

NL17SV04XV5T2

MAXIMUM RATINGS

Symbol	Rating	Value	Unit
V _{CC}	DC Supply Voltage	−0.5 to + 4.6	V
V _I	DC Input Voltage	−0.5 to + 4.6	V
V _O	DC Output Voltage	−0.5 to V _{CC} +0.5	V
I _{IK}	DC Input Diode Current V _I < GND	±50	mA
I _{OK}	DC Output Diode Current V _O = GND V _O = V _{CC}	−50 +50	mA
I _O	DC Output Sink Current	±50	mA
I _{CC}	DC Supply Current per Supply Pin	±50	mA
I _{GND}	DC Ground Current per Ground Pin	±50	mA
T _{STG}	Storage Temperature Range	− 65 to +150	°C
T _L	Lead Temperature, 1.0 mm from Case for 10 seconds	260	°C
T _J	Junction Temperature Under Bias	+150	°C
θ _{JA}	Thermal Resistance (Note 1)	250	°C/W
P _D	Power Dissipation in Still Air at 85°C	250	mW
MSL	Moisture Sensitivity	Level 1	
F _R	Flammability Rating Oxygen index: 28 to 34	UL 94 V−0 @ 0125 in	
V _{ESD}	ESD Withstand Voltage Human Body Model (Note 2) Machine Model (Note 3)	4000 150	V

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Measured with minimum pad spacing on an FR4 board, using 10 mm-by-1 inch, 2 ounce copper trace no air flow.
2. Tested to EIA/JESD22-A114-A.
3. Tested to EIA/JESD22-A115-A.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V _{CC}	Positive DC Supply Voltage	0.9	3.6	V
V _{IN}	Digital Input Voltage	0	3.6	V
V _{out}	Output Voltage	0	V _{CC}	V
I _{OH} /I _{OL}	Output Current V _{CC} = 3.0 V to 3.6 V V _{CC} = 2.3 V to 2.7 V V _{CC} = 1.65 V to 1.95 V V _{CC} = 1.4 V to 1.6 V V _{CC} = 1.1 V to 1.3 V V _{CC} = 0.9 V		±24 ±18 ±6 ±4 ±2 ±0.1	mA
t _A	Operating Temperature Range. All Package Types	−40	+85	°C
t _r , t _f	Input Rise or Fall Time V _{CC} = 3.3V ± 0.3 V	0	10	nS/V

DEVICE JUNCTION TEMPERATURE VERSUS TIME TO 0.1% BOND FAILURES

Junction Temperature °C	Time, Hours	Time, Years
80	1,032,200	117.8
90	419,300	47.9
100	178,700	20.4
110	79,600	9.4
120	37,000	4.2
130	17,800	2.0
140	8,900	1.0

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DC CHARACTERISTICS– Digital Section (Voltages Referenced to GND)

Symbol	Parameter	Condition	V _{CC}	T _A = 25°C		T _A = –40 to 85°C		Unit
				Min	Max	Min	Max	
V _{IH}	High Level Input Voltage		0.90 1.10 ≤ V _{CC} ≤ 1.30 1.40 ≤ V _{CC} ≤ 1.60 1.65 ≤ V _{CC} ≤ 1.95 2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60	0.65 x V _{CC} 0.65 x V _{CC} 0.65 x V _{CC} 0.65 x V _{CC} 1.6 2.0		0.65 x V _{CC} 0.65 x V _{CC} 0.65 x V _{CC} 0.65 x V _{CC} 1.6 2.0		V
V _{IL}	Low Level Input Voltage		0.90 1.10 ≤ V _{CC} ≤ 1.30 1.40 ≤ V _{CC} ≤ 1.60 1.65 ≤ V _{CC} ≤ 1.95 2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60		0.35 x V _{CC} 0.35 x V _{CC} 0.35 x V _{CC} 0.35 x V _{CC} 0.7 0.8		0.35 x V _{CC} 0.35 x V _{CC} 0.35 x V _{CC} 0.35 x V _{CC} 0.7 0.8	V
V _{OH}	High Level Output Voltage	I _{OH} = –100 μA	0.90 1.10 ≤ V _{CC} ≤ 1.30 1.40 ≤ V _{CC} ≤ 1.60 1.65 ≤ V _{CC} ≤ 1.95 2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60	V _{CC} – 0.1 V _{CC} – 0.1 V _{CC} – 0.2 V _{CC} – 0.2 V _{CC} – 0.2 V _{CC} – 0.2		V _{CC} – 0.1 V _{CC} – 0.1 V _{CC} – 0.2 V _{CC} – 0.2 V _{CC} – 0.2 V _{CC} – 0.2		V
		I _{OH} = –2.0 mA	1.10 ≤ V _{CC} ≤ 1.30	0.75 x V _{CC}		0.75 x V _{CC}		
		I _{OH} = –4.0 mA	1.40 ≤ V _{CC} ≤ 1.60	0.75 x V _{CC}		0.75 x V _{CC}		
		I _{OH} = –6.0 mA	1.65 ≤ V _{CC} ≤ 1.95 2.30 ≤ V _{CC} ≤ 2.70	1.25 2.0		1.25 2.0		
		I _{OH} = –12 mA	2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60	1.8 2.2		1.8 2.2		
		I _{OH} = –18 mA	2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60	1.7 2.4		1.7 2.4		
		I _{OH} = –24 mA	2.70 ≤ V _{CC} ≤ 3.60	2.2		2.2		
V _{OL}	Low Level Output Voltage	I _{OL} = 100 μA	0.90 1.10 ≤ V _{CC} ≤ 1.30 1.40 ≤ V _{CC} ≤ 1.60 1.65 ≤ V _{CC} ≤ 1.95 2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60		0.1 0.1 0.2 0.2 0.2 0.2		0.1 0.1 0.2 0.2 0.2 0.2	V
		I _{OL} = 2.0 mA	1.10 ≤ V _{CC} ≤ 1.30		0.25 x V _{CC}		0.25 x V _{CC}	
		I _{OL} = 4.0 mA	1.40 ≤ V _{CC} ≤ 1.60		0.25 x V _{CC}		0.25 x V _{CC}	
		I _{OL} = 6.0 mA	1.65 ≤ V _{CC} ≤ 1.95		0.3		0.3	
		I _{OL} = 12 mA	2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60		0.4 0.4		0.4 0.4	
		I _{OL} = 18 mA	2.30 ≤ V _{CC} ≤ 2.70 2.70 ≤ V _{CC} ≤ 3.60		0.6 0.4		0.6 0.4	
		I _{OL} = 24 mA	2.70 ≤ V _{CC} ≤ 3.60		0.55		0.55	
I _{IN}	Input Leakage Current	0 = V _I = 3.6 V	0.90 to 3.60		±0.1		±0.9	μA
I _{OFF}	Power Off Leakage Current		0		1		5	μA
I _{CC}	Quiescent Supply Current	V _I = V _{CC} or GND	0.90 to 3.60		0.9		5	μA

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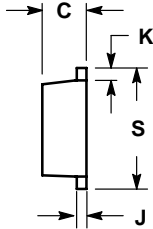
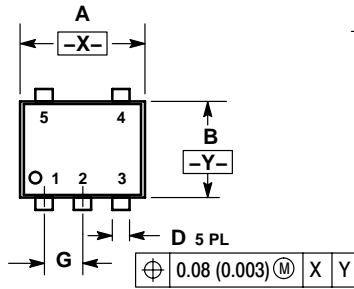
AC CHARACTERISTICS (Input $t_r = t_f = 3.0$ nS)

Symbol	Parameter	-40°C		25°C			85°C		Unit
		Condition	V_{CC}	Min	Typ	Max	Min	Max	
T_{PHL} , T_{PLH}	Propagation Delay	$C_L = 15$ pF, $R_L = 1.0$ M Ω	0.90		12				nS
		$C_L = 15$ pF, $R_L = 2.0$ k Ω	$1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.60$	2.0 1.0	6.0 3.2	9.0 5.1	1.0 1.0	13.9 6.0	nS
		$C_L = 30$ pF, $R_L = 500$ k Ω	$1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $2.70 \leq V_{CC} \leq 3.60$	1.0 0.8 0.7	2.0 1.2 1.0	4.2 2.7 2.3	1.0 0.7 0.6	5.2 3.4 2.8	nS
C_{IN}	Input Capacitance		0		2.0				pF
C_{OUT}	Output Capacitance		0		4.5				pF
C_{PD}	Power Dissipation Capacitance	$V_I = 0$ V or V_{CC} $F = 10$ MHz	0.90 to 3.60		20				pF

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PACKAGE DIMENSIONS

SOT-553
5-LEAD PACKAGE
CASE 463B-01
ISSUE A

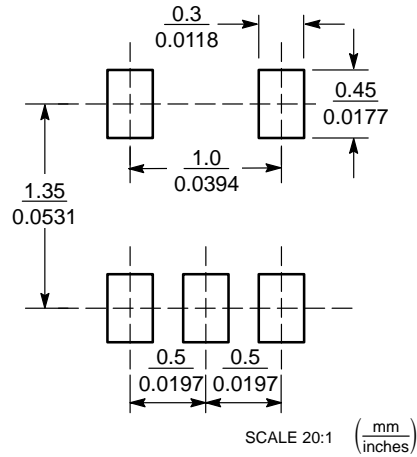


NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	1.10	1.30	0.043	0.051
C	0.50	0.60	0.020	0.024
D	0.17	0.27	0.007	0.011
G	0.50 BSC		0.020 BSC	
J	0.08	0.18	0.003	0.007
K	0.10	0.30	0.004	0.012
S	1.50	1.70	0.059	0.067

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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