

### FEATURES

- Low Propagation Time ..... 1ns
- Low On Resistance
- Low Insertion Loss
- Low Capacitance
  - Input (Gate)..... 3.6pF typ.
  - Output..... 1.6pF typ.
  - Feedback ..... .6pF typ.
- Low Crosstalk ..... -107dB @ 4kHz
- Input Transient Protection

### APPLICATION

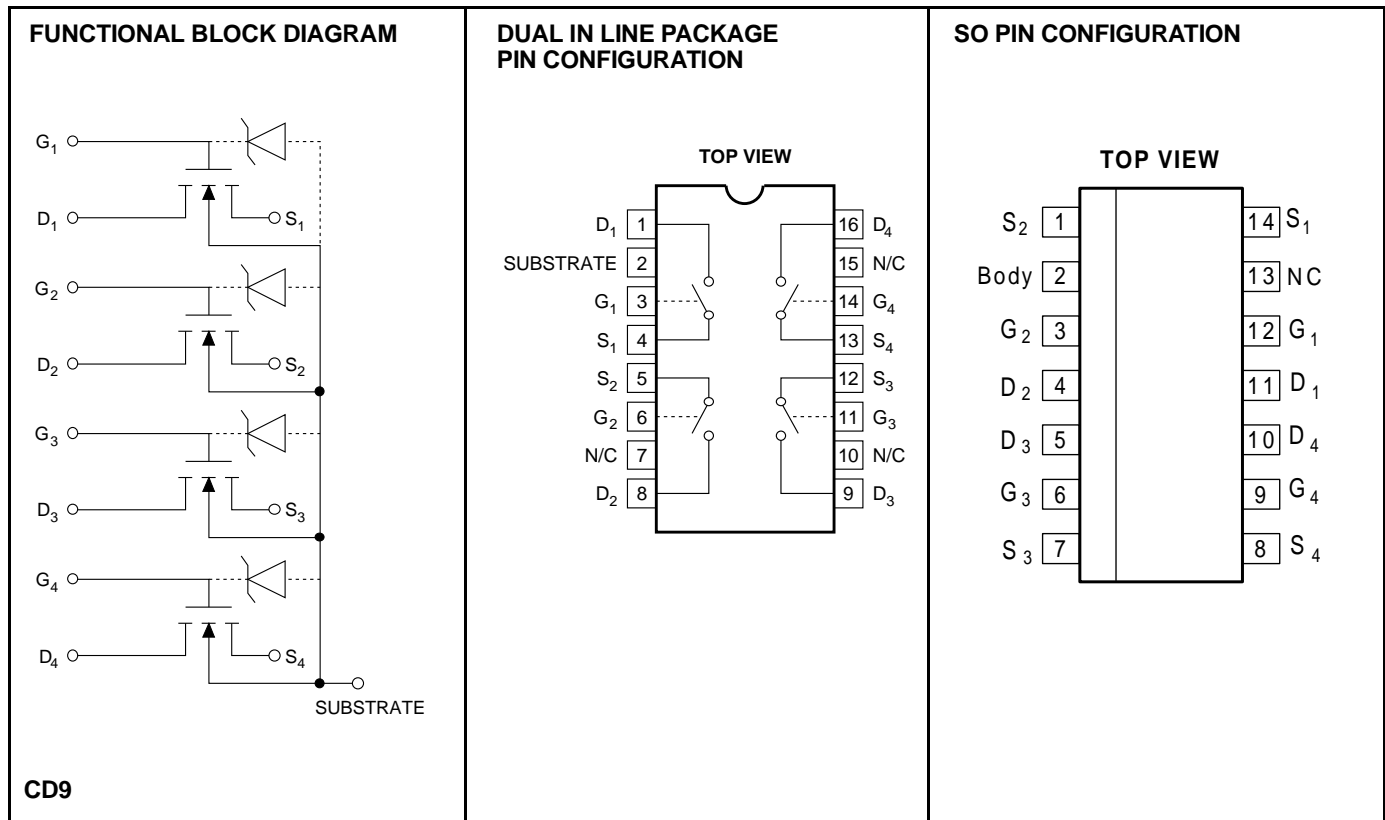
- Analog Switch Driver
- Wide Band Dual Differential Amplifiers

### DESCRIPTION

The Calogic SD5300 is a monolithic array of 20V enhancement-mode DMOS FET analog switch drivers. The SD5300 is manufactured with implanted high-speed, high-voltage and low resistance double-diffused MOS (DMOS) process, and was designed to drive DMOS and other analog switches. The devices are available in 16-pin plastic DIP package and in a die form for hybrid applications. Custom devices based on SD5300 can also be ordered.

### ORDERING INFORMATION

Part	Package	Temperature Range
SD5300Y	SOIC	-55°C to +125°C
SD5300N	Plastic DIP	-55°C to +125°C
XSD5300	Sorted Chips in Carriers	-55°C to +125°C



## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MAX. VALUE	UNITS
Breakdown Voltage			
Drain-Source	$V_{DS}$	20	V
Source-Drain	$V_{SD}$	20	
Drain-Substrate	$V_{DB}$	25	
Source-Substrate	$V_{SB}$	25	
Gate-Source	$V_{GS}$	25	
Gate-Substrate	$V_{GB}$	25/-3	
Gate-Drain	$V_{GD}$	25	
Continuous Drain Current	$I_D$	50	mA

## ABSOLUTE MAXIMUM

PARAMETER	SYMBOL	MAX. VALUE	UNITS
Drain Current	$I_D$	50	mA
Temperature Range			
Operating	$T_J$	-55 to +85	°C
Storage	$T_S$	-55 to +150	
Power Dissipation			
Package	$P_D$	640 (Note 1)	mW
Each Device	$P_D$	300 (Note 2)	

## Notes:

1. Linear Derating Factor – 10.7mW/°C above 25°C
2. Linear Derating Factor – 5.0mW/°C above 25°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
$BV_{DS}$	Drain-Source Breakdown Voltage	20	25		V	$I_D = 10\mu\text{A}$ , $V_{GS} = V_{BS} = 0$
$BV_{SB}$	Source-Substrate Breakdown Voltage	20	25			$I_S = 10\mu\text{A}$ , $V_{GS} = 0$ , Drain Open
$I_{GBS}$	Gate-Body Leakage Current			1.0	$\mu\text{A}$	$V_{GB} = 25\text{V}$ , $V_{DB} = V_{SB} = 0$
$V_{GS(th)}$	Gate-Source Threshold Voltage	0.5		2.0	V	$V_{DS} = V_{GS}$ , $I_D = 1.0\mu\text{A}$ , $V_{SB} = 0$
$r_{DS(on)}$	Drain-Source ON Resistance		40	45	ohms	$V_{GS} = 5\text{V}$ , $I_D = 1\text{mA}$ , $V_{SB} = 0$
			22	25		$V_{GS} = 10\text{V}$ , $I_D = 1\text{mA}$ , $V_{SB} = 0$
			17	20		$V_{GS} = 15\text{V}$ , $I_D = 1\text{mA}$ , $V_{SB} = 0$
			15	17		$V_{GS} = 20\text{V}$ , $I_D = 1\text{mA}$ , $V_{SB} = 0$
$g_{fs}$	Common-Source Forward Transconductance	10	12		mmhos	$V_{DS} = 10\text{V}$ , $I_D = 20\text{mA}$ , $f = 1\text{KHz}$ , $V_{SB} = 0$
$C_{(ga+gd+gb)}$	Gate Node Capacitance		2.4	3.7	pF	$f = 1\text{MHz}$ , $V_{DS} = 10\text{V}$ , $V_{GS} = V_{BS} = -15\text{V}$
$C_{(gd+db)}$	Drain Node Capacitance		1.3	1.7		
$C_{(gs+sb)}$	Source Node Capacitance		3.5	4.5		
$C_{(dg)}$	Reverse Transfer Capacitance		0.3	.7		
$C_T$	Cross Talk		-107		dB	

**SWITCHING CHARACTERISTICS**

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
$t_{d(on)}$	Turn-on Time		0.7	1.5	ns	$R_L = 680\Omega, R_G = 51$
$t_r$	Rise Time		0.8	1.5		$V_{DD} = 5V$
$t_{off}^*$	Turn-off Time		10.0			$V_{G(on)} = 10V$

\*  $t_{off}$  is dependent on  $R_L$  and  $C$  and does not depend on the device characteristics.

