4.5Ω双路双向**SPST**模拟开关

特性

- 带宽: **300MHz**
- 高速, 一般为 **30ns**
- 供电范围: **+1.8V 至+5.5V**
- 低导通电阻:**4.5Ω(典型值)**
- 轨到轨运行
- **TTL/CMOS 兼容**
- 工业温度范围: **-40°C 至 +125°C**
- 封装形式: **SOIC-8(SOP-8), MSOP-8**

应用

- 无线设备
- 音频和视频信号路由
- 便携式计算机
- 可穿戴设备
- 信号门控，斩波，调制或解调（调制解调器）
- 手机

说明

RS2266是一个双向双通道单刀单掷(SPST)模拟开关，其运行工作电压范围从1.8V 至5.5 V。

RS2266器件可以处理模拟和数字信号，它具有带宽高(300MHz)和导通电阻低(4.5Ω 典型值)等特点。

每个开关部分都有自己的输入使能控制端SEL，给SEL上施加高电压打开相关的开关部分。

它的应用包括信号门控、斩波、调制或解调（调制解调器），以及用于模拟到数字和数字到模拟转换系统的信号多路复用。

器件信息[1]

| PART NUMBER	PACKAGE	BODY SIZE(NOM)
RS2266	SOIC-8	4.90mm×3.90mm
	MSOP-8	3.00mm×3.00mm

(1) 要了解所有可用封装，请参见数据表末尾的封装选项附录。

RS2266 功能框图

PIN CONFIGURATIONS

(TOP VIEW)

```
        ┌─────────────────┐
 S1  ┌─1│ ●               │8─┐  Vcc
     └──│                 │──┘
 D1  ┌─2│    RS2266       │7─┐  SEL1
     └──│                 │──┘
SEL2 ┌─3│                 │6─┐  D2
     └──│                 │──┘
GND  ┌─4│                 │5─┐  S2
     └──│                 │──┘
        └─────────────────┘
```

SOIC-8(SOP8)/ MSOP-8
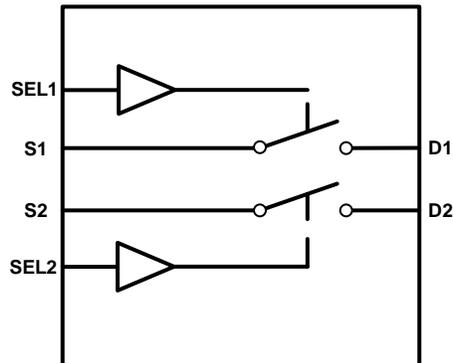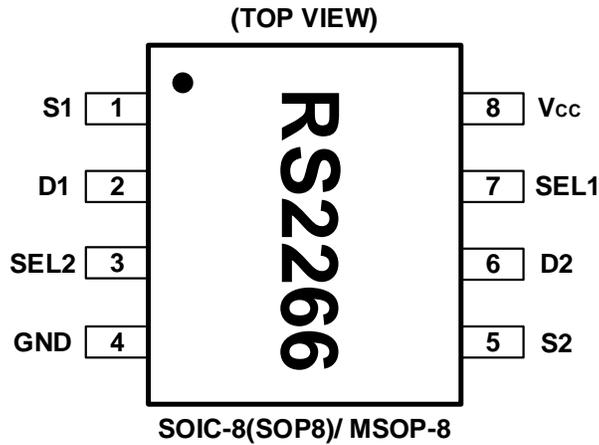
PIN DESCRIPTION

NAME	PIN	I/O	DESCRIPTION
S1	1	I/O	Bidirectional signal to be switched
D1	2	I/O	Bidirectional signal to be switched
SEL2	3	I	Controls the switch (L = OFF, H = ON)
GND	4	-	Ground
S2	5	I/O	Bidirectional signal to be switched
D2	6	I/O	Bidirectional signal to be switched
SEL1	7	I	Controls the switch (L = OFF, H = ON)
Vcc	8	-	Power Supply

FUNCTION TABLE

SELECT INPUTS	SWITCH STATUS
SEL1/SEL2	
High	All Switches ON
Low	All Switches OFF

NOTE: Input and output pins are identical and interchangeable. Any may be considered an input or output; signals pass equally well in both directions.

SPECIFICATIONS

Absolute Maximum Ratings

Over operating free-air temperature range (unless otherwise noted) [1]

SYMBOL	PARAMETER		MIN	MAX	UNIT
V_{CC}	Supply Voltage [2]		-0.3	6.0	V
V_{IN}	Input Voltage [2][3]		-0.3	6.0	
V_O	Switch I/O Voltage [2][3][4]		-0.3	V_{CC}+0.3	
I_{IK}	Control input clamp current	V_I<0		-50	mA
$I_{I/OK}$	I/O port diode current	$V_{I/O}$ < 0 or $V_{I/O}$ > V_{CC}		-50	
I_T	On-state switch Current	V_{IO}=0 to V_{CC}	-50	50	
	Continuous current through V_{CC} or GND		-100	100	
T_J	Junction Temperature			150	°C
T_{stg}	Storage temperature		-65	150	

(1) Stresses above these ratings may cause permanent damage. Exposure to absolute maximum conditions for extended periods may degrade device reliability. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those specified is not implied.
(2) All voltages are with respect to ground, unless otherwise specified.
(3) The input and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
(4) This value is limited to 5.5 V maximum.

ESD Ratings

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human-body model (HBM)	±2000	V
		Machine Model (MM)	300	V

Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted) [3]

SYMBOL	PARAMETER	MIN	MAX	UNIT
V_{CC}	Supply Voltage	1.8	5.5	V
T_A	Operating temperature	-40	+125	°C

Thermal Information

THERMAL METRIC		RS2266		UNIT
		8PINS		
		SOIC-8	MSOP-8	
$R_{\Theta JA}$	Junction-to-ambient thermal resistance	116	165	°C/W
$R_{\Theta JC(top)}$	Junction-to-case(top) thermal resistance	60	53	°C/W
$R_{\Theta JB}$	Junction-to-board thermal resistance	56	87	°C/W
Ψ_{JT}	Junction-to-top characterization parameter	12.8	4.9	°C/W
Ψ_{JB}	Junction-to-board characterization parameter	98.3	85	°C/W
$R_{\Theta JC(bot)}$	Junction-to-case(bottom) thermal resistance	N/A	NA	°C/W

PACKAGE/ORDERING INFORMATION

PRODUCT	ORDERING NUMBER	TEMPERATURE RANGE	PACKAGE LEAD	PACKAGE MARKING	PACKAGE OPTION
RS2266	RS2266XK	-40°C ~+125°C	SOIC-8(SOP8)	RS2266	Tape and Reel,2500
	RS2266XM	-40°C ~+125°C	MSOP-8	RS2266	Tape and Reel,3000

ELECTRICAL CHARACTERISTICS

V_{CC} = 5.0 V or 3.3V, FULL= –40°C to +125°C, Typical values are at T_A = +25°C. (unless otherwise noted)

| PARAMETER	SYMBOL	CONDITIONS	VDD	T_A	MIN	TYP	MAX	UNITS
ANALOG SWITCH								
Analog Signal Range	V_S, V_D			FULL	0		V_{CC}	V
On-Resistance	R_{ON}	V_S = V_{CC} /2, I_{SD}= -10mA, Switch ON, See Figure 1	5V	+25°C		4.5	8	Ω
			5V	FULL			8.5	Ω
			3.3V	+25°C		7	10	Ω
			3.3V	FULL			10.5	Ω
On-Resistance Match Between Channels	ΔR_{ON}	V_S = V_{CC} /2, I_{SD} = -10mA, Switch ON, See Figure 1	5V	+25°C		0.15	0.3	Ω
			5V	FULL			0.4	Ω
			3.3V	+25°C		0.15	0.3	Ω
			3.3V	FULL			0.4	Ω
On-Resistance Flatness	$R_{FLAT(ON)}$	0 ≤ (V_S) ≤V_{CC} /2, I_{SD} = -10mA, Switch ON, See Figure 1	5V	+25°C		2	3	Ω
			5V	FULL			3.3	Ω
			3.3V	+25°C		3	4	Ω
			3.3V	FULL			4.3	Ω
Source, Drain OFF Leakage Current	$I_{D(OFF)}$, $I_{S(OFF)}$	V_D = 0.3V, V_{CC} /2, V_S = V_{CC} /2, 0.3V See Figure 2	1.8 to 5.5V	FULL			1	µA
Channel ON Leakage Current	$I_{D(ON)}$, $I_{S(ON)}$	V_D = 0.3V, Open V_S = Open, 0.3V See Figure 3	1.8 to 5.5V	FULL			1	µA
DIGITAL CONTROL INPUTS [1]								
Input High Voltage	V_{IH}		5V	FULL	1.5			V
			3.3V	FULL	1.3			V
Input Low Voltage	V_{IL}		5V	FULL			0.6	V
			3.3V	FULL			0.5	V
Input Leakage Current	I_{IN}	V_{IN} = V_{IO} or 0	1.8 to 5.5V	FULL			1	µA

(1) All unused digital inputs of the device must be held at V_{IO} or GND to ensure proper device operation.

ELECTRICAL CHARACTERISTICS (continued)

V_{CC}= 5.0 V or 3.3V, FULL= −40°C to +125°C, Typical values are at T_A = +25°C (unless otherwise noted)

PARAMETER	SYMBOL	CONDITIONS		V+	TEMP	MIN	TYP	MAX	UNITS
DYNAMIC CHARACTERISTICS									
Turn-On Time	t_{ON}	$V_S = V_{CC}$, R_L = 300Ω, C_L = 35pF, See Figure 4		5V	+25°C		30		ns
				3.3V			40		
Turn-Off Time	t_{OFF}	$V_S = V_{CC}$, R_L = 300Ω, C_L = 35pF, See Figure 4		5V	+25°C		25		ns
				3.3V			30		
Break-Before-Make Time Delay	t_{BBM}	V_S = 3V, R_L = 300Ω, C_L = 35pF, See Figure 5		5V	+25°C		5		ns
				3.3V			8		
-3dB Bandwidth	BW	Switch ON, R_L = 50Ω, See Figure 6		5V	+25°C		300		MHz
Off Isolation	O_{ISO}	R_L = 50Ω, Switch OFF, See Figure 7	f = 10MHz		+25°C		-52		dB
			f = 1MHz		+25°C		-71		dB
Source, Drain OFF Capacitance	$C_{S(OFF)}$, $C_{D(OFF)}$	V_S= V_{CC} /2 or GND, Switch OFF			+25°C		5		pF
Source, Drain ON Capacitance	$C_{S(ON)}$, $C_{D(ON)}$	V_S= V_{CC} /2 or GND, Switch ON			+25°C		15		pF
POWER REQUIREMENTS									
Power Supply Range	V_{CC}				FULL	1.8		5.5	V
Power Supply Current	I_{CC}	V_{IN} = GND or V_{CC}		5.5V	FULL			1	μA

TYPICAL CHARACTERISTICS

BANDWIDTH

BANDWIDTH

Typical r_{on} as a Function of Input Voltage (VI) for VI = 0 to Vcc


V+=5.5V ······ V+=4V ─ ─ ─ V+=3.3V ─ · · V+=2.5V ─ · V+=1.8V
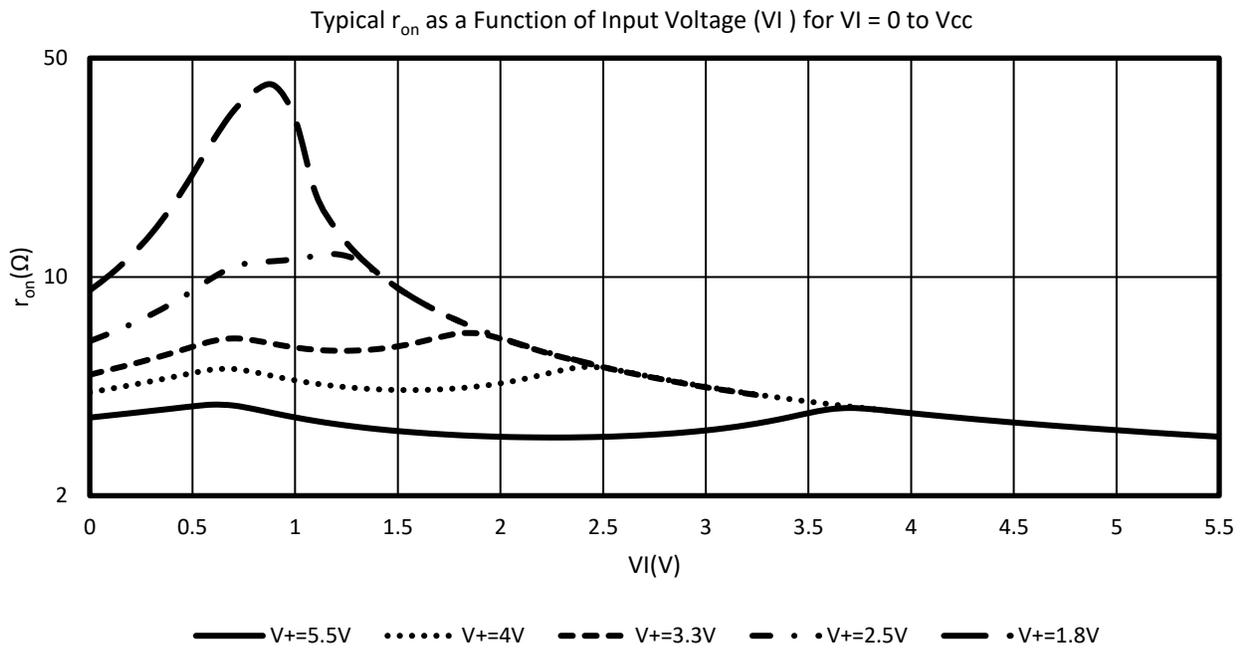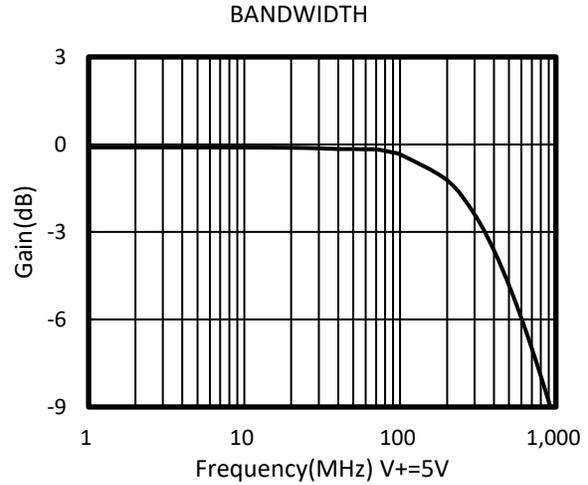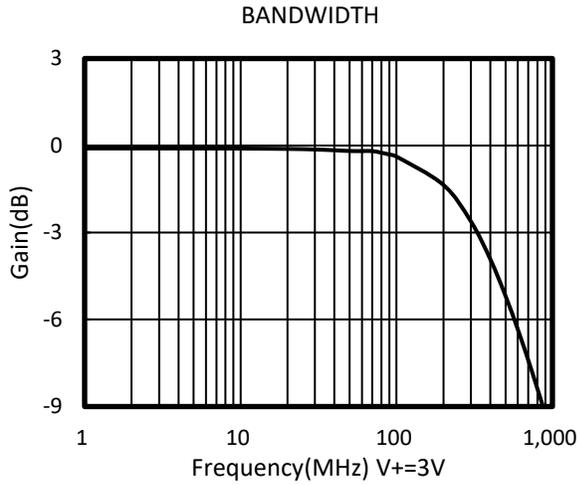
Parameter Measurement Information
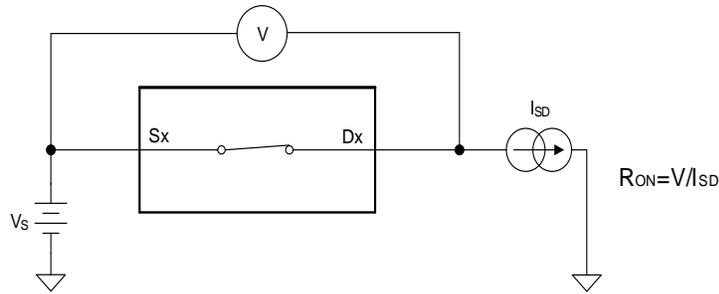
Figure 1. ON-State Resistance (R_{ON})
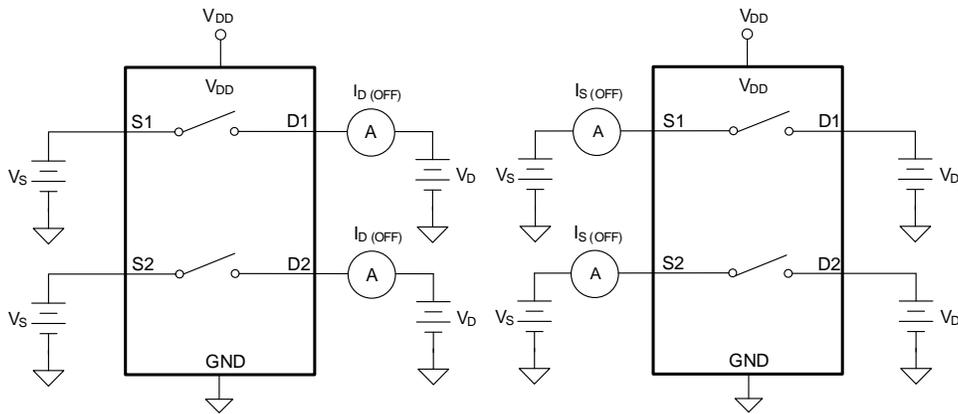
Figure 2.OFF-State Leakage Current ($I_{D(OFF)}$, $I_{S(OFF)}$)
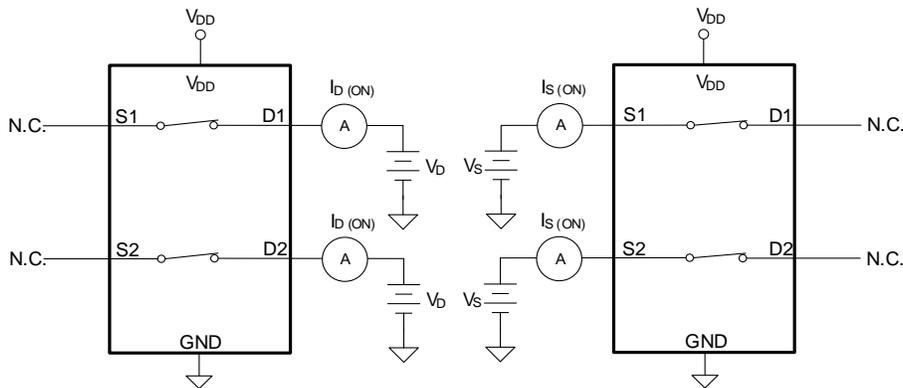
Figure 3. ON-State Leakage Current ($I_{D(ON)}$, $I_{S(ON)}$)

Parameter Measurement Information(continued)
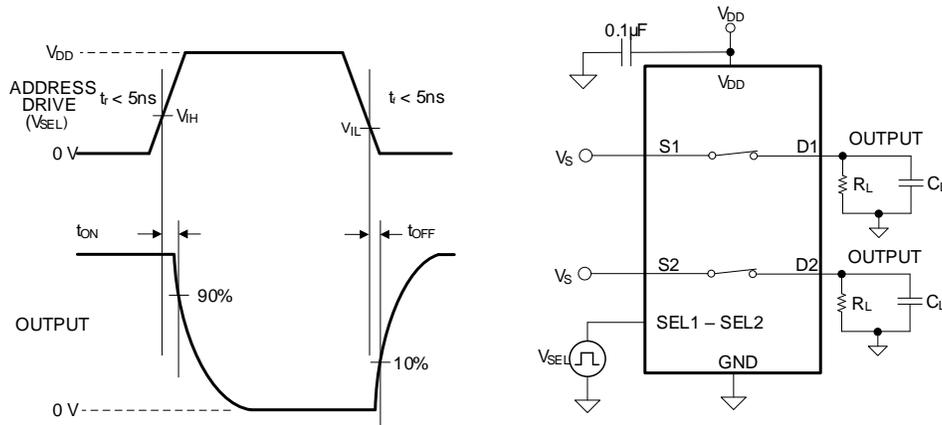
Figure 4. Turn-On (t$_{ON}$) and Turn-Off Time (t$_{OFF}$)
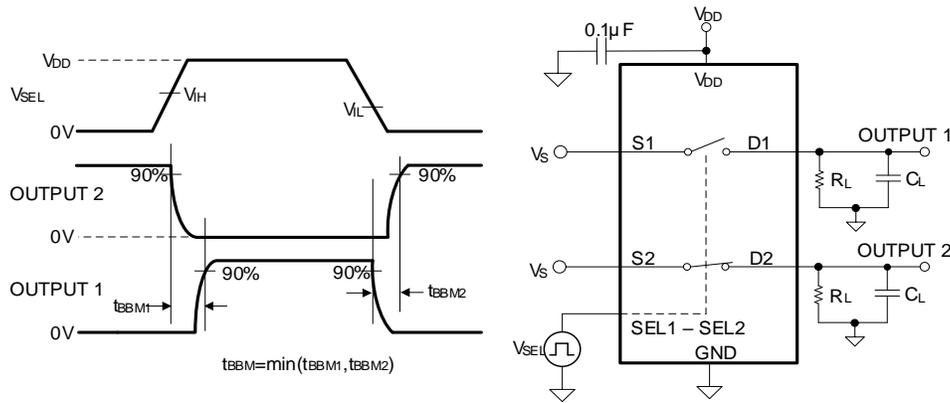

Figure 5. Break-Before-Make Time (t$_{BBM}$)
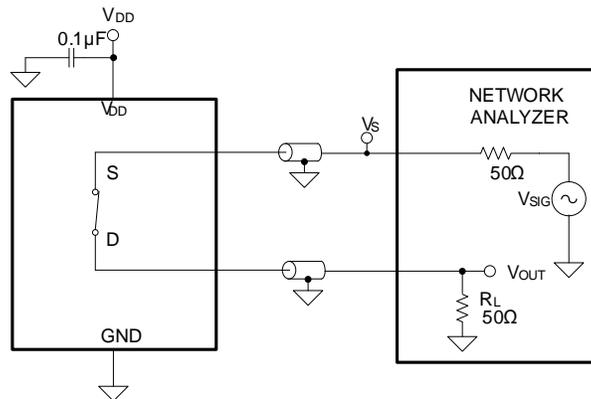

Figure 6. Bandwidth (BW)

Parameter Measurement Information(continued)

Off Isolation=20*Log(V_{OUT}/V_S)
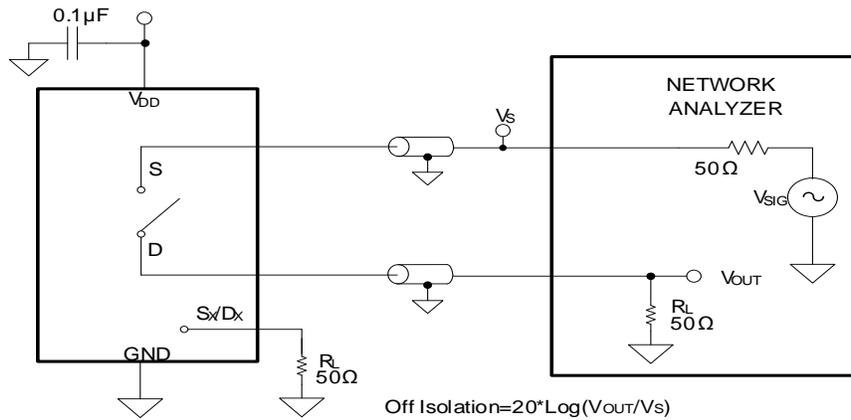
Figure 7.OFF Isolation (O$_{ISO}$)

Channel-to-Channel Crosstal=20*Log(V_{OUT}/V_S)
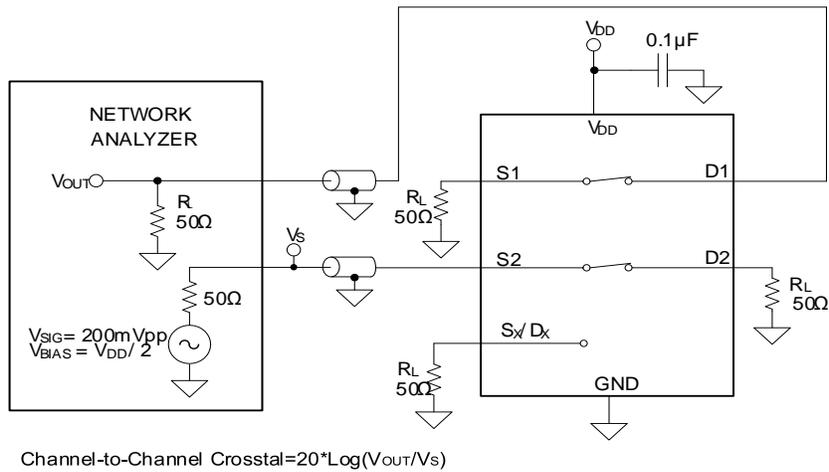
Figure 8. Crosstalk (X$_{TALK}$)

$Q_C = C_L \times \Delta V_{OUT}$
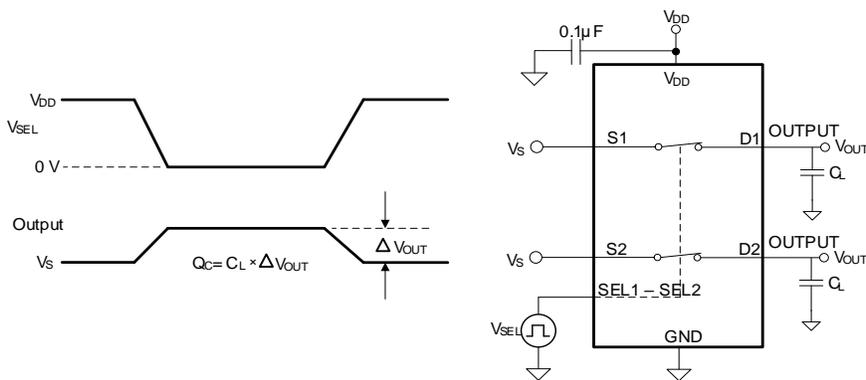
Figure 9. Charge Injection (Q$_C$)

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TYPICAL APPLICATION

The RS2266 can be used in any situation where a Dual SPST switch would be used and a solid-state, voltage-controlled version is preferred. The RS2266 allows on/off control of analog and digital signals with a digital control signal. All input signals should remain between 0V and Vcc for optimal operation.
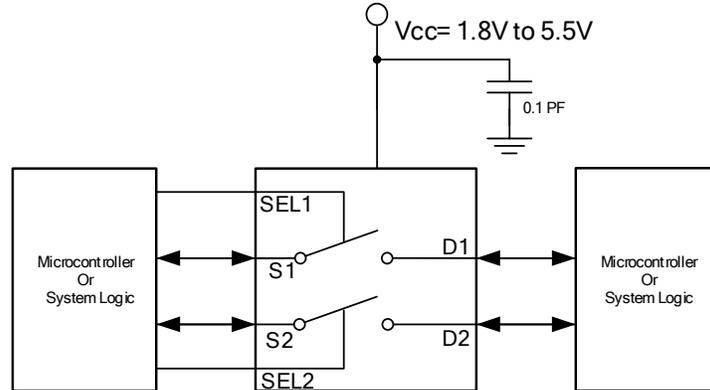

Figure 10. Typical Application Schematic

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PACKAGE OUTLINE DIMENSIONS
SOIC-8(SOP8)
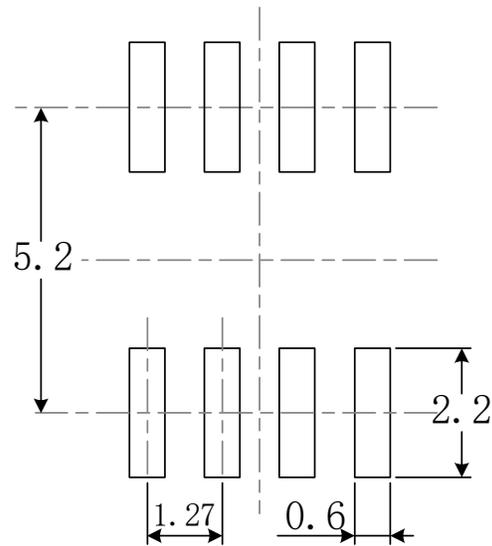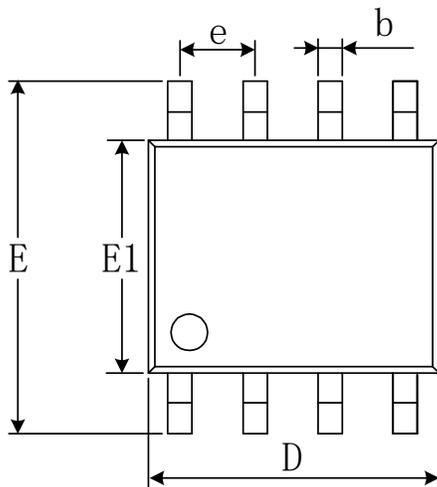
RECOMMENDED LAND PATTERN (Unit: mm)
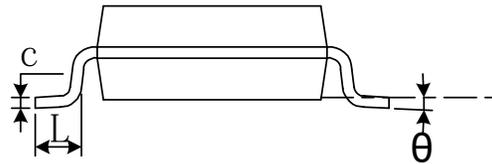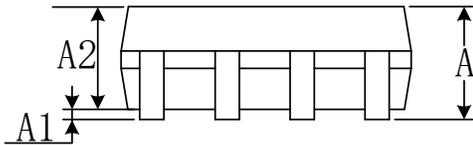
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270(BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°
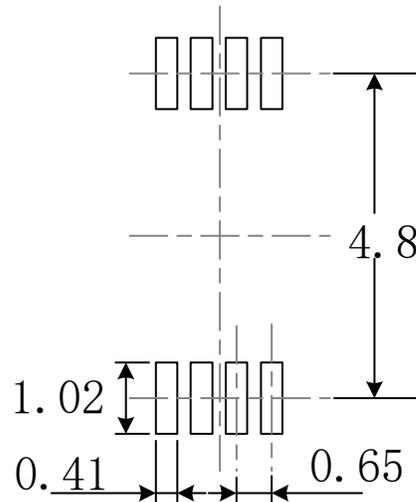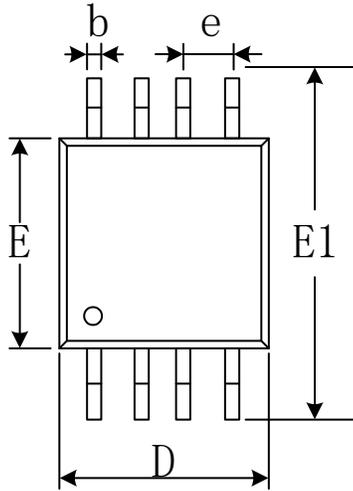
MSOP-8

RECOMMENDED LAND PATTERN (Unit: mm)
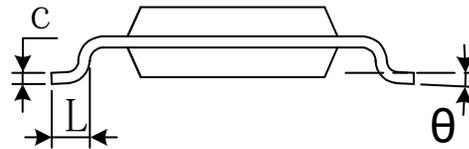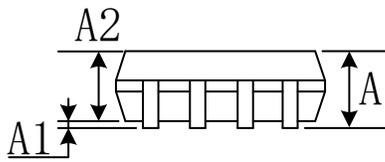
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
e	0.650(BSC)		0.026(BSC)	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°