TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER MMIC AMPLIFIER

TMD1414-2C

FEATURES

- **Suitable for Ku-band VSAT**
- **HIGH POWER**
  P1dB=34.0dBm (TYP.)
- **HIGH GAIN**
  G1dB=24.0dB (TYP.)
- **HIGH POWER ADDED EFFICIENCY**
  ηadd=29% (TYP.)
- **BROADBAND OPERATION**
  f=13.75-14.5GHz

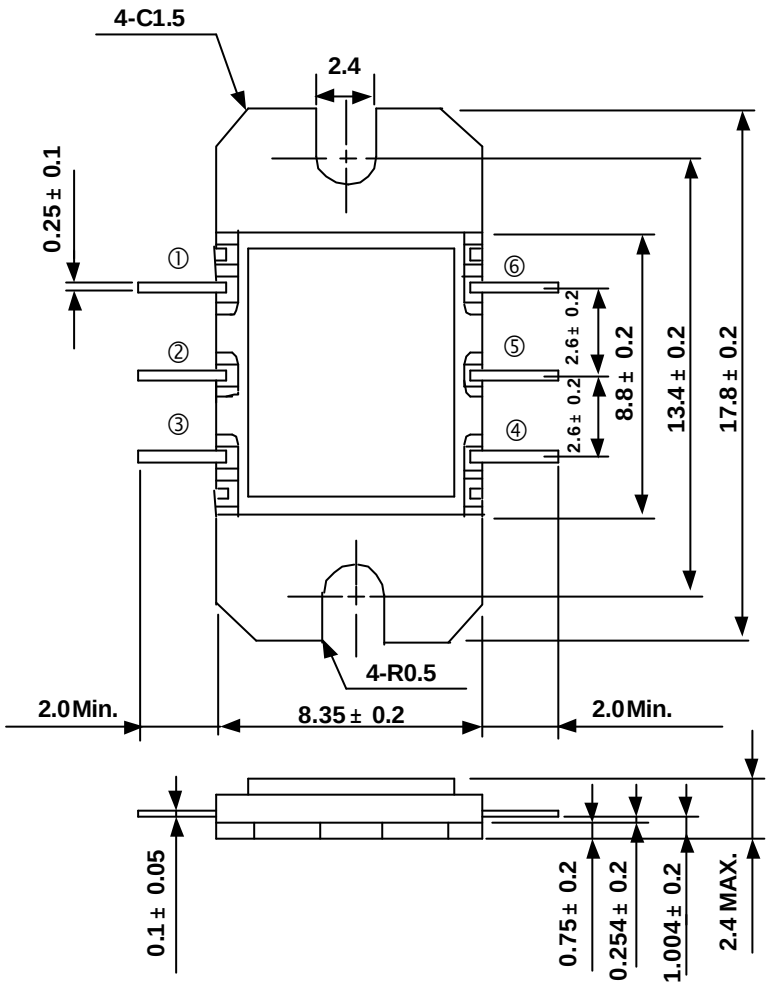
ABSOLUTE MAXIMUM RATINGS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	UNIT	RATING
Drain Supply Voltage	V_{DD}	V	10
Gate Supply Voltage	V_{GG}	V	-10
Input Power	P_{in}	dBm	20
Flange Temperature	T_f	°C	-40 ~ +90
Storage Temperature	T_{stg}	°C	-65 ~ +175

RF PERFORMANCE SPECIFICATIONS (Ta= 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Operating Frequency	f		GHz	13.75	—	14.5
Output Power at 1dB Gain Compression Point	P_{1dB}	V_{DD}= 7V V_{GG}= -5V	dBm	32.0	34.0	—
Power Gain at 1dB Gain Compression Point	G_{1dB}		dB	21.0	24.0	—
Gain Flatness	ΔG		dB	—	—	±1.0
Drain Current	I_{DD}		A	—	1.4	1.8
Power Added Efficiency	η_{add}		%	—	29	—
3rd Order Intercept Point	IP_3		dBm	—	40	—
VSWRin (small signal)	VSWRin		—	—	2.0	2.5
VSWRout (small signal)	VSWRout		—	—	2.0	3.0
Detecter Output Voltage	Vdet	@ Po=33dBm	V	—	2.5	—

PACKAGE OUTLINE (2-9E1C)

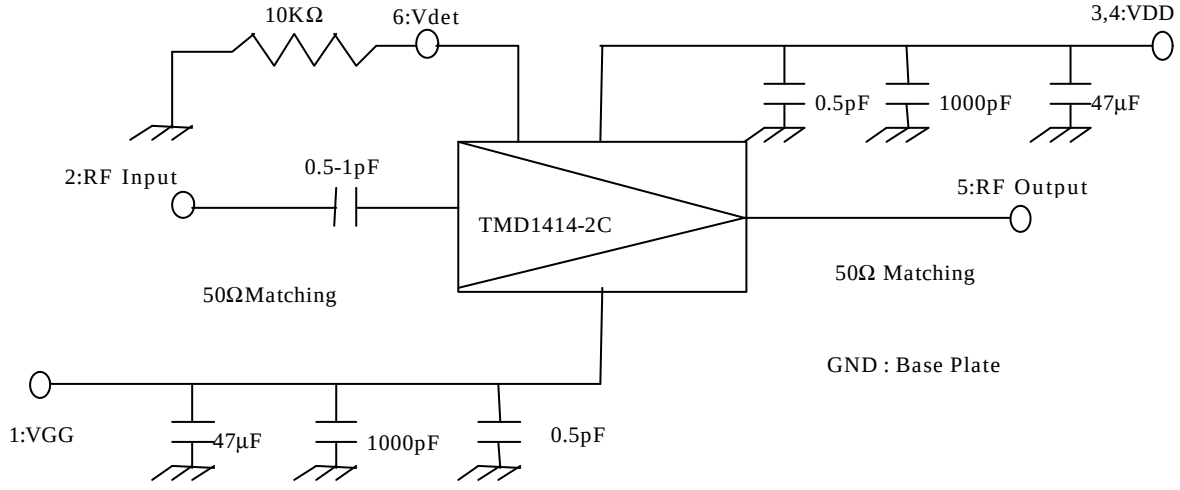


Unit in mm

① : VGG
② : RF Input
③④ : VDD
⑤ : RF Output
⑥ : Vdet

Two VDD pins do not have to be biased at the same time, but at least one of the pins has to be biased.
In case only one pin is biased, The Other pin has to be opened.

Recommended Bias Configuration



S-Parameters of TMD1414-2C

V_{DD}= 7V, V_{GG}= -5V

Freq. (GHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
13.5	0.24	-79	16.1	55	0.004	150	0.42	-91
13.6	0.22	-76	16.8	43	0.005	147	0.43	-96
13.7	0.20	-72	17.5	30	0.005	139	0.44	-100
13.8	0.18	-67	18.3	17	0.006	143	0.45	-106
13.9	0.17	-62	19.0	4	0.005	129	0.46	-113
14.0	0.16	-56	19.7	-11	0.006	135	0.46	-120
14.1	0.16	-51	20.3	-26	0.007	135	0.47	-129
14.2	0.15	-47	20.7	-41	0.006	130	0.47	-139
14.3	0.15	-41	20.8	-56	0.007	132	0.46	-150
14.4	0.14	-33	20.5	-72	0.008	119	0.44	-161
14.5	0.14	-23	19.8	-88	0.008	118	0.41	-173
14.6	0.15	-12	18.8	-103	0.008	115	0.38	175
14.7	0.17	-4	17.7	-117	0.009	111	0.34	164