AMT1328

33 - 37GHz Transceiver Integrated Multi-Function Chip

Key Features :

- Frequency : 33 – 37GHz
- Receiver gain : 25dB
- Transmitter gain : 28dB
- Receiver noise figure :3.8dB
- Receiver input/output standing wave : 1.5/1.5
- Transmitter input/output standing wave : 1.4/1.4
- Receiver output power at P-1 : 13dBm
- Transmitter output power at P-1 : 19dBm
- Transmitter saturated output power : 21.5dBm
- Receiver power dissipation : 5V/90mA
- Transmitter power dissipation : 5V/120mA
- Switch control method : 0/-5V
- Chip dimensions : 3.0mm x 2.5mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT1328 is a high performance transceiver multi-function chip, frequency range is 33 – 37GHz, it integrates switch and bi-directional power amplifier, receiver gain is 25dB, noise figure is 3.8dB, transmitter gain is 28dB, and transmitter saturated output power is 21.5dBm. It is designed by Gallium Arsenide (GaAs) process. This chip is designed with ground through metal vias on the back technology. All chip products p are 100% RF tested.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain voltage	+7V	
Pin	Max. Input Signal Power	12dBm	
Tch	Operation Temperature	150°C	
Tm	Sintering Temperature	310°C	30s, N_2 protection
Tstg	Storage Temperature	-65 ~ +150°C	

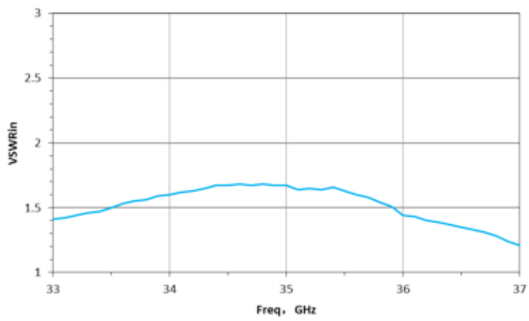
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

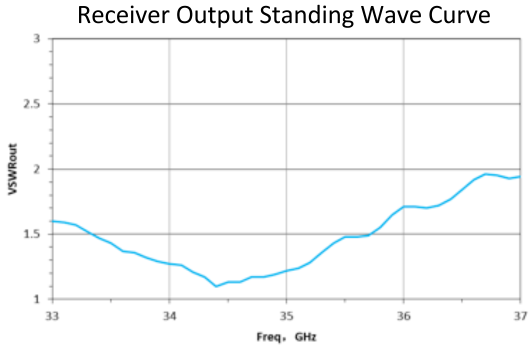
Symbol	Parameter	Test Conditions	Value			Unit
			Min	Typical	Max	
G_R	Receiver gain	F : 6 ~ 18GHz PA_VD1 = 0V, PA_VD2 = 0V, PA_VD3 = 0V, PA_VD4 = 0V, PA_VG = 0V, LNA_VD = +5V, SW1 = 0V, SW2 = -5V	-	26	-	dB
NF	Receiver noise figure		-	3.5	-	dB
$VSWR_{RX}$	Receiver input standing wave		-	1.4	-	-
$VSWR_{RX}$	Receiver output standing wave		-	1.4	-	-
P_{R-1dB}	Receiver output power at P-1 point		-	2.5	-	dBm
G_T	Transmitter power gain	F : 6 ~ 18GHz, PA_VD1 = +5V, PA_VD2 = +5V, PA_VD3 = +5V, PA_VD4 = +5V, PA_VG = -5V, LNA_VD = 0V, SW1 = -5V, SW2 = 0V	-	23	-	dB
$VSWR_{TX}$	Transmitter input standing wave		-	1.8	-	-
$VSWR_{TX}$	Transmitter output standing wave		-	2	-	-
P_{T-1dB}	Transmitter output power at P-1 point		-	22	-	dBm
Pout	Transmitter saturated output power		-	0.5	-	A

Typical Performance

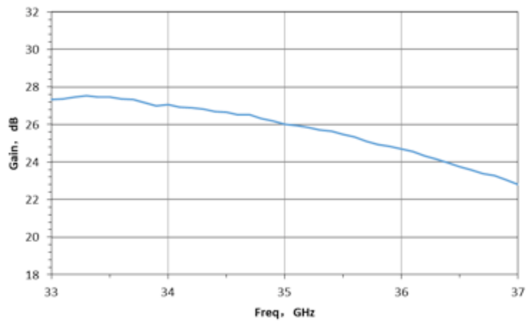
Receiver Input Standing Wave Curve



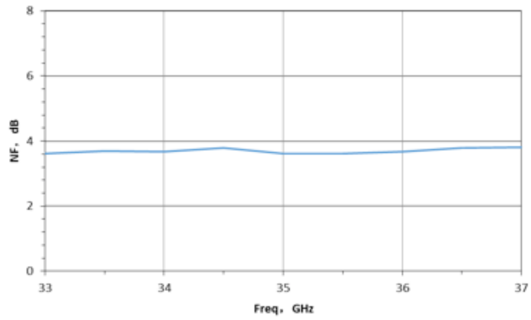
Receiver Output Standing Wave Curve



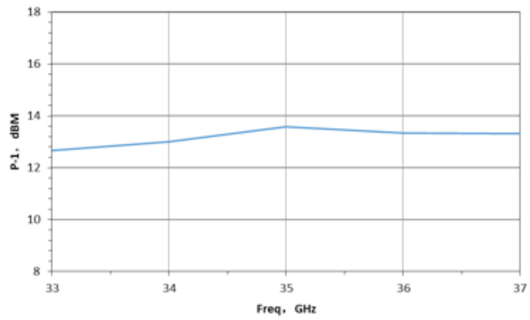
Receiver Gain Curve



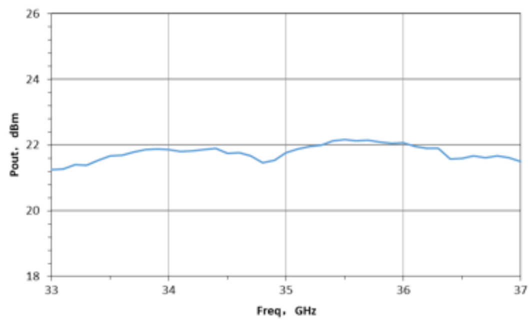
Noise Figure Curve



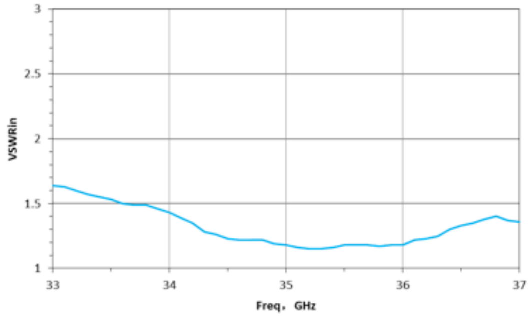
Receiver Output Power at P-1 Curve



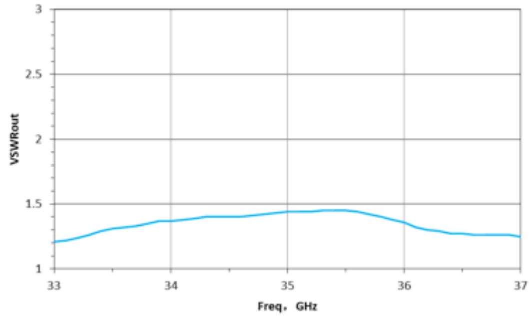
Transmitter Saturated Output Power Curve



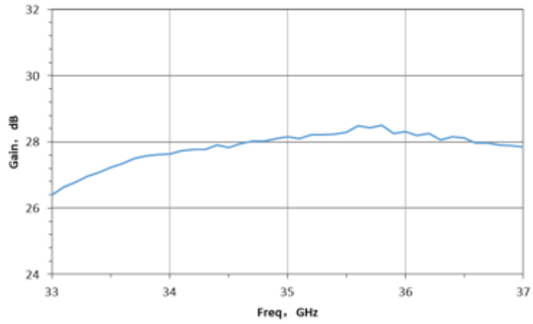
Transmitter Input Standing Wave Curve



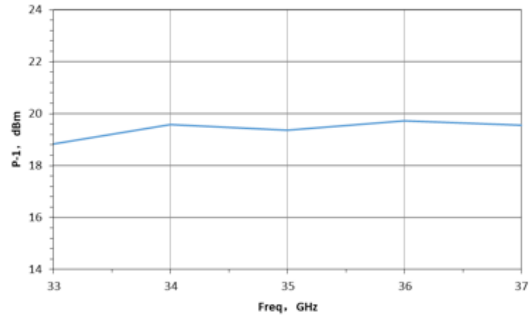
Transmitter Output Standing Wave Curve



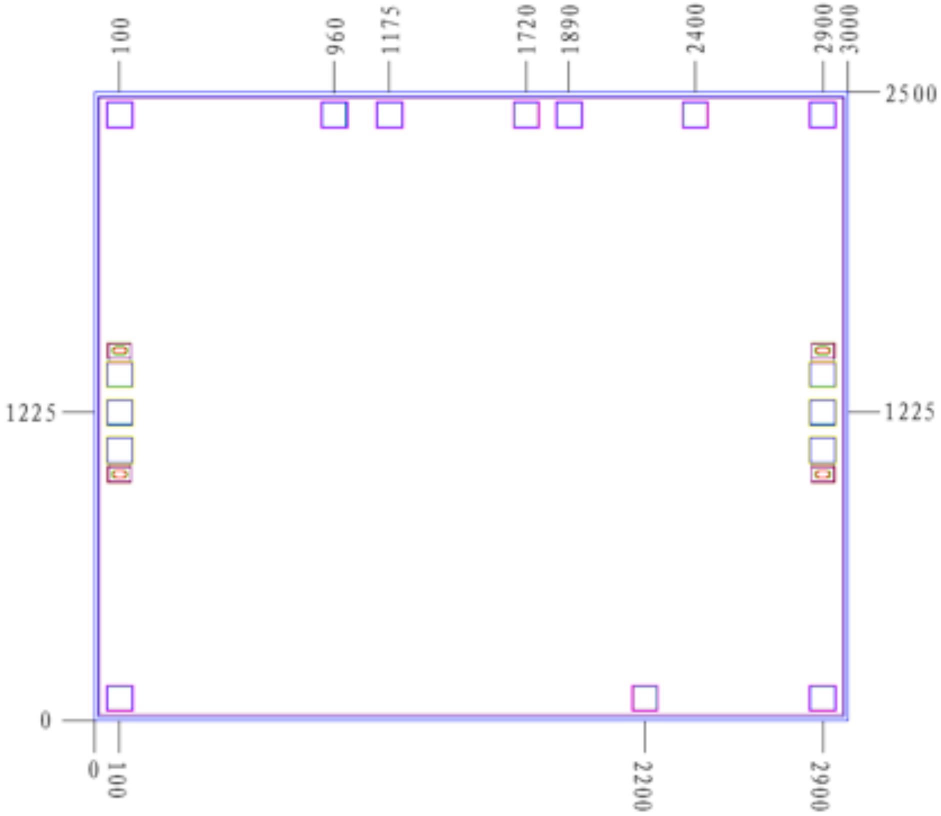
Transmitter Gain Curve



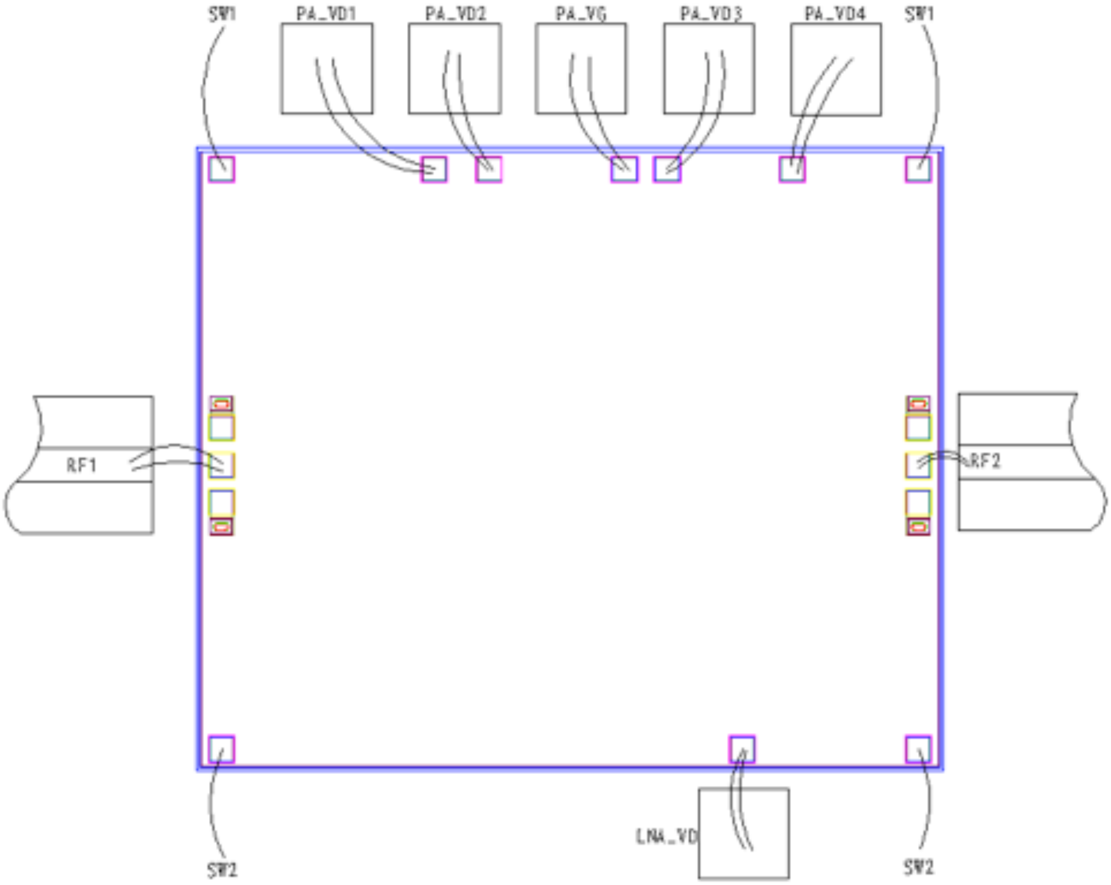
Transmitter Output Power at P-1 Curve



Chip Dimensions (Unit : μm)



Chip Layout Diagram



Pad Definition

Symbol	Function Description	Dimensions
RF1	RF signal transmitter input/receiver output port, external connecting to 50Ω system.	100μm * 100μm
RR2	RF signal receiver input/transmitter output port, external connecting to 50Ω system.	100μm * 100μm
PA_VD1	Amplifier voltage bias at transmit state, refer to usage explanation for control logic	100μm * 100μm
PA_VD2	Amplifier voltage bias at transmit state, refer to usage explanation for control logic	100μm * 100μm
PA_VD3	Amplifier voltage bias at transmit state, refer to usage explanation for control logic	100μm * 100μm
PA_VD4	Amplifier voltage bias at transmit state, refer to usage explanation for control logic	100μm * 100μm
PA_VG	Amplifier voltage bias at transmit state, refer to usage explanation for control logic	100μm * 100μm
LNA_VD	Amplifier voltage bias at receive state, refer to usage explanation for control logic	100μm * 100μm
SW1	Supply control port, refer to usage explanation for control logic	100μm * 100μm
SW2	Supply control port, refer to usage explanation for control logic	100μm * 100μm

Usage Explanation

Operation State	Receive State (RF2-RF1)	Transmit State (RF1-RF2)
Voltage bias	PA_VD1 = 0V, PA_VD2 = 0V, PA_VD3 = 0V, PA_VD4 = 0V, PA_VG = 0V, LNA_VD = +5V, SW1 = 0V, SW2 = -5V	PA_VD1 = +5V, PA_VD2 = +5V, PA_VD3 = +5V, PA_VD4 = +5V, PA_VG = -5V, LNA_VD = 0V, SW1 = -5V, SW2 = 0V

Note, use either one of SW1 / SW2.

Please see appendix A for details.