



Quad DMOS Analog Switch Driver

*"Improved Performance Over
SD5000N and SD5400CY"*

SD5300

FEATURES

- Low Propagation Time 1ns
- Low On Resistance
- Low Insertion Loss
- Low Capacitance
 - Input (Gate)..... 3.6pF typ.
 - Output..... 1.6pF typ.
 - Feedback6pF typ.
- Low Crosstalk -107dB @ 4kHz
- Input Transient Protection

APPLICATION

- Analog Switch Driver
- Wide Band Dual Differential Amplifiers

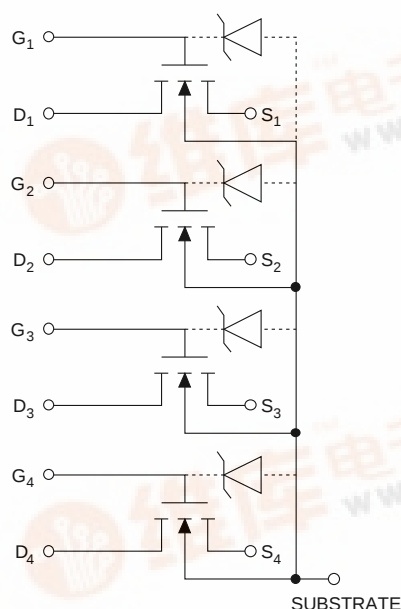
DESCRIPTION

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.

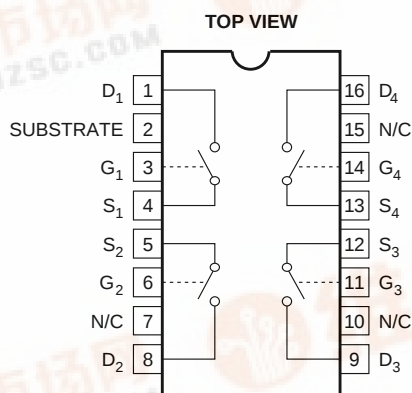
ORDERING INFORMATION

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

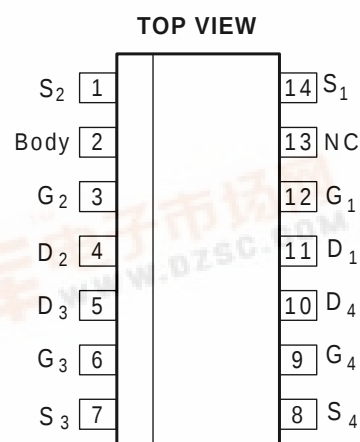
FUNCTIONAL BLOCK DIAGRAM



DUAL IN LINE PACKAGE PIN CONFIGURATION



SO PIN CONFIGURATION



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)

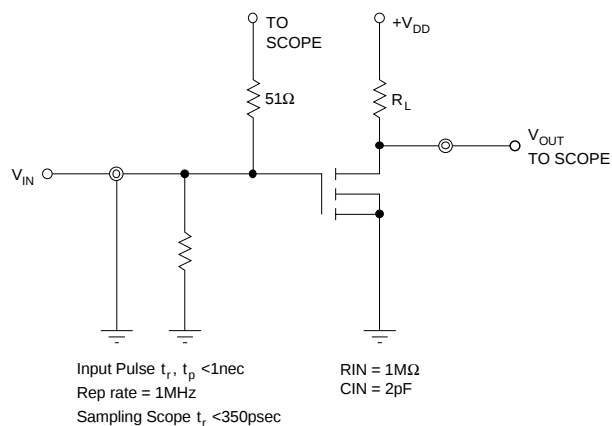
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
BV_{DS}	Drain-Source Breakdown Voltage	20	25		V	$I_D = 10\mu\text{A}$, $V_{GS} = V_{BS} = 0$
BV_{SB}	Source-Substrate Breakdown Voltage	20	25			$I_S = 10\mu\text{A}$, $V_{GS} = 0$, Drain Open
I_{GBS}	Gate-Body Leakage Current			1.0	μA	$V_{GB} = 25\text{V}$, $V_{DB} = V_{SB} = 0$
$V_{GS(th)}$	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.

TEST CIRCUIT



SWITCHING WAVEFORM

