August.26,2002
Ver.7

SPDT SWITCH GaAs MMIC

■ GENERAL DESCRIPTION

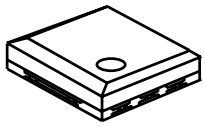
NJG1535HD3 is a GaAs SPDT switch IC suited for antenna switch of cellular phone handset.

This switch features high power, low loss, high isolation and the low switch current.

This device includes logic decoder function, and can be operated by 1 bit control signal for Tx/Rx switching.

The ultra small & ultra thin USB10-D3 package is adopted.

■ PACKAGE OUTLINE



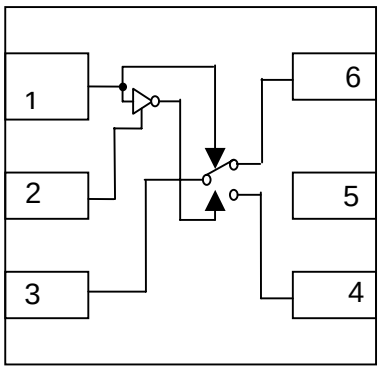
NJG1535HD3

■ FEATURES

● Low voltage operation	+2.5~+5.5V
● Pin at 0.2dBcompression point	36dBm typ. @f=2GHz, V_{CTL}=2.7V
● Low insertion loss	0.35dB typ. @f=1.0GHz, P_{IN}=30dBm, V_{CTL}=2.7V
● High isolation	28dB typ. @f=1.0GHz, P_{IN}=30dBm, V_{CTL}=2.7V
● Low current consumption	15uA typ.
● Ultra small & ultra thin package	USB6-D3 (Package size: 2.0x1.8x0.8mm)

■ PIN CONFIGURATION

USB10-D3 Type
(TOP VIEW)



Pin connection
1. .VCTL
2.VDD
3.PC
4.P1
5.GND
6.P2

■ TRUTH TABLE

Control Voltage : "H"=$V_{CTL\ (H)}$, "L"=$V_{CTL\ (L)}$

VCTL	H	L
PC-P1	ON	OFF
PC-P2	OFF	ON

NOTE: Please note that any information on this catalog will be subject to change.

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	CONDITIONS	CONDITIONS	UNITS
RF Input Power	P_{IN}	V_{DD}=2.7V, V_{CTL}=0V/2.7V	36	dBm
Supply Voltage	V_{DD}	VDD terminal	7.5	V
Power Dissipation	P_D		200	mW
Control Voltage	V_{CTL}	VCTL terminal	7.5	V
Operating Temp.	T_{opr}		-40~+85	°C
Storage Temp.	T_{stg}		-55~+150	°C

■ ELECTRICAL CHARACTERISTICS

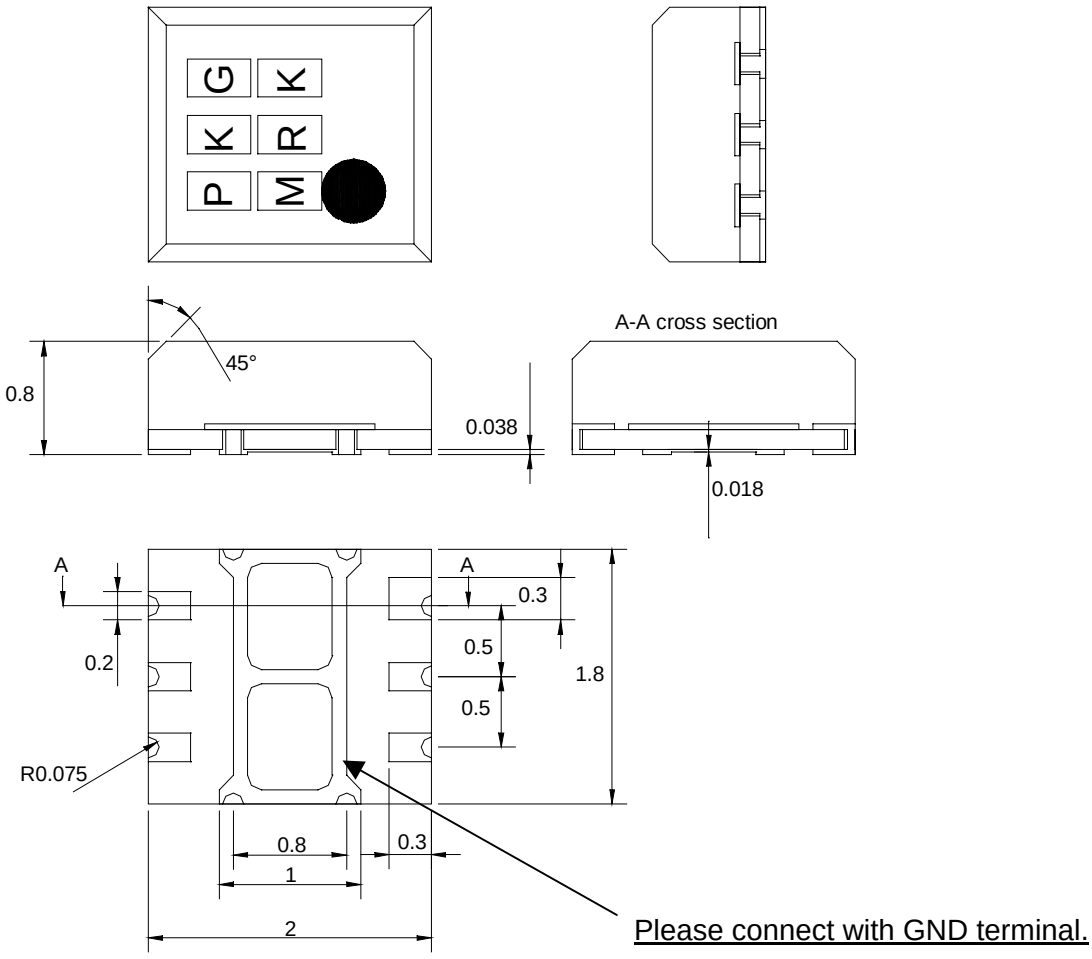
(General conditions: T_a=+25°C, Z_s=Z_l=50Ω, $V_{CTL\ (L)}$=0V, $V_{CTL\ (H)}$=2.7V)

PARAMETERS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Voltage	V_{DD}		2.5	2.7	5.5	V
Operating Current	I_{DD}	P_{IN}=30dBm	-	70	-	uA
Control Voltage (LOW)	$V_{CTL\ (L)}$		0	-	0.8	V
Control Voltage (HIGH)	$V_{CTL\ (H)}$		2.0	2.7	V_{DD}	V
Control Current	I_{CTL}		-	15	-	uA
Insertion Loss 1	LOSS1	f=1GHz, P_{IN}=30dBm	-	0.35	0.45	dB
Insertion Loss 2	LOSS2	f=2GHz, P_{IN}=30dBm	-	0.4	0.5	dB
Isolation 1	ISL1	f=1GHz, P_{IN}=30dBm	23	28	-	dB
Isolation 2	ISL2	f=2GHz, P_{IN}=30dBm	22	25	-	dB
Pin at 0.2dB Compression Point	$P_{-0.2dB}$	f=2GHz	34	36	-	dBm
VSWR	VSWR	f=0.1~2.5GHz, ON State	-	1.45	-	
Switching time	T_{SW}	f=0.1~2.5GHz	-	2.0	-	us

■ TERMINAL INFORMATION

No.	SYMBOL	DESCRIPTION
1	VCTL	Control signal input terminal . This terminal is set to High-Level (+2V~VDD) or Low-Level (0~+0.8V).
2	VDD	Positive voltage supply terminal. The positive voltage (+2.5~+5.5V) have to be supplied. Please connect a bypass capacitor with GND terminal for excellent RF performance.
3	PC	Common RF port. The terminal PC is connected with the terminal P1 or the terminal P2 by the voltage impressed to the terminal VCTL. In order to block the DC bias voltage of internal circuit, an external capacitor is required. (50~100MHz:0.01uF, 0.1~0.5GHz: 1000pF, 0.5~2.5GHz: 56pF).
4	P1	RF port. This port is connected with PC port by controlling 6th pin ($V_{CTL(H)}$) to 2.5~VDD. An external capacitor is required to block the DC bias voltage of internal circuit. (50~100MHz:0.01uF, 0.1~0.5GHz: 1000pF, 0.5~2.5GHz: 56pF)
5	GND	Ground terminal. Please connect this terminal with ground plane as close as possible for excellent RF performance.
6	P2	RF port. This port is connected with PC port by controlling 6^{th} pin ($V_{CTL(H)}$) to 0~+0.8. An external capacitor is required to block the DC bias voltage of internal circuit. (50~100MHz:0.01uF, 0.1~0.5GHz: 1000pF, 0.5~2.5GHz: 56pF)

■ **PACKAGE OUTLINE** (USB10-D3)



TERMINAL TREAT :Au
PCB :FR5
Molding material : Epoxy resin
UNIT :mm
WEIGHT :TBD

Cautions on using this product

This product contains Gallium-Arsenide (GaAs) which is a harmful material.

- Do NOT eat or put into mouth.
- Do NOT dispose in fire or break up this product.
- Do NOT chemically make gas or powder with this product.
- To waste this product, please obey the relating law of your country.

This product may be damaged with electric static discharge (ESD) or spike voltage. Please handle with care to avoid these damages.