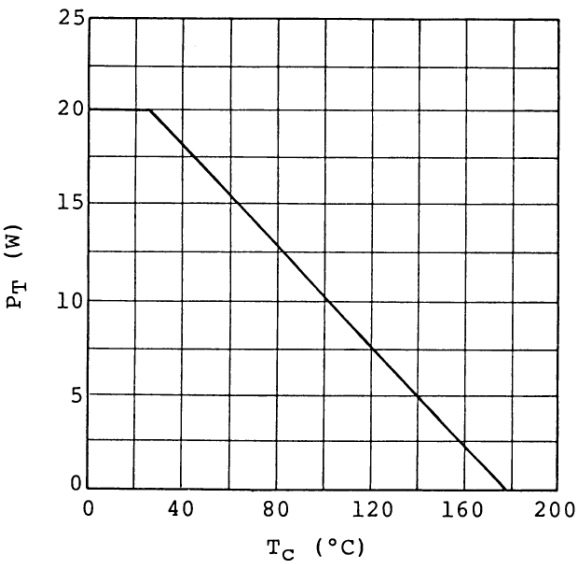
Handling Precautions for Packaged Type

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

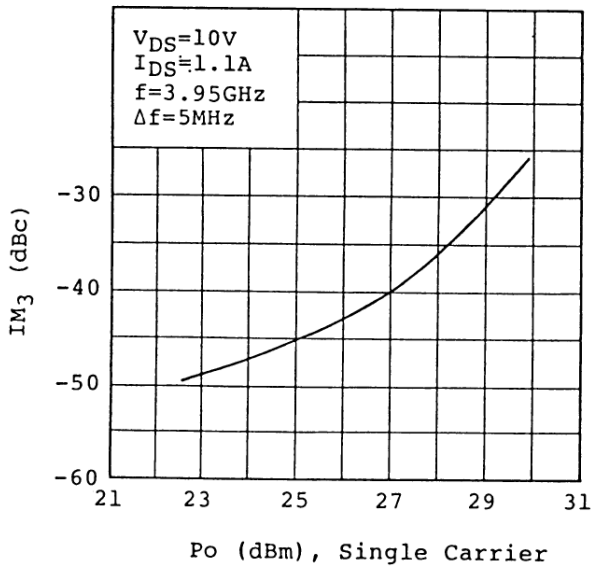
## RF Performances



Power Dissipation vs. Case Temperature



IM<sub>3</sub> vs. Output Power Characteristics



**TIM3742-4L S-Parameters  
(MAGN. and ANGLES)**
 $V_{DS} = 10 \text{ V}, I_{DS} = 1.0 \text{ A}$ 
