

**FEATURES**

- High Speed Switching.....  $t_r < 2ns$
- Low Capacitance.....  $C_{RSS} 1.2pF$  typical
- Very Low on Resistance..... 8 ohm max
- Low Threshold .....  $< 1.5V$
- CMOS and TTL Compatible Input
- Available in Surface Mount Package

**APPLICATIONS**

- Switch Drivers
- Video Switches
- VHF/UHF Amplifiers

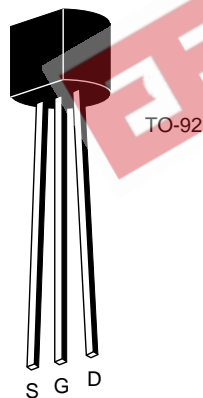
**DESCRIPTION**

The SD404 is an N-Channel Enhancement Mode device processed with Calogic's ultra high speed lateral DMOS technology. The SD404 is an excellent switch driver or analog switch. Its low threshold offers the designer an advantage in applying the benefits of low on resistance and high speed switching to low voltage circuits.

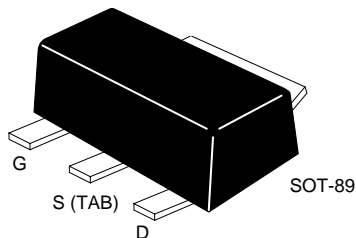
**ORDERING INFORMATION**

Part	Package	Temperature Range
SD404BD	Plastic TO-92 Package	-55°C to +125°C
SD404CY	SOT-89 Surface Mount	-55°C to +125°C
XSD404	Sorted Chips in Carriers	-55°C to +125°C

**PIN CONFIGURATION**



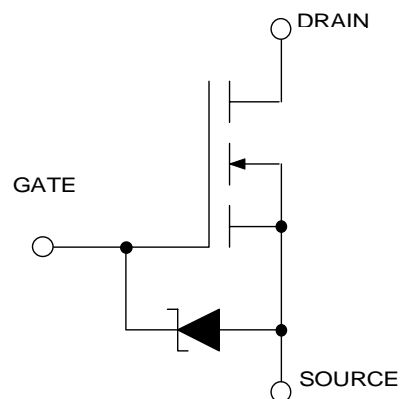
CD3



**PRODUCT MARKING**

TO-92	SD4040B
SOT-89	SD404

**SCHEMATIC DIAGRAM**



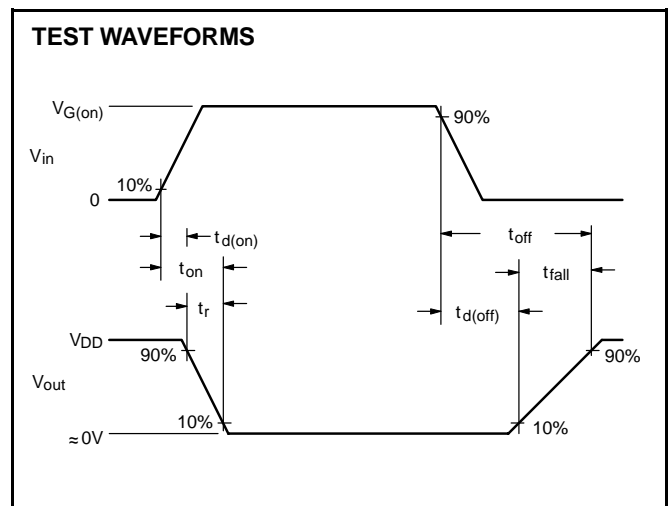
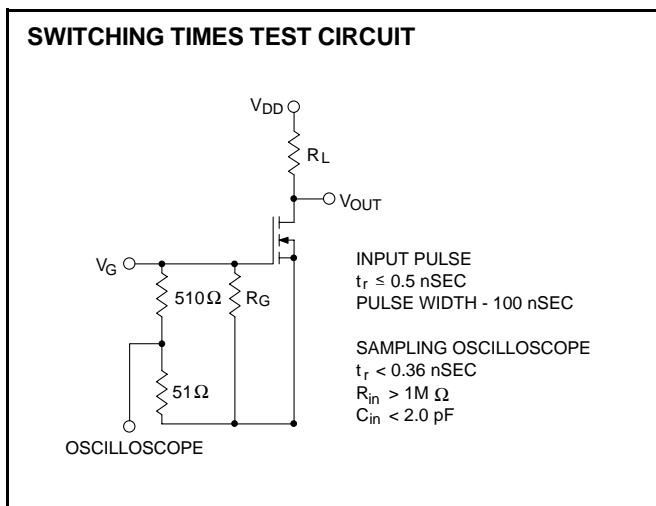
**ABSOLUTE MAXIMUM RATINGS** ( $T_A = +25^\circ\text{C}$  unless otherwise noted)

Drain-Source Voltage	+20V	Peak Pulsed Drain Current	+0.8A
Gate-Source Voltage	-0.3V	Continuous Drain Current	100mA
	+20V	Power Dissipation (at or below $T_A = +25^\circ\text{C}$ )	300mW
Gate-Drain Voltage	-0.3V	Linear Derating Factor	3.0mW/ $^\circ\text{C}$
	+20V	Operating Junction and Storage	
Source-Drain Voltage	-0.3V	Temperature Range	-55 $^\circ\text{C}$ to +125 $^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

SYMBOL	CHARACTERISTICS	MIN	TYP	MAX	UNIT	TEST CONDITIONS	
<b>STATIC</b>							
$BV_{DSS}$	Drain-Source Breakdown Voltage	20	25		V	$I_D = 1.0\mu\text{A}, V_{GS} = 0$	
$I_{D(OFF)}$	Drain-Source OFF Leakage Current			1.0	$\mu\text{A}$	$V_{DS} = 15\text{V}, V_{GS} = 0$	
$I_{GSS}$	Gate-Source Leakage Current			10	$\mu\text{A}$	$V_{GS} = 20\text{V}, V_{DS} = 0$	
$I_{D(ON)}$	Drain-Source ON Current	0.8	1.2		A	$V_{DS} = 10\text{V}, V_{GS} = 10\text{V}$ (Note 1)	
$V_{GS(th)}$	Gate-Source Threshold Voltage	0.5	1.1	1.5	V	$I_D = 1.0\mu\text{A}, V_{DS} = V_{GS}$	
$V_{DS(ON)}$	Drain-Source ON Voltage			200	mV	(Note 1)	
$r_{DS(ON)}$	Drain-Source ON Resistance			20	ohms		$I_D = 10\text{mA}$ $V_{GS} = 2.4\text{V}$
$V_{DS(ON)}$	Drain-Source ON Voltage			800	mV		$I_D = 100\text{mA}$ $V_{GS} = 4.5\text{V}$
$r_{DS(ON)}$	Drain-Source ON Resistance			8.0	ohms		
<b>DYNAMIC</b>							
$g_{fs}$	Common-Source Forward Transconductance	100			mS	$I_D = 0.3A, V_{DS} = 20\text{V}$ $f = 1\text{KHz}$ (Note 1)	
$C_{iss}$	Common-Source Input Capacitance		12	18	pf	$V_{DS} = 20\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$	
$C_{oss}$	Common-Source Output Capacitance		6.0	8.0			
$C_{rss}$	Common-Source Reverse Transfer Capacitance		1.2	2.0			
$t_{d(on)}$	Turn ON Delay Time		1.0	1.5	ns	$V_{DD} = 10\text{V}, R_L = 390\Omega$ $V_{G(ON)} = 10\text{V}, R_G = 51\Omega$ $C_L = 1.5\text{pF}$	
$t_r$	Rise Time		1.0	2.0			
$t_{(OFF)}$	Turn OFF Time		1.0				

Note 1: Pulse Test, 80 $\mu\text{Sec}$ , 1% Duty Cycle



**TYPICAL PERFORMANCE CHARACTERISTICS** ( $T_A = +25^\circ\text{C}$  unless otherwise noted)

