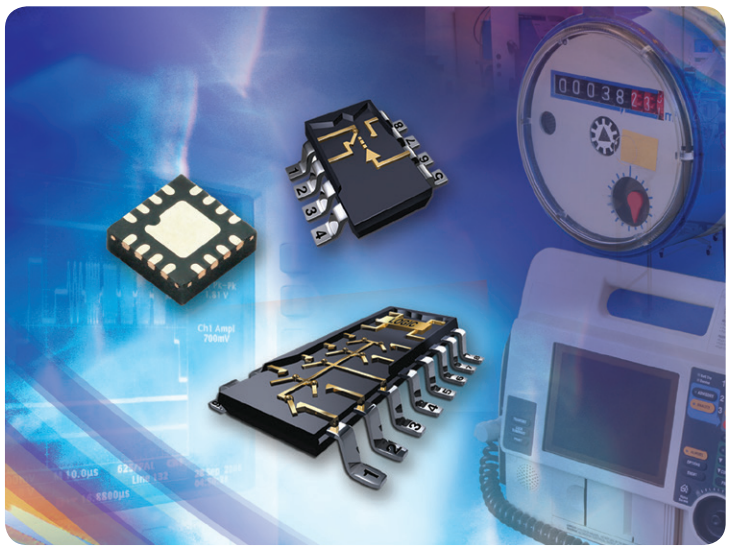
VISHAY

精密類比積體電路

類比開關與多工器

Precision Analog ICs - Low $R_{DS(ON)}$ Analog Switches and Multiplexers

應用於工業，儀器儀表，醫療保健，和通訊的高精度低功耗類比開關與多工器產品選擇指南



- 低且平坦的開關導通電阻
- 低功耗
- 低漏電流和電荷注入
- 低寄生電容
- 高頻寬
- 寬工作電壓範圍

產品應用

- 音視頻訊號切換
- 加壓與檢測電路
- 採樣保持電路
- 可編程增益控制和濾波
- 檢測校準電路
- 精密類比數位轉換輸入多工器
- 訊號端口隔離
- 繼電器替代

終端產品

- 音視頻系統
- 控制和自動化
- 數據採集
- 數據存儲
- 網絡與電信
- 調制解調器和路由器
- 醫療及保健設備
- 儀器
- 測試設備
- 消費性電子產品

產品支持與資源：

- 產品網表：http://www.vishay.com/analog-switches/
- 產品技術支持，請電郵：AnalogSwitchtechsupport@vishay.com
- 交叉參考：http://www.vishay.com/analog-switches/competitor-cross-ref/
- 產品編號命名
- 封裝選項

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Discrete Semiconductors and Passive Components

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台灣威世公司類比開關與多工器

在超過40年時間裡，台灣威世公司類比開關與多工器為業界提供了廣泛的標準參照的高性能產品。器件已經應用在諸多終端產品中，包括多通道數據採集系統，程序控制和自動化，儀器儀表，視頻系統，醫療保健和便攜式消費類電子等產品。為了滿足各種應用的特定要求，我們提供產品的多個封裝選項，包括TSSOP, SOIC, miniQFN, MICRO FOOT®等封裝。台灣威世公司類比開關與多工器支持單，雙電源供電工作模式。開關導通電阻值的範圍從低過1 Ω到10 Ω以上。開關產品的配置包括單刀單擲，單刀雙擲，雙刀單擲，雙刀雙擲，和數據線開關等。多工器配置包括2:1，4:1，8:1，和16:1以及差分式配置。

新近開發的產品，使得工作電壓範圍可以低到1.6 V。±15V開關導通電阻降低到1.5Ω。新產品也降低電荷注入到pC的範圍，同時也提供高達1 GHz的訊號頻寬。

針對不同應用要求設計的產品可以分類如下：

- 低電荷注入器件
  這些器件設計側重在精準的瞬態開關轉換。它們不論開和關過程的電荷注入都得到最好的控制。它們有極低的開關雜訊和快速的訊號到位時間。因此它們是各種採樣和保持應用，數據採集和高精度類比數位轉換輸入共用電路設計的理想選擇。
- 低導通電阻器件
  該系列器件具有低導通電阻（通常為0.3 Ω至8 Ω）。產品有很寬的多種適用工作電壓範圍以供選擇，典型應用如音視頻切換，可編程增益控制，電源切換和繼電器替代等。
- 高頻寬器件
  這一類的器件優化給有高頻寬需求的應用，如高速混合類訊號切換和濾波。該類器件-3 dB頻寬高達1.0 GHz。它們通常有適度低的導通電阻，以減少訊號的插入損耗。同時它們有極低的寄生電容，高串擾抑制以及高關斷隔離。
- 為便攜式儀表和消費類電子應用設計的低電壓器件
  台灣威世公司的低電壓系列器件工作電壓低至1.6 V，並擁有低導通電阻和平滑的電阻特性。該系列器件包括高頻寬的USB2.0 High Speed開關，帶負電壓通過功能的音頻開關，集成了過壓保護電路和提供過電流與斷電保護的開關。 開關時序控制上包含了先斷後閉與先閉後斷的選擇。

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低電荷注入 (Low Charge Injection) 器件

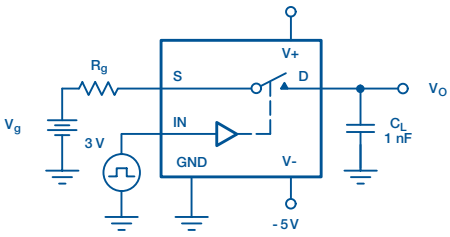
這些器件設計側重在精準的瞬態開關轉換。它們不論開和關過程的電荷注入都得到最好的控制。它們有極低的開關雜訊和快速的訊號到位時間。因此它們是各種採樣和保持應用，數據採集和高精度類比數位轉換輸入共用電路設計的理想選擇。該類器件常應用在工業自動化與控制，醫療設備，和儀器儀表領域。

DG506B/507B 和 DG508B/509B代表了同類產品中最佳的高壓精密多工器。這些器件具有極低漏電流，3 pF的源極關斷電容，和1 pC的電荷注入。

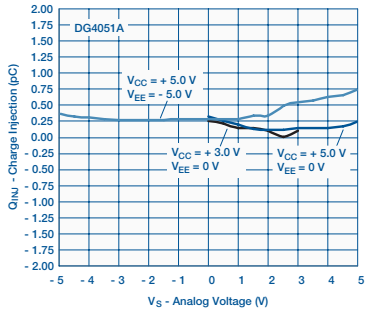
新的低漏電流高精度類比多工器（DG408L，DG4051A系列，DG9251系列）和開關（DG611A系列，DG636）具有低電荷注入（低於1 pC）和低開關電容（低於3 pF）的特性。他們是理想的± 5 V和+12 V工作電壓應用的選擇。

這些新產品的封裝包括了SOIC，TSOP，和miniQFN等。

電荷注入測試電路



DG4051A電荷注入對應類比電壓



Part Number	Configuration	Basic Parameters			Characterization Voltages							Dynamic Performance			Package Option								
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	± 2.5 V	≤ 3 V	5 V	± 5 V	12 V	16 V	± 15 V	t_{ON} Max. (ns)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23 / TSOP	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	DIP
DG2722	DPDT	7	0.5	2.2		√	√					30	-45 @ 240 Mhz	900						√			
DG2723	2 x SPDT	7	0.5	2.2		√	√					30	-45 @ 240 Mhz	900						√			
DG2001	1 x SPDT	3	1	17		√	√					53	-70	120			√	√					
DG2012	1 x SPDT	1	7	20		√	√					38	-64	110							√		
DG9411	1 x SPDT	7	5	7		√	√					15	-70	200							√		
DG2018 DG2019	4 x SPDT	6	3	9		√	√					65	-53	150					√				
DG2034	4:1 MUX	4	5	14		√	√					45	-77	100				√	√				
DG2041 DG2042 DG2043	4 x SPDT	1	1	26		√	√					82	-94	200	√				√				
DG2303	1 x SPST	5	0.5	9		√	√					1.8 typ	--	200							√		
DG2511	1 x SPDT	1	3	19		√	√					39	-64	80						√			
DG2512 DG2513	1 x SPST	1	3	19		√	√					39	-64	80						√			
DG2537 DG2538 DG2539	2 x SPST	2.5	2	8	√	√	√					40	-92	366				√					

Note: Products in the tables of this document are sorted in the order of increasing operating voltage range followed by configuration

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低電荷注入 (Low Charge Injection) 器件（續）

Part Number	Configuration	Basic Parameters										Dynamic Performance			Package Option								
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	± 2.5 V	≤ 3 V	5 V	± 5 V	12 V	16 V	± 15 V	t_{ON} Max. (ns)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23 / TSOP	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	DIP
DG3516 DG3517	2 x SPDT	2.2	1	12		√	√					52	-78	300								√	
DG721 DG722 DG723	2 x SPST	2.5	2	8		√	√					55	-92	319				√	√				
DG611A DG612A DG613A	4 x SPST	72	0.5	2		√	√	√	√			75	-90 @ 10 MHz	720	√	√				√			
DG636	2 x SPDT	85	0.1	5		√	√	√	√			130	-90	610	√					√			
DG9432 DG9433 DG9434	2 x SPST	19	0.36	7.5		√	√	√	√			40	-96	200			√	√					
DG411L DG412L DG413L	4 x SPST	20	5	5		√	√	√	√			50	-95	--	√	√							
DG4051A	8:1 MUX	60	2	2		√	√	√	√			175	-95	330	√						√		
DG4052A	Dual 4:1 MUX	60	2	2		√	√	√	√			175	-95	450	√						√		
DG4053A	Triple 2:1 MUX	60	2	2		√	√	√	√			175	-95	730	√						√		
DG408L	8:1 MUX	17	1	7		√	√	√	√			55	-82	280	√	√							
DG409L	Dual 4:1 MUX	17	1	7		√	√	√	√			55	-82	280	√	√							
DG604	4:1 MUX	70	0.7	2.7		√	√	√	√			65	-81 @ 10 Mhz	400	√					√			
DG611 DG612 DG613	4 x SPST	18	4	2				√	√			35	-98	500	√								
DG9251	8:1 MUX	90	4	2.7			√	√	√	√		98	-90	314						√			
DG9252	Dual 4:1 MUX	90	4	2.2			√	√	√	√		98	-90	449						√			
DG9253	3 x SPDT	90	4	2			√	√	√	√		98	-90	480						√			
DG411 DG412 DG413	4 x SPST	25	5	9				√	√		√	175	-85	--	√	√							√
DG441B DG442B	4 x SPST	45	1	4				√	√	√	√	220	-95 @ 100 KHz	--	√	√			√				√
DG444B DG445B	4 x SPST	45	1	5				√	√	√	√	250	-95 @ 100 KHz	--		√			√				√
DG447 DG448	1 x SPST	17	10	8			√	√	√	√	√	130	N/A	--			√						
DG449	1 x SPDT	38	5	8				√	√		√	146	-80	--			√						
DG406	16:1 MUX	45	11	6					√		√	123	-90			√							√
DG407	Dual 8:1 MUX	45	11	6					√		√	123	-90			√							√
DG408	8:1 MUX	40	20	3					√		√	115	-85		√	√							√
DG409	Dual 4:1 MUX	40	20	3					√		√	115	-85		√	√							√
DG506B	16:1 MUX	170	1	3					√	√	√	190	-84	114	√	√							
DG507B	Dual 8:1 MUX	170	1	3					√	√	√	190	-84	217	√	√							
DG508B	8:1 MUX	180	2	3				√	√	√	√	250	-88	200	√	√				√			
DG509B	Dual 4:1 MUX	180	2	3				√	√	√	√	250	-88	200	√	√				√			
DG201B	4 x SPST	45	1	5				√	√	√	√	300	-95 @ 100 KHz	--	√	√							
DG211B DG212B	4 x SPST	45	1	5				√	√	√	√	300	-75	--	√	√							√
DG213	4 x SPST	45	1	5				√	√	√	√	130	-95 @ 100 KHz	--	√	√							√
DG333A DG333AL	4x SPDT	25	2	8			√	√	√	√	√	175	-80	--	√	√							√

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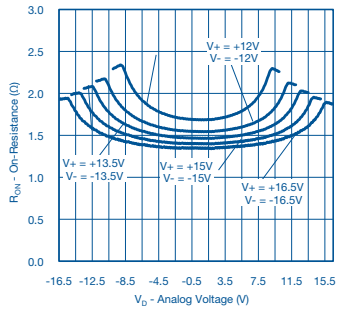
低導通電阻器件

該系列器件具有低導通電阻（通常為0.3 Ω至8 Ω）。產品有很寬的多種適用工作電壓範圍以供選擇，典型應用包括音視頻切換，可編程增益控制，電源切換和繼電器替代等。

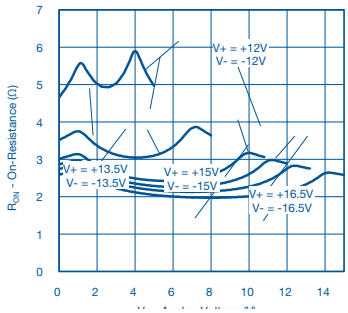
器件設計在實現低導通電阻的同時，保持了低漏電流，低寄生電容，低電荷注入，和快速的開關速度。最小化寄生電容降低了訊號失真。它最大限度地減少了在可編程增益電路運算放大器輸出的電容負載，從而改善整體線路的響應時間和訊號保真度。

DG1411/1412/1413系列是±15 V四路1.5Ω單刀單擲開關。其導通電阻平坦度為0.3 Ω，並有小於0.1 Ω的精確通道匹配，30 pA開關漏電流，11 pF源極關斷電容， 和87 pF開關導通電容。這些器件-3 dB頻寬為170 MHz。DG1411/1412/1413是高保真音視頻切換，大動態範圍可編程增益控制，繼電器替代，以及高端數據採集系統應用的理想的選擇。

DG1411/1412/1413導通電阻與對應的類比訊號電壓和雙電源供電電壓



DG1411/1412/1413導通電阻與對應的類比訊號電壓和單電源供電電壓



Part Number	Config	Basic Parameters		Characterization Voltage								Dynamic Performance				Package Options								Current
		r_{ON} (Ω) typ	C_{OFF} (pF) typ	1.8 V	± 2.5 V	3 V	4.3V / 5 V	± 5 V	12 V	16 V	± 15 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23	TSOP	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	I_{OUT} (mA)
DG2001	1 x SPDT	3	17			√	√					40	-71	-70	120				√						50
DG2012	1 x SPDT	1	20	√		√	√					38	-63	-64	110								√		100
DG2016 DG2026	2 x SPDT	2.4	14			√	√					52	-81	-82	200					√					50
DG2018 DG2019	2 x DPDT	4	7.5			√	√					52	-67	-72	180						√				50
DG2032	2 x SPDT	2.4	15			√	√					59	-78	-82	200						√				50
DG2034	4:1 MUX	4	14			√	√					45	-73	-77						√	√				50
DG2041 DG2042 DG2043	4 x SPDT	1	26	√		√	√					42	-63	-94	200	√					√				50
DG2303	1 x SPST	5	9			√	√					1.8 typ	-50	--	200								√		50
DG2307	1 x SPDT	4	6.5			√	√					6.2	-60 @ 10 MHz	-60 @ 10 MHz	250								√		50
DG2511	1 x SPDT	1	19	√		√	√					35	-58	-64	90							√			150
DG2512 DG2513	1 x SPST	1	19	√		√	√					35	-58	-64	90							√			150

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低導通電阻器件（續）

Part Number	Config	Basic Parameters		Characterization Voltage								Dynamic Performance				Package Options									Current
		r_{ON} (Ω) typ	C_{OFF} (pF) typ	1.8 V	± 2.5 V	3 V	4.3V / 5 V	± 5 V	12 V	16 V	± 15 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23	TSOP	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	I_{OUT} (mA)
DG2522	SPTT, 3:1 MUX	0.8	17	√		√	√					85	-59	-64	105							√			300
DG2535 DG2536	2 x SPDT	0.4	145			√	√					90	-60	-60	180						√				300
DG2537 DG2538 DG2539	2 x SPST	2.5	8		√	√	√					40	-67	-92	366					√					50
DG2612 DG2613	1 x SPDT	1	36	√		√	√					63	-46	-42	80								√		150
DG2706	2 x DPDT	3	16	√		√						55	-70	-90	190							√			250
DG2707	Dual 4:1 MUX	2.8	16	√		√						55	-70	-90	120							√			300
DG2714	1 x SPDT	0.85	30	√		√	√					54	-64	-64	110								√		200
DG2715 DG2716	1 x SPST	0.4	72	√		√	√					29	-57	-60	--								√		200
DG2717	1 x SPDT	0.45	76	√		√	√					48	-54	-57	110								√		200
DG2725	2 x SPDT	0.7	24	√		√	√					95	-85 @ 100 KHz	-95 @ 100 KHz	62							√			350
DG2727 DG2728 DG2729	2 x SPST	0.65	31	√		√	√					38	-58	-64	110							√			300
DG2735 DG2736	2 x SPDT	0.6	55			√	√					80	-53	-60	50							√			250
DG2741 DG2742 DG2743	2 x SPST	0.8	81	√		√	√					35	-56	-89	230			√		√					200
DG2747 DG2748 DG2749	2 x SPST	0.4	55	√		√	√					25	-52	-90	93							√			300
DG2750	2 x SPDT	1.1	25	√		√	√					65	-55 @ 300 KHz	-61 @ 300 KHz	34							√			250
DG2753	3 x SPDT	0.7	35	√		√	√					60	-90	-90	100	√					√				300
DG1411, DG1412, DG1413	4 x SPST	1.5	12					√	√		√	150	-80	-100	170	√					√				250

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應用焦點：機械繼電器替代

以類比開關替換機械繼電器可以讓許多電子設計受益。下面的器件具有低電阻和雙向導通特性。

通常，這些器件可以通過50 mA到300 mA的電流。它們適用於訊號和電源切換以及小訊號繼電器替換。

DG469和DG470是可以在單電源或雙電源供電模式工作的單刀雙擲高壓類比開關。它們低於4.2 Ω導通電阻和0.4 Ω典型導通電阻平坦度。兩款器件的額定連續電流為120 mA，非常適用於繼電器更換和電源切換。

DG2520和DG2521是採用TSOP-6封裝的5 V的單刀雙擲開關，集成了過電流保護功能。 DG2521具有先閉後斷開關時序，適用於需要連續導通的閉環電路設計。

機械與電子開關

	機械	電子
優點	大電流 高電壓 高關斷隔離 低導通電阻 低分布電容	沒有開關反彈 高可靠性 低功耗 成本低 小體積
缺點	易磨損 開關點反彈 低開關速度 高功率消耗 笨重	低電流：通常小於500 mA/開關 有限的電壓範圍：< 44 V 關斷隔離度 導通電阻

Part Number	Config	Basic Parameters			Characterization Voltages							Dynamic Performance				Package Options								Current
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	≤ 1.8 V	± 2.5V	3 V	5 V	± 5 V	12 V	16 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23 / TSOP	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	I_{OUT} (mA)
DG2799	2 x DPDT	0.25	160	108	√		√	4.3 V				60	-50	-50	70					√				300
DG2788 DG2789	2 x DPDT	0.4	87	0.81	√		√	4.3 V				75	-49	-96	50						√			300
DG2735 DG2736	2 x SPDT	0.6		55	√		√	4.3 V				90	-60	-60	180						√			250
DG2747 DG2748 DG2749	2 x SPST	0.4	10	55	√		√	√				35	-52	-90	93						√			300
DG2753	3 x SPDT	0.7	25	35	√		√	√				60	-90	-90	100	√				√				300
DG2741 DG2742 DG2743	2 x SPST	0.8	6	81	√		√	√				60	-56	-89	230			√	√					200
DG2750	2 x SPDT	1.1		25	√		√	√				65	-55 @ 300 KHz	-61 @ 300 KHz	34						√			250
DG2720	1 x DPDT	6		2.6	√		√	√				30	30		700						√			300

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大電流開關器件（續）

Part Number	Config	Basic Parameters			Characterization Voltages							Dynamic Performance				Package Options								Current
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	≤ 1.8 V	± 2.5V	3 V	5 V	± 5 V	12 V	16 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23 / TSOP	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	I_{OUT} (mA)
DG2706	2 x DPDT	3	4	16			√					55	-70	-90	190						√			250
DG2707	2 x 4:1 MUX	3	4	16			√					56	-70	-90	191						√			300
DG2535 DG2536	2 x SPDT	0.35	21	145	√		√	√				40	-60	-60	180					√				300
DG2032	2 x SPDT	2.4	38	15	√		√	√				59	-78	-82	200					√				50
DG2016 DG2026	2 x SPDT	2.4	79	14	√		√	√				52	-81	-82	200				√					50
DG2041 DG2042 DG2043	4 x SPST	1	1	4	√		√	√				42	-63	-94	200	√				√				50
DG2018 DG2019	2 x DPDT	6	3	9	√		√	√				66	-54	-53	151					√				50
DG2034	4:1 MUX	4	5	14	√		√	√				45	-73	-77	--					√				50
DG2511	1 x SPDT	1.3	3	21	√		√	√				39	-58	-64	80						√			150
DG2612 DG2613	1 x SPDT	1	2.4	36	√		√	√				30	-46	-42	80							√		150
DG2012	1 x SPDT	1	7	22	√		√	√				39	-63	-64	110							√		100
DG2520 DG2521	1 x SPDT	0.4	224	50			√	√				40	-51	-57	224			√						50
DG9411	1 x SPDT	7	5	7	√		√	√				40	-75	-68	200							√		50
DG2001	1 x SPDT	3	1	17	√		√	√				53	-71	-70	120			√						50
DG2303	1 x SPDT	5	0.5	9	√		√	√				1.8 / typ	-50	-	200							√		50
DG4157	1 x SPDT	0.95	50	20			√	√				60	-58	-63	117						√	√		200
DG2522	SPTT, 3:1 MUX	0.8	27	17	√		√	√				85	-59	-64	105						√			300
DG9424 DG9425 DG9426	4 x SPST	1.8	38	49	√		√	√	√	√	√	65	-56	-77	150	√								100
DG3516 DG3517	2 x SPDT	2.5	1	12	√		√	√				45	-74	-78	300								√	100
DG9408	8:1 MUX	4	29	23	√		√	√	√	√	√	75	-80 @ 100 KHz	-85 @ 100 KHz	--					√				100
DG9051	8:1 MUX	30	38	4	√		√	√	√	√	√	55	-78	-83	--	√								100
DG9421 DG9422	1 x SPST	2	320	32	√		√	√	√	√	√	50	-60	--	50			√						50
DG451 DG452 DG453	4 x SPST	3.8	22	31				√	√	√	√	118	-60	-85	--	√	√							100
DG454 DG455 DG456	4 x SPST	3.8	22	31				√	√	√	√	118	-60	-85	--	√	√							100
DG1411, DG1412, DG1413	4 x SPST	1.5	30	12				√	√		√	150	-80	-100	170	√				√				250

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高頻寬器件

這一類器件的設計優化給有高頻寬要求的應用，如高速或高頻混合訊號切換和濾波電路。適度低的導通電阻來減少插入損耗。它們有達到1.0 GHz的最高頻寬，極低的寄生電容，和高串擾抑制以及高關斷隔離的特點。

DG611A系列四路單刀單擲開關用於12 V或± 5 V供電電源的電路設計，擁有720 MHz的-3 dB頻寬。DG9253系列多工器可以雙電源± 2.7 V至± 8 V或單單電源2.7 V至16 V供電，其-3 dB頻寬達480 MHz。

Part Number	Config	Basic Parameters		Characterization Voltage								Dynamic Performance				Package Options							
		r_{ON} (Ω) typ	C_{OFF} (p_F) typ	1.8 V	± 2.5 V	≤ 3 V	4.3V / 5 V	± 5 V	12 V	16 V	± 15 V	t_{ON} Max/. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	PLCC
DG2714	1x SPDT	0.85	30	√		√						54	-64	-64	110						√		
DG2720	DPDT	6	2.6			√	√					30	-80	-85	620					√			
DG2722	DPDT	7	2.2			√	√					30	-30 @ 240 MHz	-45 @ 240 MHz	900						√		
DG2723	2 x SPDT	7	2.5			√	√					30	-30 @ 240 MHz	-45 @ 240 MHz	700						√		
DG2730	DPDT	7	2.2			√	√					30	-30 @ 240 MHz	-45 @ 240 Mhz	900						√		
DG2706	2 x DPDT	3	16			√						55	-70	-90	190					√			
DG2707	2 x 4:1 MUX	3	16			√						55	-70	-90	120					√			
DG2737 DG2738 DG2739	2 x SPST	6	4.4			√	√					60	-79	-109	720						√		
DG9411	1 x SPDT	7	7			√	√					40	-75	-68	200						√		
DG2001	1 x SPDT	3	17			√	√					53	-71	-70	120		√	√					
DG2018 DG2019	2 x DPDT	6	9			√	√					65	-54	-53	150				√				
DG721 DG722 DG723	2 x SPST	2.5	8	√		√	√					55	-67	-92	319			√					
DG2537 DG2538 DG2539	2 x SPST	2.5	8	√	√	√	√					40	-67	-92	366			√					
DG3157	1 x SPDT	8	7			√	√					10.2	-58	-59	250						√		
DG3157A	1 x SPDT	6	7			√	√					60	-57	-64	300					√			
DG604	4:1 MUX	85	5			√	√	√	√			80	-75	-70	280	√				√			
DG611 DG612 DG613	4 x SPST	18	3					√	√			35	-93	-98	500		√						√
DG611A DG612A DG613A	4 x SPST	85	5			√	√	√	√			75	- 62 @ 10 MHz	- 90 @ 10 MHz	720	√				√			
DG636	2 x SPDT	85	5			√	√	√	√			130	-90	- 90	610	√				√			
DG4051A	8:1 MUX	60	2			√	√	√	√			175	-90	-95	330	√	√			√			
DG4052A	Dual 4:1 MUX	60	2			√	√	√	√			50	-90	-95	450	√	√			√			
DG4053A	3 x SPDT	60	2			√	√	√	√			175	-90	-95	730	√	√			√			
DG9451	8:1 MUX	68	1			√	√	√	√			152	-90	-90	270					√			
DG9453	3 x SPDT	68	1			√	√	√	√			152	-90	-90	552					√			
DG9236	2 x SPDT	301	2.1			√	√	√	√	√		110	-62 @ 10 MHz	-70 @ 10 MHz	575					√			
DG9251	8:1 MUX	90	2.7				√	√	√	√		98	-90	-90	314					√			
DG9252	Dual 4:1 MUX	90	2.2				√	√	√	√		98	-90	-90	449					√			

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高頻寬器件（續）

Part Number	Config	Basic Parameters		Characterization Voltage								Dynamic Performance				Package Options							
		r_{ON} (Ω) typ	C_{OFF} (p_F) typ	1.8 V	± 2.5 V	≤ 3 V	4.3V / 5 V	± 5 V	12 V	16 V	± 15 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT	PLCC
DG9253	3 x SPDT	90	2				√	√	√	√		98	-90	-90	480					√			
DG506B	16:1 MUX	170	3						√	√	√	190	-85	-84	114	√	√						√
DG507B	Dual 8:1 MUX	170	3						√	√	√	190	-85	-84	217	√	√						√
DG508B	8:1 MUX	180	3						√	√	√	250	-81	-88	200	√	√			√			
DG509B	Dual 4:1 MUX	180	3						√	√	√	250	-81	-88	200	√	√			√			
DG1411 DG1412 DG1413	4 x SPST	1.5	12					√	√		√	150	-80	-100	170	√			√				

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Precision Analog ICs - Low $R_{DS(ON)}$ Analog Switches and Multiplexers

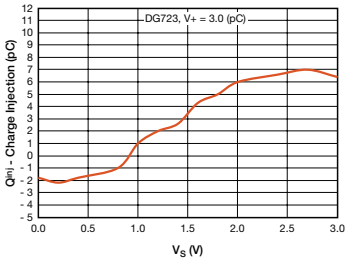
為便攜式儀表和消費類電子應用設計的低電壓器件

該低電壓系列器件工作電壓從5.5 V到低至1.6 V。 器件設計主要優化給低而且平滑的導通電阻特性。器件採用各種小型封裝，包括了TSSOP，MSOP，TDFN和mQFN等來滿足空間受限應用設計對小尺寸的要求。

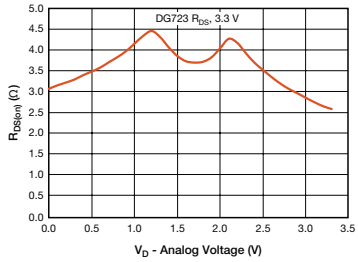
該系列器件包括高頻寬的USB2.0 High Speed開關，帶負電壓通過功能的音頻開關，集成的故障保護電路和提供過電流與斷電保護的開關。 開關時序上包含了先斷後閉與先閉後斷的選擇。

該系列裡的DG721/2/3和DG2537/8/9是5 V，4 Ω，低電壓雙路單刀單擲開關。DG2537/8/9也支持雙電源供電模式。它們綜合了低而且平坦的導通電阻，低漏電流，和低寄生電容的特點，是低電壓前端類比電路，便攜式醫療設備和儀器，及傳感器應用設計的理想選擇。

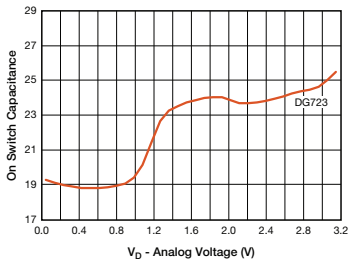
DG723電荷注入與對應的源極訊號電壓



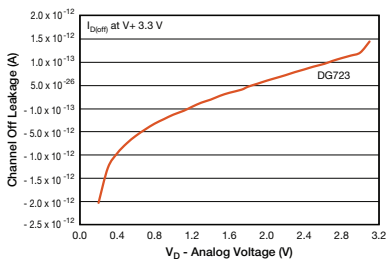
DG723導通電阻與對應的訊號電壓



DG723開關導通電容與對應的訊號電壓



DG723開關導通電容與對應的訊號電壓



Part Number	Config	Basic Parameters			Characterization Voltages						Dynamic Performance				Package Options							
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	1.8 V	± 2.5 V	3 V	4.3 V / 5 V	± 5 V	12 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT
DG2001	1 x SPDT	3	1	17	√		√	√			53	-71	-70	120			√	√				
DG2012	1 x SPDT	1	7	20	√		√	√			39	-63	-64	110							√	
DG2016 DG2026	2 x SPDT	2.4	79	14			√	√			52	-81	-82	200				√	√			
DG2018 DG2019	2 x DPDT	6	3	9			√	√			66	-54	-53	151					√			
DG2034	4:1 MUX	4	5	14			√	√			45	-73	-77	--				√	√			
DG2041 DG2042 DG2043	4 x SPST	1	1	26	√		√	√			42	-63	-94	200	√				√			
DG2303	1 x SPDT	5	0.5	9			√	√			1.8 / typ	-50	-	200							√	
DG2511	1 x SPDT	1	3	19			√	√			39	-58	-64	80						√		
DG2512 DG2513	1 x SPST	1	3	19			√	√			90	-58	-64	80						√		
DG2535 DG2536	2 x SPDT	0.4	21	145	√		√	√			40	-60	-60	180				√	√			
DG2537 DG2538 DG2539	2 x SPST	2.5	2	8	√		√	√			63	-67	-92	366				√				
DG2612 DG2613	1 x SPDT	1	2.4	36	√		√	√			30	-46	-42	80							√	
DG2720	DPDT	6	2.6	4			√	√			30	-80	-85	620						√		

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低電壓器件 （續）

Part Number	Config	Basic Parameters			Characterization Voltages						Dynamic Performance				Package Options							
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	1.8 V	± 2.5 V	3 V	4.3V / 5 V	± 5 V	12 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT
DG2721	2 x SPDT	7	0.5	4	√		√	√			30	-80	-85	620						√		
DG2722	DPDT	7	0.5	1.3			√	√			30	-30 @ 240 MHz	-45 @ 240 MHz	900						√		
DG2723	2 x SPDT	7	0.5	2.5	√		√	√			30	-30 @ 240 MHz	-45 @ 240 MHz	700						√		
DG2730	DPDT	7	0.5	1.3			√	√			30	-30 @ 240 MHz	-45 @ 240 Mhz	900						√		
DG2735 DG2736	2 x SPDT	0.4	55	145	√		√	√			90	-60	-60	180						√		
DG2737 DG2738 DG2739	2 x SPST	6	10.4	4.4	√		√	√			60	-79	-109	720						√		
DG2741 DG2742 DG2743	2 x SPST	0.8	6	81	√		√	√			60	-56	-89	230			√	√				
DG2714	1 x SPDT	0.85	9	30	√		√	√			54	-64	-64	110							√	
DG2715 DG2716	1 x SPST	0.4	9	72	√		√	√			29	-57	-60	--							√	
DG2717	1 x SPDT	0.45	28	76	√		√	√			48	-54	-57	110							√	
DG2725	2 x SPDT	0.7	85	24	√		√	√			95	-85 @ 100 KHz	-95 @ 100 KHz	62						√		
DG2706	2 x DPDT	3	4	16			√				55	-70	-90	190						√		
DG2707	2 x 4:1 MUX	3	4	16			√				56	-70	-90	191						√		
DG2747 DG2748 DG2749	2 x SPST	0.4	10	55	√		√	√			35	-52	-90	93						√		
DG2750	2 x SPDT	1.1	25	25	√		√	√			65	-55 @ 300 KHz	-61 @ 300 KHz	34						√		
DG2753	3 x SPDT	0.7	25	35	√		√	√			60	-90	-90	100	√					√		
DG2788 DG2789	2 x DPDT	0.4	87	81	√		√	√			75	-49	-96	50						√		
DG2799	2 x DPDT	0.3	160	108	√		√	√			60	-50	-50	70					√			
DG3157	1 x SPDT	6	7	6.5	√		√	√				-58 @ 10 MHz	-59 @ 10 MHz	250							√	
DG3157A	1 x SPDT	6	7	7	√		√	√			52	57	64	300						√		
DG2522	SPTT, 3:1 MUX	0.8	27	17			√	√			85	-59	-64	105						√		
DG2520 DG2521	1 x SPDT	0.4	224	50			√	√			40	-51	-57	224			√					
DG4051A	8:1 MUX	60	2	2			√	√	√	√	175	-90	-95	330	√	√				√		
DG4052A	Dual 4:1 MUX	60	2	2			√	√	√	√	50	-90	-95	450	√	√				√		
DG4053A	Triple 2:1 MUX	60	2	2			√	√	√	√	175	-90	-95	730	√	√				√		
DG408L	8:1 MUX	17	1	7			√	√	√	√	55	-70	-82	280	√	√						
DG409L	Dual 4:1 MUX	17	1	7			√	√	√	√	55	-70	-82	280	√	√						
DG411L	4 x SPST	20	5	5			√	√	√	√	60	-71	-95	280	√	√						
DG604	4:1 MUX	85	1	5			√	√	√	√	80	-75	-70	280	√					√		
DG611A DG612A DG613A	4 x SPST	85	0.5	5			√	√	√	√	75	- 62 @ 10 MHz	- 90 @ 10 MHz	720	√					√		
DG636	2 x SPDT	85	1.2	5			√	√	√	√	130	-90	-90	610	√					√		

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低電壓器件（續）

Part Number	Config	Basic Parameters			Characterization Voltages						Dynamic Performance				Package Options							
		r_{ON} (Ω) typ	Charge Injection (pC) typ	C_{OFF} (pF) typ	1.8 V	± 2.5 V	3 V	4.3V / 5 V	± 5 V	12 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	TSSOP	SOIC	SOT-23	MSOP	QFN/DFN	Mini QFN	SC-70/SC89	MICRO FOOT
DG721 DG722 DG723	2 x SPST	2.5	2	8			√	√			55	-67	-92	319				√	√			
DG9051	8:1 MUX	30	38	4			√	√	√	√	55	-78	-83	--	√							
DG9052	Dual 4:1 MUX	30	38	4			√	√	√	√	55	-78	-83	--	√							
DG9053	Triple 2:1 MUX	30	38	4			√	√	√	√	55	-78	-83	--	√							
DG9409	Dual 4:1 MUX	4	23	23			√	√	√	√	75	-80 @ 100 KHz	-85 @ 100 KHz	--					√			
DG9408	8:1 MUX	4	29	21			√	√	√	√	75	-80 @ 100 KHz	-85 @ 100 KHz	--					√			
DG9411	1 x SPDT	7	5	7	√		√	√			40	-75	-68	200							√	
DG9421 DG9422	1 x SPST	2	320	31			√	√	√	√	50	-60	--	50			√					
DG9424 DG9425 DG9426	4 x SPST	1.8	38	49			√	√	√	√	65	-56	-77	150	√							
DG9432 DG9433 DG9434	2 x SPST	19	0.36	7.5			√	√	√	√	40	-75	-96	200			√	√				

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USB訊號開關

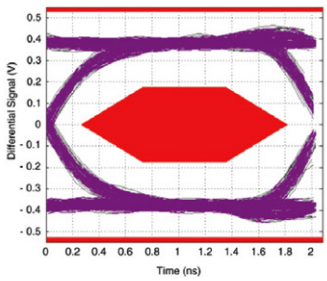
DG2722和DG2730是支持USB 2.0高速數據線路切換的雙路單刀雙擲 （雙刀雙擲）開關。這兩款器件提供大於900 MHz的 -3 dB頻寬，1.3 pF關斷電容，和高於8 kV的ESD/HBM保護。

USB2.0類比雙刀雙擲開關提供給雙端口切換

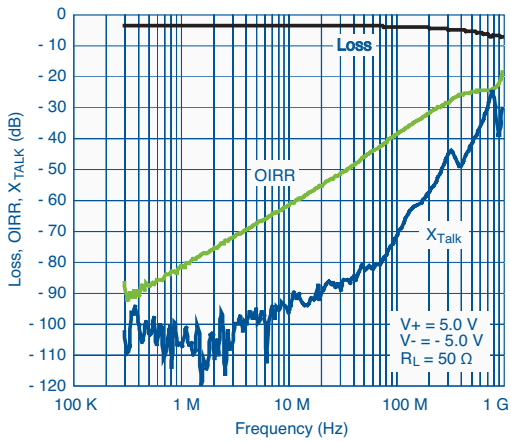
- 高於900 MHz的-3 dB頻寬 （5 pF負載）
- 快速切換:導通時間30 ns，關斷時間25 ns
- 低bit-to-bit偏差：40 ps（典型值）
- 低導通電阻，7.0 Ω（典型值）
- 低分布電容，1.3 pF（典型值）
- 低電位邏輯控制， VINH ≦1.3 V
- 8 kV ESD/HBM保護
- miniQNF-10 (1.4 mm x 1.8 mm x 0.55 mm)



miniQFN10,
1.4 mm x 1.8 mm



DG2722/DG2730,USB2.0 High-Speed
測試眼圖， V = 3.3 V



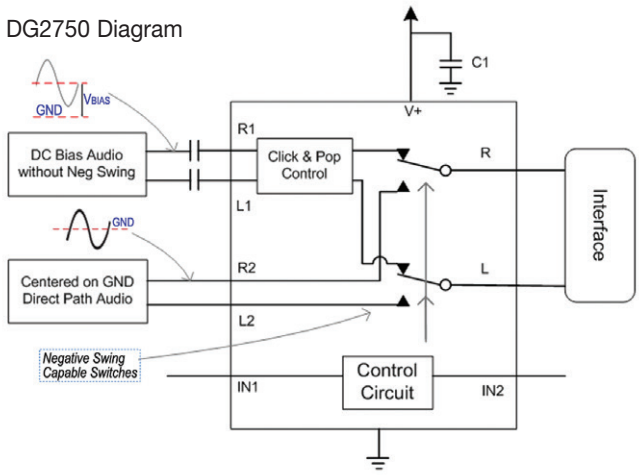
		Basic Parameters				Dynamic Performance					
Part Number	Config	r_{ON} (Ω) typ	C_{OFF} (pF) typ	≤ 3 V	4.3 V / 5 V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross-talk @ 1 MHz (dB)	BW (MHz)	QFN/ DFN	Mini QFN
DG2720	DPDT	6	2.6	√	√	30	-80	-85	620		√
DG2722	DPDT	7	2.2	√	√	30	-30 @240 MHz	-45 @240 MHz	900		√
DG2723	2 x SPDT	7	2.5	√	√	30	-30 @240 MHz	-45 @240 MHz	700		√
DG2730	DPDT	7	2.2	√	√	30	-30 @240 MHz	-45 @240 Mhz	900		√

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支持帶負電壓訊號的音頻開關

下表所列器件是為類比音頻訊號設計的低壓開關。不帶直流偏壓的音頻訊號可以擺動至負電壓範圍。器件集成的特殊電路可以在無需外加負偏壓的情況下讓帶有負擺幅的訊號通過。因此，無論音頻訊號是否帶有直流偏壓，該系列器件都可以單電源工作。

DG2750 Diagram



Part Number	Config	Basic Parameters		Characterization on Voltages (V)	Dynamic Performance				Package Option
		r_{ON} (Ω) typ	Charge Injection (pC) typ		tON Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	
DG2727/8/9	Dual SPST	0.65	1.2	2.7	67	-58	-64	250MHz	mQFN8
DG2612/3	SPDT	1	2.4	3	60	-61	-67	50MHz	SC89
DG2750	Dual SPDT	0.6	4	2.7	1700	-55	-61	34MHz	mQFN10

Note: DG2750, 0.6Ω dual SPDT in mQFN10

故障保護開關

集成在器件中的特殊電路可以在多種故障情況下提供保護功能。在芯片電源斷電的情況下斷電保護功能切斷從訊號端口到電源引腳的電流通路。該功能對於使用在端口切換的開關器件尤其重要。因為端口所連接的線路由不同的電源供電，它們會有不同的通電時序，可能在開關線路未加電時， 另一電路已傳送訊號。

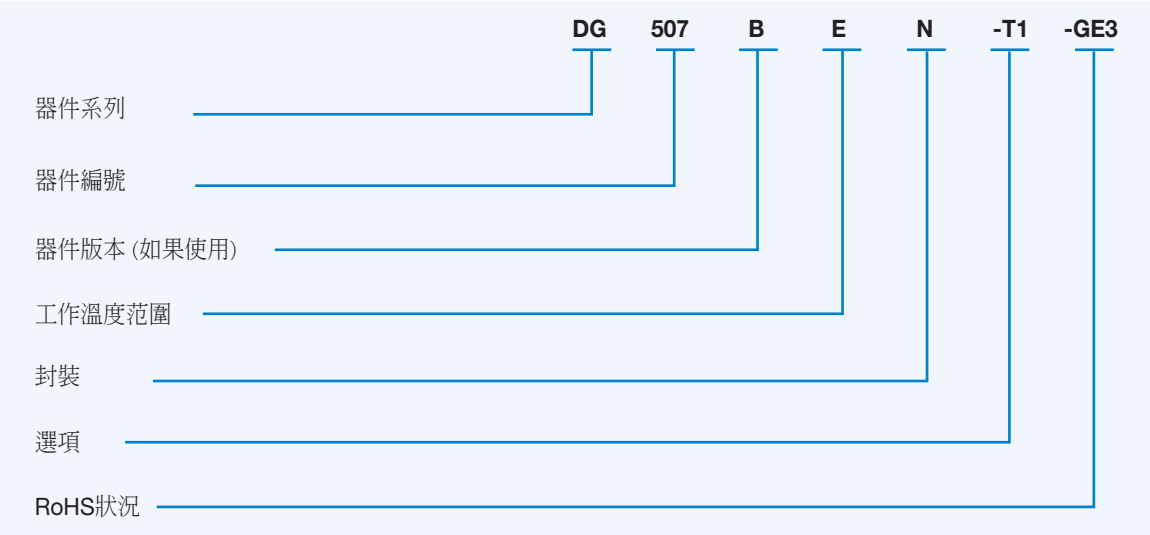
DG2522是3:1多工器。該器件保証在訊號端電壓高過電源電壓的故障條件下的低漏電流，隔離輸入和輸出電路。

該系列裡的DG2520和DG2521帶有過電流保護，在過載狀態下斷開負載。

Part Number	Config	r_{ON} (Ω) typ	Characterization Voltages (V)				Dynamic Performance				Feature and Protection
			1.8	3V	4.3	5V	t_{ON} Max. (ns)	Off Isolation @ 1 MHz (dB)	Cross- talk @ 1 MHz (dB)	BW (MHz)	
DG2520	SPDT	0.4		√		√	40	-51	-57	224	Overcurrent, Break before Make
DG2521	SPDT	0.4		√		√	40	-51	-57	224	Overcurrent, Make before Break
DG2522	SPTT, 3:1 mux	0.8	√	√		√	85	-59	-64	105	Signal over power rail protection
DG2720	2 x SPDT	6		√	√		30	-80	-85	620	Power down protection
DG2722	2 x SPDT	7		√	√		30	-30 @ 240 MHz	-45 @ 240 MHz	900	Power down protection
DG2723	2 x SPDT	7		√	√		30	-30 @ 240 MHz	-45 @ 240 MHz	700	
DG2730	2 x SPDT	7		√	√		30	-30 @ 240 MHz	-45 @ 240 Mhz	900	Power down protection
DG4157	SPDT	0.95		√		√	60	-58	-63	117	Power down protection

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產品編號命名



器件系列 (1至3個字母)

DG	- Analog Switches and Analog Multiplexers

器件編號 （3至5位數字）

工作溫度范圍(1個字母)

A	-55 to 125 °C
B	-25 to 85 °C
C	0 to 70 °C
D	-40 to 85 °C
E	-40 to 125 °C

封裝 (1個字母)

A	Metal Can
B	Wafer Level CSP (MicroFOOT, WCSP)
J	Dual-In-Line Package – (Plastic DIP)
K	Dual-In-Line Package – (Ceramic DIP)
L	SC70 (-5ld, -6ld) Package
M	CerQuad J-Leaded Chip Carrier
N	Quad Flat No-Lead – (QFN, miniQFN) Dual Flat No-Lead – (DFN, TDFN, uDFN) Plastic J-Leaded Chip Carrier – (PLCC)
P	Dual-In-Line Package – Sidebraze
Q	Thin Shrink Small Outline Package (TSSOP, MSOP)
R	Dual-In-Line Package – Sidebraze
S	SOT23-8ld Package
V	Thin Shrink Small Outline Package (TSOP)
W	Wide-Body Small Outline Package (SOIC)
X	SC89 Package
Y	Narrow-Body Small Outline Package (SOIC)
Z	Leadless Chip Carrier – (LCC)

器件選項

/883	以當前版本MIL-STD-883，Level B制程生產。 兼容 Non-JAN
Tx	“X”是一個數字，表示卷帶的方向;沒有卷軸 選項表示器件用筒管包裝

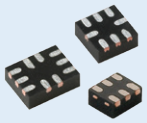
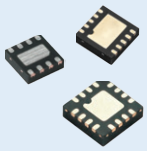
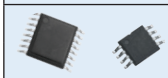
RoHS狀況

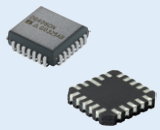
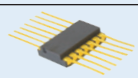
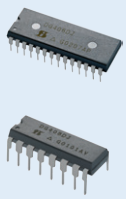
G	符合 RoHS“Green”標准 雖然一些零件號沒有G后綴，它們還是可能符 合RoHS標准。請與廠商洽詢
Ex	3個“E”數字代表不同的管腳無鉛處理 - E1 = Tin/Silver/Copper - E3 = 100 % matte Tin - E4 = Nickel/Palladium/Gold 如果沒有 “-Ex”表示該器件非無鉛處理

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封裝

多種封裝選擇以滿足您的需求

Package Type		Dimensions (mm) W x L x H
	MICRO FOOT® 3 x 2	1.5 x 1.0 x 0.65
	MICRO FOOT® 3 x 3	1.5 x 1.5 x 0.65
	MICRO FOOT® 4 x 3	2.0 x 1.5 x 0.65
	MICRO FOOT® 4 x 4	2.0 x 2.0 x 0.65
	miniQFN-6	1.2 x 1.0 x 0.55
	miniQFN-8	1.4 x 1.4 x 0.55
	miniQFN-10	1.8 x 1.4 x 0.55
	miniQFN-16	2.6 x 1.8 x 0.75
	DFN-10	3.0 x 3.0 x 0.9
	QFN-12	3.0 x 3.0 x 0.9
	QFN-16	3.0 x 3.0 x 0.9
	QFN-16	4.0 x 4.0 x 0.9
	TDFN-8	2.0 x 2.0 x 0.55
	MSOP-8	3.0 x 4.9 x 1.0
	MSOP-10	3.0 x 4.9 x 1.0
	SC89-6	1.65 x 1.65 x 0.55
	SC70-5/6	2.0 x 2.1x 1.0
	TSOP-6	2.9 x 3.0 x 1.0
	SOT23-8	2.9 x 2.8 x 1.3
	SOIC-8 (Narrow)	6.0 x 4.9 x 1.6
	SOIC-14 (Narrow)	6.0 x 8.6 x 1.6
	SOIC-16 (Narrow)	6.0 x 9.9 x 1.6
	SOIC-18 (Wide)	10.2 x 7.6 x 2.4
	SOIC-20 (Wide)	10.3 x 12.8 x 2.5
	SOIC-28 (Wide)	10.3 x 17.9 x 2.5

Package Type		Dimensions (mm) W x L x H
	TSSOP-14	5.0 x 6.4 x 1.2
	TSSOP-16	5.0 x 6.4 x 1.1
	TSSOP-28	6.4 x 9.7 x 1.0
	PLCC-20	9.9 x 9.9 x 4.4
	PLCC-28	12.4 x 12.4 x 4.4
	PLCC-44	17.5 x 17.5 x 4.4
	LCC-20	8.9 x 8.9 x 1.8
	LCC-28	11.4 x 11.4 x 1.8
	CERQUAD-44	17.5 x 17.5 x 3.1
	FLAT PACK-14	22.9 x 8.9 x 2.3
	FLAT PACK-16	23.4 x 10.2 x 2.1
	CERDIP-8	7.9 x 9.8 x 4.6
	CERDIP-14	7.9 x 19.3 x 4.6
	CERDIP-16	7.9 x 19.3 x 4.5
	CERDIP-28	36.8 x 15.5 x 5.0
	PDIP-14	7.9 x 18.3 x 4.4
	PDIP-16	7.9 x 21.1 x 4.4
	PDIP20	7.9 x 25.9 x 4.4
	PDIP28	15.5 x 37.3 x 3.7
	SideBraze DIP-14	7.6 x 18.5 x 3.6
	SideBraze DIP-16	7.6 x 20.5 x 3.6
	SideBraze DIP-20	7.6 x 25.5 x 3.6
	SideBraze DIP-28	15.3 x 37.4 x 3.6

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