74V1G384

SINGLE HIGH SPEED BUS SWITCH

- HIGH SPEED: t_{PD} = 0.5ns (TYP.) at V_{CC} = 5V
- LOW POWER DISSIPATION:
  I_{CC} = 1µA(MAX.) at T_A=25°C
- LOW "ON" RESISTANCE at V_{CC}=5.0V:
  R_{ON}= 7Ω (TYP), V_{IN}=0V, $I_{I/O}$=30mA
  R_{ON}= 14Ω (TYP), V_{IN}=2.4V, $I_{I/O}$=15mA
- OPERATING VOLATGE RANGE:
  V_{CC} (OPR.) = 3.0V TO 5.5V
- 5V TOLERANT ON CONTROL PIN
- HIGH NOISE IMMUNITY:
  V_{NIH} = V_{NIL} = 28% V_{CC} (MIN.)

SOT23-5L

SOT323-5L

ORDER CODES

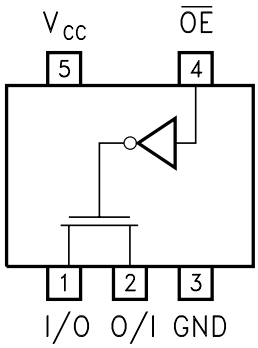
PACKAGE	T & R
SOT23-5L	74V1G384STR
SOT323-5L	74V1G384CTR

DESCRIPTION

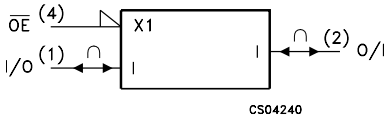
The 74V1G384 is an advanced high-speed CMOS SINGLE HIGH SPEED BUS SWITCH fabricated in silicon gate C^2MOS technology. It's designed to operate from 3V to 5.5V, making this device ideal for portable applications. It's offers 7Ω Resistance typical value at V_{CC}=5V. Additional key feature are fast switching speed (t_{ON}=3.8ns, t_{OFF}=3.3ns Typical) and Low Power Consumption.

The $\overline{OE}$ input is provided to control the switch; the switch is ON when the $\overline{OE}$ input is held low and OFF when $\overline{OE}$ is held high.
It's available in the commercial and extended temperature range in SOT23-5L and SC-70-5L package.

PIN CONNECTION AND IEC LOGIC SYMBOLS



CS04250



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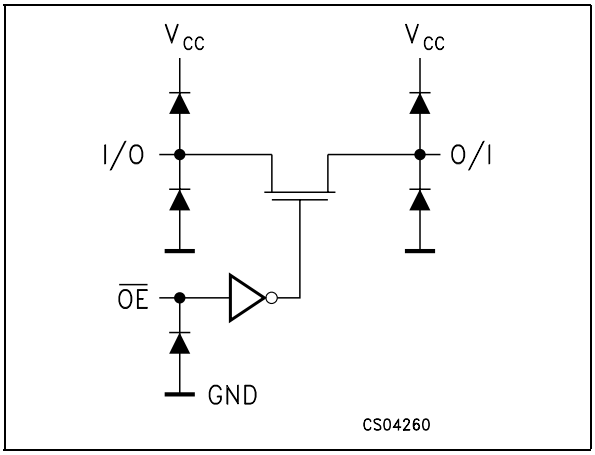
INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN N°	SYMBOL	NAME AND FUNCTION
1	I/O	Independent Input/Output
2	O/I	Independent Output/Input
4	$\overline{OE}$	Enable Input (Active HIGH)
3	GND	Ground (0V)
5	V_{CC}	Positive Supply Voltage

TRUTH TABLE

$\overline{OE}$	SWITCH FUNCTION
L	ON
H	OFF *

* High Impedance State

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.5 to +7.0	V
V_I	DC Input Voltage	-0.5 to V_{CC} + 0.5	V
V_{IC}	DC Control Input Voltage	-0.5 to +7.0	V
V_O	DC Output Voltage	-0.5 to V_{CC} + 0.5	V
I_{IK}	DC Input Diode Current	± 20	mA
I_{IK}	DC Control Input Diode Current	- 20	mA
I_{OK}	DC Output Diode Current	± 20	mA
I_O	DC Output Current	± 50	mA
I_{CC} or I_{GND}	DC V_{CC} or Ground Current	± 50	mA
T_{stg}	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature (10 sec)	300	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	3 to 5.5	V
V_I	Input Voltage	0 to V_{CC}	V
V_{IC}	Control Input Voltage	0 to 5.5	V
V_O	Output Voltage	0 to V_{CC}	V
T_{op}	Operating Temperature	-55 to 125	°C
dt/dv	Input Rise and Fall Time (note 1) V_{CC} = 5.0V	0 to 20	ns/V

1) V_{IN} from 30% to 70% of V_{CC} on control pin

DC SPECIFICATIONS

Symbol	Parameter	Test Condition		Value							Unit
		V_{CC} (V)		T_A = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
V_{IH}	High Level Input Voltage	2.0		1.5			1.5		1.5		V
		3.0 to 5.5		$0.7V_{CC}$			$0.7V_{CC}$		$0.7V_{CC}$		
V_{IL}	Low Level Input Voltage	2.0				0.5		0.5		0.5	V
		3.0 to 5.5				$0.3V_{CC}$		$0.3V_{CC}$		$0.3V_{CC}$	
R_{ON}	ON Resistance	3.0	$V_{IC} = V_{IL}$ $V_{I/O}$ = GND $I_{I/O} \leq 30$ mA		9			13		20	Ω
		4.5	$V_{IC} = V_{IL}$ $V_{I/O}$ = GND $I_{I/O} \leq 30$ mA		7			10		15	Ω
R_{ON}	ON Resistance	3.0	$V_{IC} = V_{IL}$ $V_{I/O}$ = 1.5V $I_{I/O} \leq 15$ mA		20			40		60	Ω
		4.5	$V_{IC} = V_{IL}$ $V_{I/O}$ = 2.4V $I_{I/O} \leq 15$ mA		14			28		40	Ω
I_{OFF}	Input/Output Leakage Current (SWITCH OFF)	5.5	$V_{OS} = V_{CC}$ to GND $V_{IS} = V_{CC}$ to GND $V_{IC} = V_{IL}$			±0.1		± 1		± 10	µA
I_{IN}	Control Input Leakage Current	0 to 5.5	V_{IC} = 5.5V or GND			± 0.1		± 1.0		± 1.0	µA
I_{CC}	Quiescent Supply Current	5.5	$V_I = V_{CC}$ or GND			1		10		20	µA

AC ELECTRICAL CHARACTERISTICS (C_L = 50pF, Input $t_r = t_f$ = 3ns)

Symbol	Parameter	Test Condition		Value							Unit
		V_{CC} (V)		T_A = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
t_{PD}	Delay Time	3.3(*)	$t_r = t_f$ = 6ns		0.8	1.2		1.5		2.0	ns
		5.0(**)	$t_r = t_f$ = 6ns		0.5	0.8		1.0		1.5	
t_{PLZ} t_{PHZ}	Output Disable Time	3.3(*)	R_1 = 500Ω V_{IN}=1.5V		8.5	12.0		14.0		16.0	ns
		5.0(**)	R_1 = 500Ω V_{IN}=2.4V		3.8	6.5		9.0		10.0	
t_{PZL} t_{PZH}	Output Enable Time	3.3(*)	R_1 = 1KΩ V_{IN}=1.5V		7.3	12.0		14.0		16.0	ns
		5.0(**)	R_1 = 1KΩ V_{IN}=2.4V		3.3	5.0		7.5		8.5	

(*) Voltage range is 3.3V ± 0.3V
(**) Voltage range is 5.0V ± 0.5V

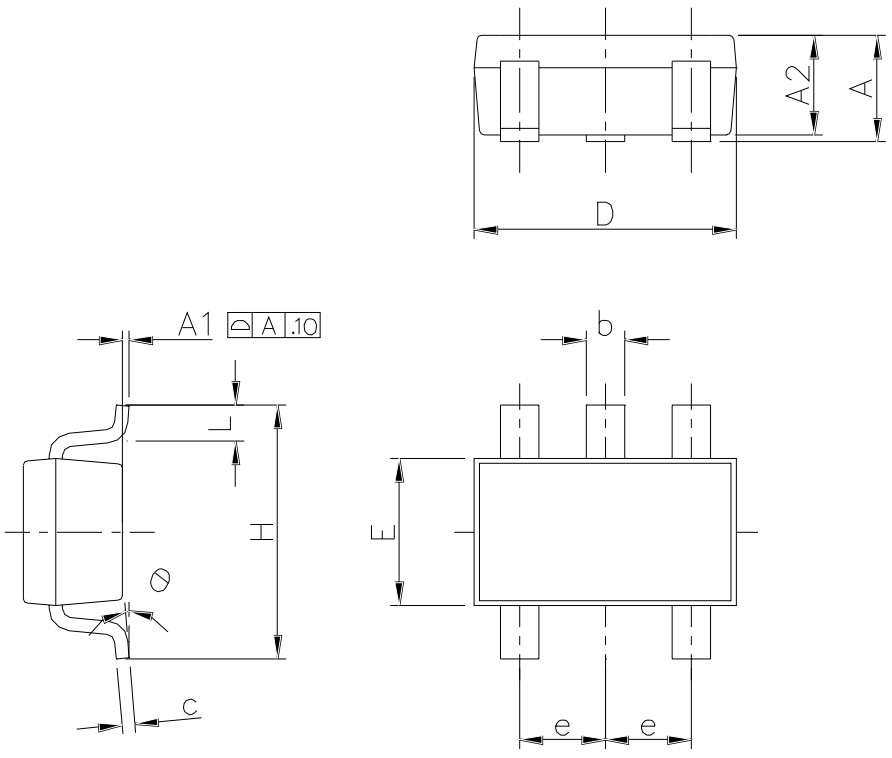
CAPACITIVE CHARACTERISTICS

Symbol	Parameter	Test Condition		Value							Unit
		V_{CC} (V)		T_A = 25°C			-40 to 85°C		-55 to 125°C		
				Min.	Typ.	Max.	Min.	Max.	Min.	Max.	
C_{IN}	Input Capacitance				4	10		10		10	pF
$C_{I/O}$	Output Capacitance				7						pF
C_{PD}	Power Dissipation Capacitance (note 1)	3.3			2.5						pF
		5.0			3						

1) C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation. $I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}$

SOT23-5L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.90		1.45	35.4		57.1
A1	0.00		0.10	0.0		3.9
A2	0.90		1.30	35.4		51.2
b	0.35		0.50	13.7		19.7
C	0.09		0.20	3.5		7.8
D	2.80		3.00	110.2		118.1
E	1.50		1.75	59.0		68.8
e		0.95			37.4	
H	2.60		3.00	102.3		118.1
L	0.10		0.60	3.9		23.6



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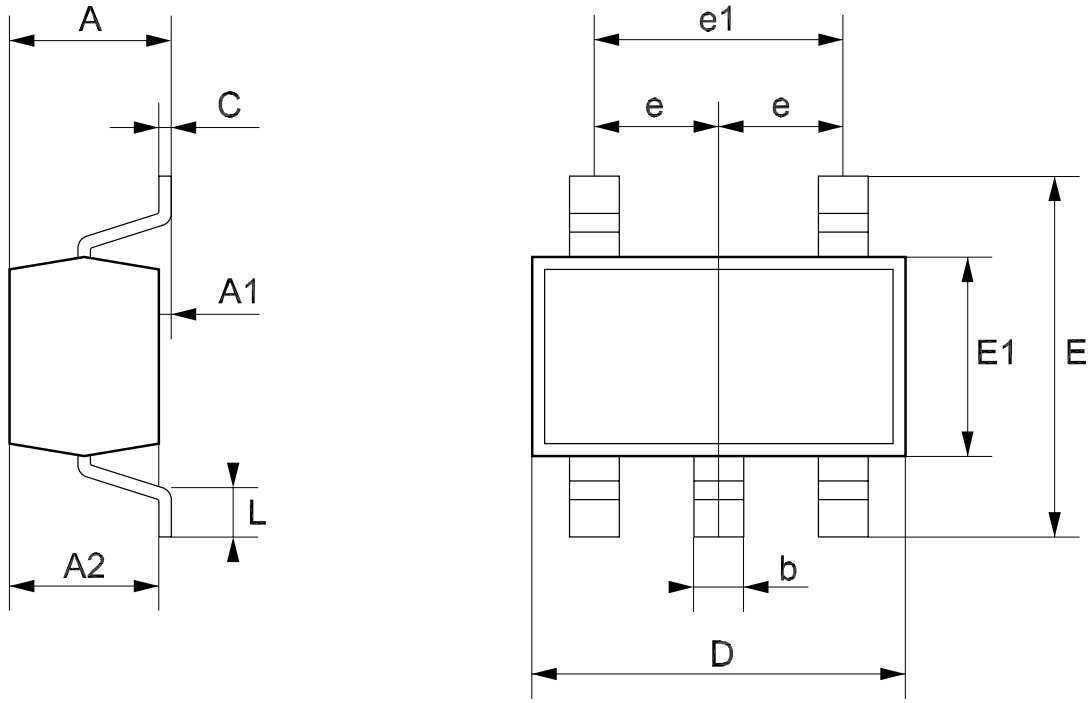
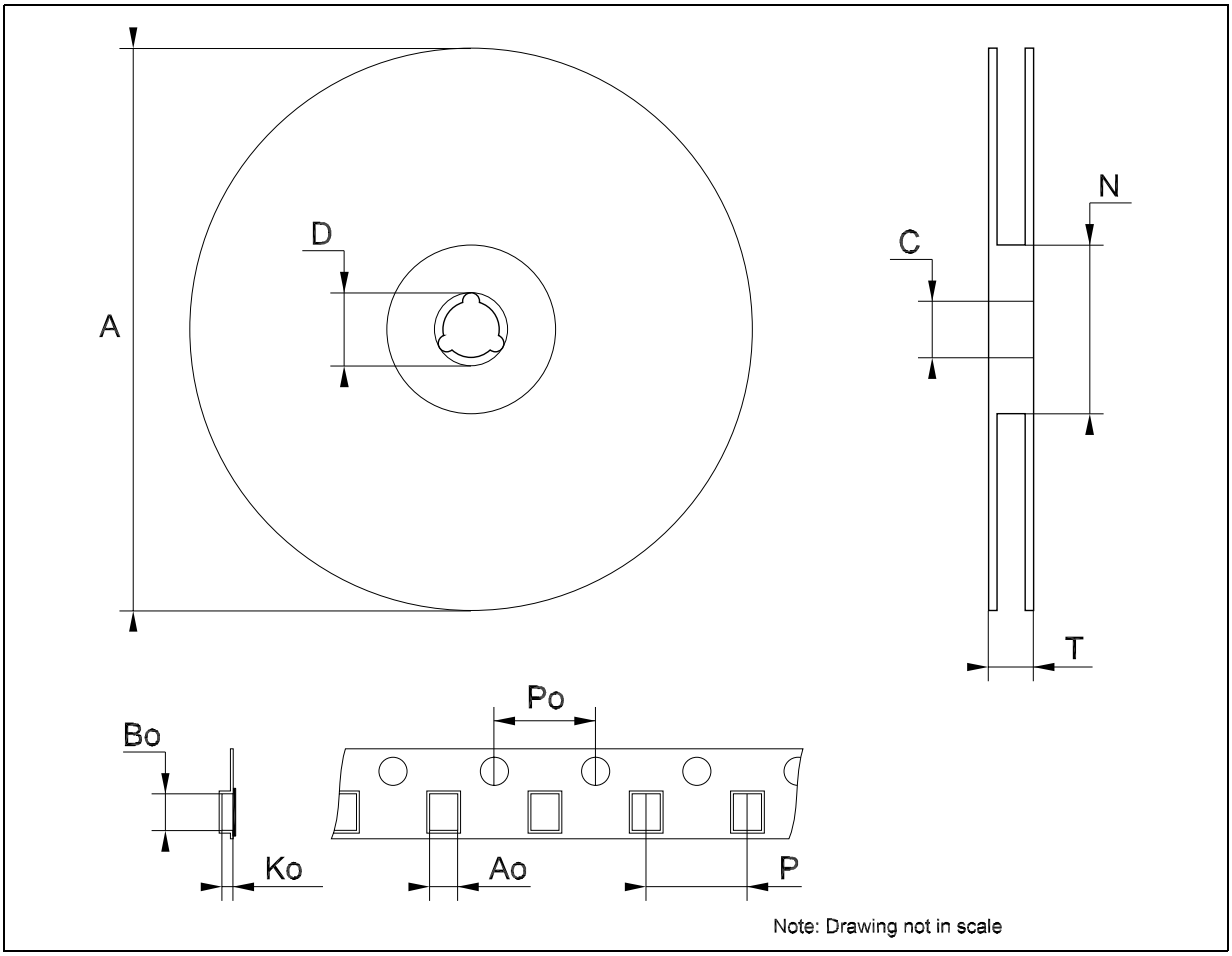
SOT323-5L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.80		1.10	31.5		43.3
A1	0.00		0.10	0.0		3.9
A2	0.80		1.00	31.5		39.4
b	0.15		0.30	5.9		11.8
C	0.10		0.18	3.9		7.1
D	1.80		2.20	70.9		86.6
E	1.80		2.40	70.9		94.5
E1	1.15		1.35	45.3		53.1
e		0 .65			25.6	
e1		1.3			51.2	
L	0.10		0.30	3.9		11.8



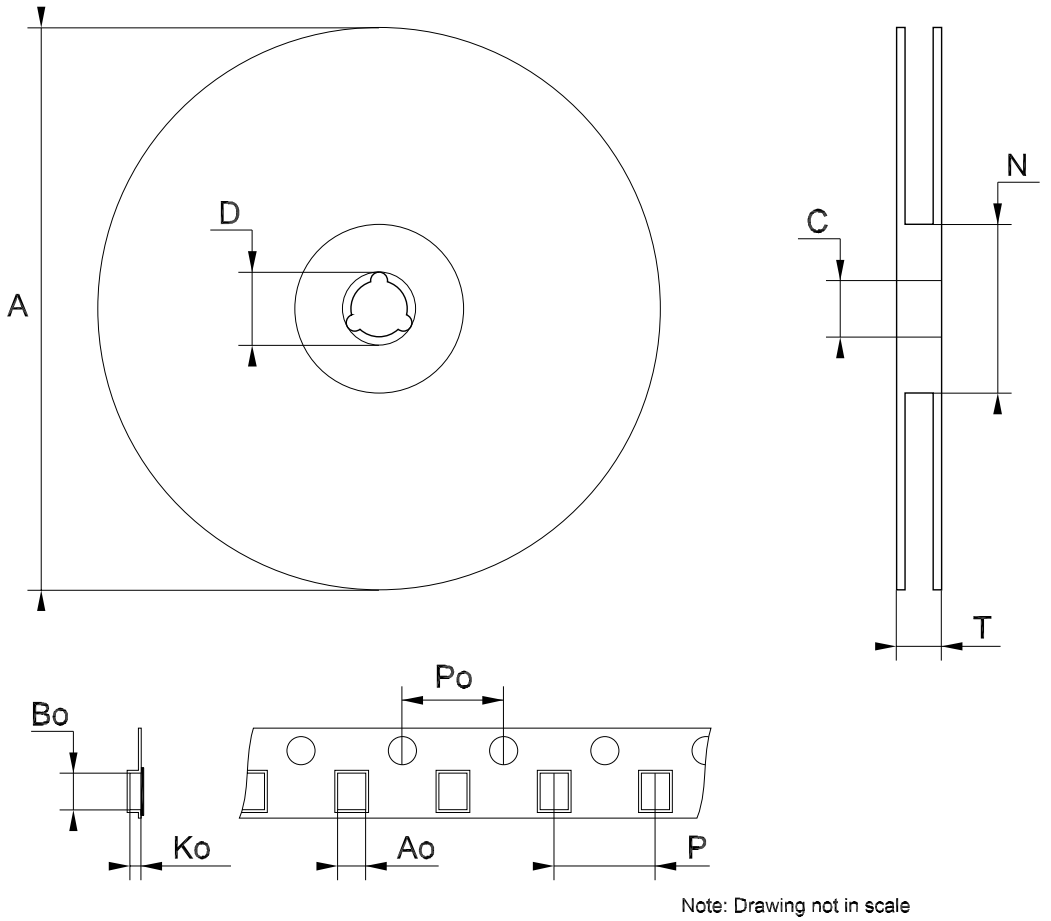
Tape & Reel SOT23-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	3.13	3.23	3.33	0.123	0.127	0.131
Bo	3.07	3.17	3.27	0.120	0.124	0.128
Ko	1.27	1.37	1.47	0.050	0.054	0.0.58
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	3.9	4.0	4.1	0.153	0.157	0.161



Tape & Reel SOT323-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	175	180	185	6.889	7.086	7.283
C	12.8	13	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	59.5	60	60.5		2.362	
T			14.4			0.567
Ao		2.25			0.088	
Bo		2.7			0.106	
Ko		1.2			0.047	
Po	3.9	4	4.1	0.153	0.157	0.161
P	3.8	4	4.2	0.149	0.157	0.165



Note: Drawing not in scale