74LVC1G3157

2-channel analog multiplexer/demultiplexer

Rev. 01 — 7 February 2005 Product data sheet

1. General description

The 74LVC1G3157 is a high-performance, low-power, low-voltage, Si-gate CMOS device that provides superior performance to most advanced CMOS compatible TTL families.

The 74LVC1G3157 provides one analog multiplexer/demultiplexer with one digital select input (S), two independent inputs/outputs (B1 and B2) and a common input/output (A).

2. Features

- Wide supply voltage range from 1.65 V to 5.5 V
- Very low ON-resistance:
  - 7.5 Ω (typical) at V_{CC} = 2.7 V
  - 6.5 Ω (typical) at V_{CC} = 3.3 V
  - 6 Ω (typical) at V_{CC} = 5 V
- Break-before-make switching
- High noise immunity
- ESD protection:
  - HBM EIA/JESD22-A114-B exceeds 2000 V
  - MM EIA/JESD22-A115-A exceeds 200 V
- CMOS low-power consumption
- Latch-up performance meets requirements of JESD 78 Class I
- Direct interface with TTL levels
- Control input accepts voltages up to 5 V
- Multiple package options
- Specified from –40 °C to +85 °C and from –40 °C to +125 °C

3. Quick reference data

Table 1: Quick reference data

GND = 0 V; $t_r = t_f \leq 2.5$ ns; minimum and maximum values at T_{amb} = –40 °C to +85 °C; typical values at T_{amb} = 25 °C.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_{PZH}, t_{PZL}	turn-on time S to Bn	C_L = 50 pF; R_L = 500 Ω				
		V_{CC} = 3.3 V	0.5	4.0	5.5	ns
		V_{CC} = 5.0 V	0.5	3.0	4.0	ns
t_{PHZ}, t_{PLZ}	turn-off time S to Bn	C_L = 50 pF; R_L = 500 Ω				
		V_{CC} = 3.3 V	0.5	3.6	4.5	ns
		V_{CC} = 5.0 V	0.8	2.9	3.5	ns

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Table 1: Quick reference data *...continued*

GND = 0 V; $t_r = t_f \leq 2.5$ ns; minimum and maximum values at $T_{amb} = -40\,°C$ to $+85\,°C$; typical values at $T_{amb} = 25\,°C$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
C_I	select input capacitance		-	2.5	-	pF
C_S	switch capacitance	OFF-state	-	6.0	-	pF
		ON-state	-	18	-	pF

4. Ordering information

Table 2: Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
74LVC1G3157GW	–40 °C to +125 °C	SC-88	plastic surface mounted package; 6 leads	SOT363
74LVC1G3157GV	–40 °C to +125 °C	SC-74	plastic surface mounted package; 6 leads	SOT457
74LVC1G3157GM	–40 °C to +125 °C	XSON6	plastic extremely thin small outline package; no leads; 6 terminals; body 1 × 1.45 × 0.5 mm	SOT886

5. Marking

Table 3: Marking

Type number	Marking code
74LVC1G3157GW	YJ
74LVC1G3157GV	YJ
74LVC1G3157GM	YJ

6. Functional diagram

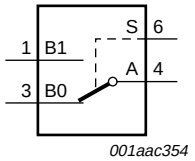


Fig 1. Logic symbol

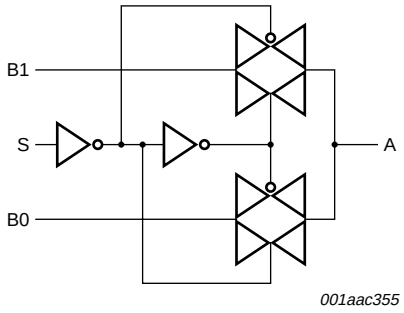


Fig 2. Logic diagram

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7. Pinning information

7.1 Pinning

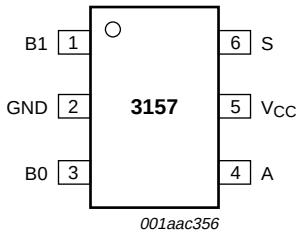


Fig 3. Pin configuration SC-88 and SC-74

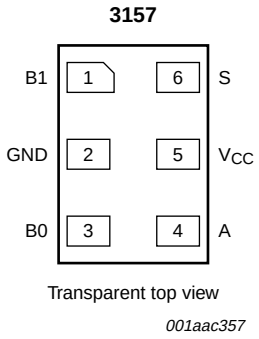


Fig 4. Pin configuration XSON6

7.2 Pin description

Table 4: Pin description

Symbol	Pin	Description
B1	1	independent B1 input or output
GND	2	ground (0 V)
B0	3	independent B0 input or output
A	4	common A output or input
V_{CC}	5	supply voltage
S	6	select input

8. Functional description

8.1 Function table

Table 5: Function table [1]

Input S	Channel on
L	B0
H	B1

[1] H = HIGH voltage level;
L = LOW voltage level.

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9. Limiting values

Table 6: Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{CC}	supply voltage			–0.5	+6.5	V
V_I	input voltage		[1]	–0.5	+6.5	V
I_{IK}	input diode current	$V_I < –0.5$ V or $V_I > V_{CC} + 0.5$		-	–50	mA
I_{SK}	switch diode current	$V_I < –0.5$ V or $V_I > V_{CC} + 0.5$		-	±50	mA
V_S	switch DC voltage	enable and disable mode		–0.5	$V_{CC} + 0.5$	V
I_S	switch source or sink current	$V_S > –0.5$ V or $V_S < V_{CC} + 0.5$		-	±50	mA
I_{CC}, I_{GND}	V_{CC} or GND current			-	±100	mA
T_{stg}	storage temperature			–65	+150	°C
P_{tot}	total power dissipation	T_{amb} = –40 °C to +125 °C		-	300	mW

[1] The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

10. Recommended operating conditions

Table 7: Recommended operating conditions

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CC}	supply voltage			1.65	-	5.5	V
V_I	input voltage			0	-	5.5	V
V_S	switch DC voltage	enable and disable mode	[1]	0	-	V_{CC}	V
T_{amb}	ambient temperature			–40	-	+125	°C
t_r, t_f	input rise and fall times	V_{CC} = 1.65 V to 2.7 V	[2]	0	-	20	ns/V
		V_{CC} = 2.7 V to 5.5 V	[2]	0	-	10	ns/V

[1] To avoid drawing V_{CC} current out of terminal A when switch current flows in terminal Bn, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into terminal A, no V_{CC} current will flow out of terminal Bn. In this case, there is no limit for the voltage drop across the switch.

[2] Applies to control signal levels.

11. Static characteristics

Table 8: Static characteristics

At recommended operating conditions; voltages are referenced to GND (ground 0 V).

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = –40 °C to +85 °C [1]						
V_{IH}	HIGH-level input voltage	V_{CC} = 1.65 V to 1.95 V	$0.65V_{CC}$	-	-	V
		V_{CC} = 2.3 V to 2.7 V	1.7	-	-	V
		V_{CC} = 3 V to 3.6 V	2.0	-	-	V
		V_{CC} = 4.5 V to 5.5 V	$0.7V_{CC}$	-	-	V

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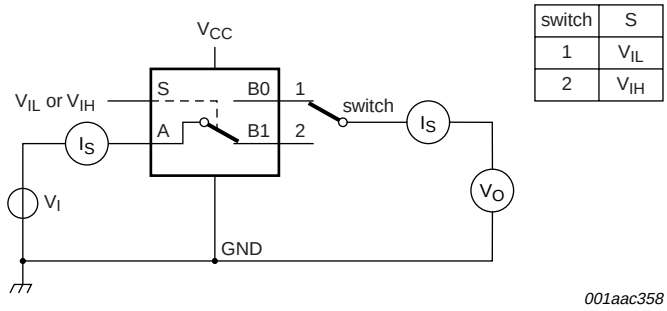
Table 8: Static characteristics *…continued*

At recommended operating conditions; voltages are referenced to GND (ground 0 V).

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{IL}	LOW-level input voltage	V_{CC} = 1.65 V to 1.95 V	-	-	0.35V_{CC}	V
		V_{CC} = 2.3 V to 2.7 V	-	-	0.7	V
		V_{CC} = 3 V to 3.6 V	-	-	0.8	V
		V_{CC} = 4.5 V to 5.5 V	-	-	0.3V_{CC}	V
I_{LI}	input leakage current on pin S	V_I = 5.5 V or GND; V_{CC} = 5.5 V	-	±0.1	±2	µA
$I_{S(OFF)}$	analog switch OFF-state current per channel	V_I = V_{IH} or V_{IL}; $\|V_S\|$ = V_{CC} – GND; V_{CC} = 5.5 V; see Figure 5	-	±0.1	±5	µA
$I_{S(ON)}$	analog switch ON-state current per channel	V_I = V_{IH} or V_{IL}; $\|V_S\|$ = V_{CC} – GND; V_{CC} = 5.5 V; see Figure 6	-	±0.1	±5	µA
I_{CC}	quiescent supply current	V_I = V_{CC} or GND; V_S = GND or V_{CC}; I_O = 0 A; V_{CC} = 5.5 V	-	0.1	10	µA
ΔI_{CC}	additional quiescent supply current pin S	V_I = V_{CC} – 0.6 V; V_S = GND or V_{CC}; I_O = 0 A; V_{CC} = 5.5 V	-	5	500	µA
C_I	input capacitance		-	2.5	-	pF
C_S	switch capacitance	OFF-state	-	6.0	-	pF
		ON-state	-	18	-	pF
T_{amb} = –40 °C to +125 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 1.65 V to 1.95 V	0.65V_{CC}	-	-	V
		V_{CC} = 2.3 V to 2.7 V	1.7	-	-	V
		V_{CC} = 3 V to 3.6 V	2.0	-	-	V
		V_{CC} = 4.5 V to 5.5 V	0.7V_{CC}	-	-	
V_{IL}	LOW-level input voltage	V_{CC} = 1.65 V to 1.95 V	-	-	0.35V_{CC}	V
		V_{CC} = 2.3 V to 2.7 V	-	-	0.7	V
		V_{CC} = 3 V to 3.6 V	-	-	0.8	V
		V_{CC} = 4.5 V to 5.5 V		-	0.3V_{CC}	V
I_{LI}	input leakage current on pin S	V_I = 5.5 V or GND; V_{CC} = 5.5 V	-	-	±10	µA
$I_{S(OFF)}$	analog switch OFF-state current per channel	V_I = V_{IH} or V_{IL}; $\|V_S\|$ = V_{CC} – GND; V_{CC} = 5.5 V; see Figure 5	-	-	±20	µA
$I_{S(ON)}$	analog switch ON-state current per channel	V_I = V_{IH} or V_{IL}; $\|V_S\|$ = V_{CC} – GND; V_{CC} = 5.5 V; see Figure 6	-	-	±20	µA
I_{CC}	quiescent supply current	V_I = V_{CC} or GND; V_S = GND or V_{CC}; I_O = 0 A; V_{CC} = 5.5 V	-	-	40	µA
ΔI_{CC}	additional quiescent supply current pin S	V_I = V_{CC} – 0.6 V; V_S = GND or V_{CC}; I_O = 0 A; V_{CC} = 5.5 V	-	-	5000	µA

[1] Typical values are measured at T_{amb} = 25 °C.

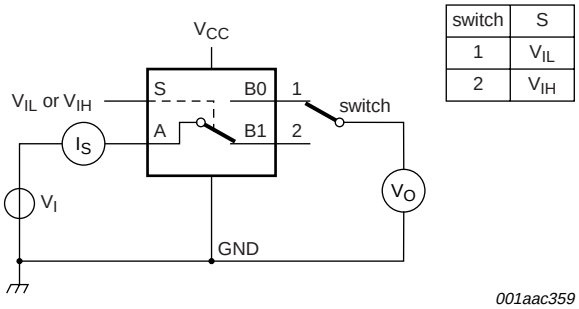
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switch	S
1	V_{IL}
2	V_{IH}

$V_I = V_{CC}$ or GND and V_O = GND or V_{CC}.

Fig 5. Test circuit for measuring switch OFF-state current



switch	S
1	V_{IL}
2	V_{IH}

$V_I = V_{CC}$ or GND and V_O = open circuit.

Fig 6. Test circuit for measuring switch ON-state current

Table 9: Resistance R_{ON}

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); see test circuit Figure 7.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = −40 °C to +85 °C [1]						
$R_{ON(rail)}$	switch ON-state resistance (rail)	V_S = GND; $V_I = V_{IH}$				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	8.7	18	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	7.2	16	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	7.0	14	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	6.5	12	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	5.9	10	Ω
		$V_S = V_{CC}$; $V_I = V_{IH}$				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	12	30	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	8.3	20	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	7.8	18	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	6.7	15	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	5.2	10	Ω

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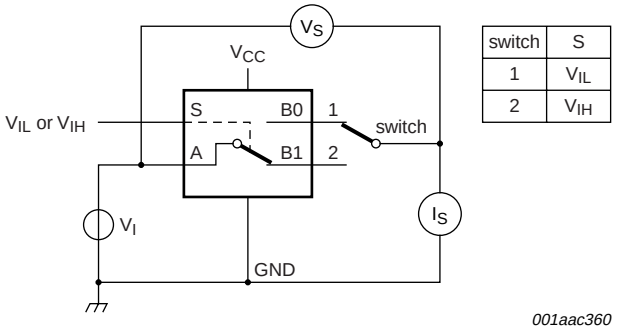
Table 9: Resistance R_{ON} *…continued*

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); see test circuit Figure 7.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{ON(peak)}$	switch ON-state resistance (peak)	V_S = GND to V_{CC}; $V_I = V_{IH}$				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	57	140	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	15	40	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	13	25	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	9.0	20	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	6.0	15	Ω
$R_{ON(flatness)}$	switch ON-resistance (flatness)	V_S = GND to V_{CC}; $V_I = V_{IH}$; see Figure 9				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	100	-	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	17	-	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	10	-	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	5	-	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	3	-	Ω
T_{amb} = −40 °C to +125 °C						
$R_{ON(rail)}$	switch ON-state resistance (rail)	V_S = GND; $V_I = V_{IH}$				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	-	27	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	-	24	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	-	21	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	-	18	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	-	15	Ω
		$V_S = V_{CC}$; $V_I = V_{IH}$				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	-	45	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	-	30	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	-	27	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	-	23	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	-	15	Ω
$R_{ON(peak)}$	switch ON-state resistance (peak)	V_S = GND to V_{CC}; $V_I = V_{IH}$				
		I_S = 4 mA; V_{CC} = 1.65 V to 1.95 V	-	-	140	Ω
		I_S = 8 mA; V_{CC} = 2.3 V to 2.7 V	-	-	60	Ω
		I_S = 12 mA; V_{CC} = 2.7 V	-	-	38	Ω
		I_S = 24 mA; V_{CC} = 3 V to 3.6 V	-	-	30	Ω
		I_S = 32 mA; V_{CC} = 4.5 V to 5.5 V	-	-	23	Ω

[1] Typical values are measured at T_{amb} = 25 °C and nominal V_{CC}.

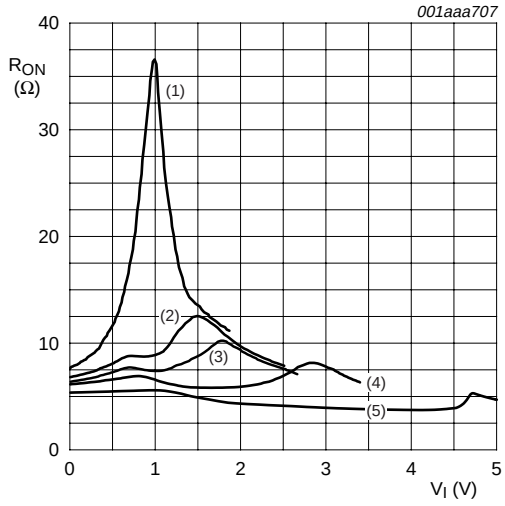
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switch	S
1	V_{IL}
2	V_{IH}

V_I = GND to V_{CC}; $R_{ON} = V_S/I_S$.

Fig 7. Test circuit for measuring switch ON-resistance

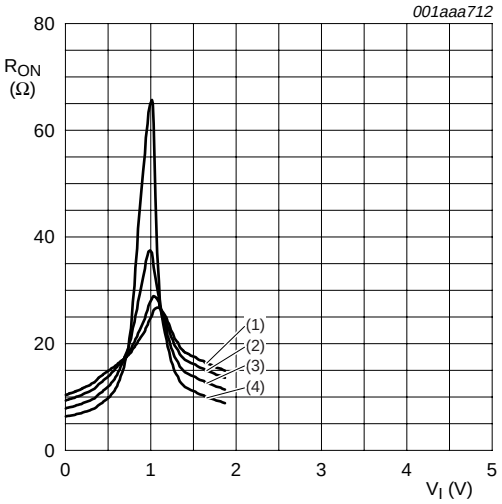


(1) V_{CC} = 1.8 V
(2) V_{CC} = 2.5 V
(3) V_{CC} = 2.7 V
(4) V_{CC} = 3.3 V
(5) V_{CC} = 5.0 V

V_S = GND to V_{CC}; T_{amb} = 25 °C.

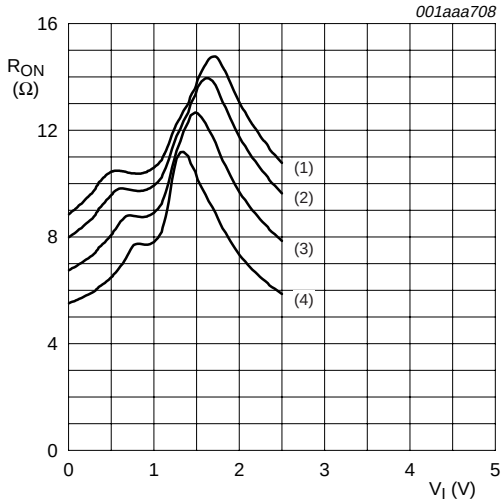
Fig 8. Typical switch ON-resistance as a function of input voltage

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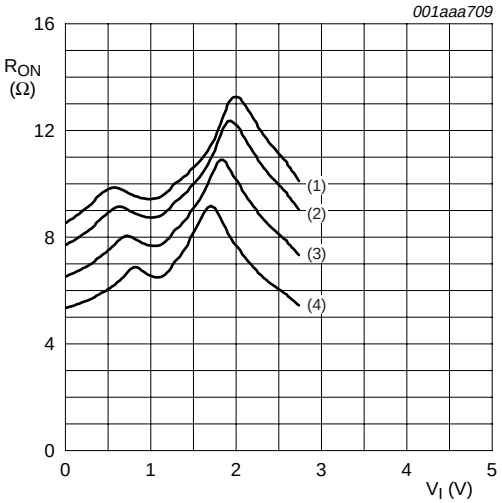
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = –40 °C

a. V_{CC} = 1.8 V



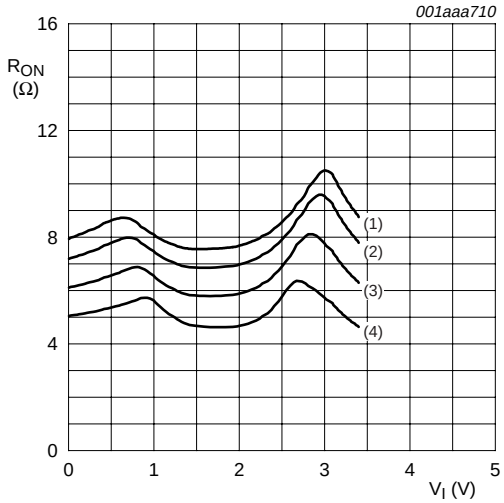
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = –40 °C

b. V_{CC} = 2.5 V



(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = –40 °C

c. V_{CC} = 2.7 V



(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = –40 °C

d. V_{CC} = 3.3 V

Fig 9. Switch ON-resistance as a function of input voltage

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12. Dynamic characteristics

Table 10: Dynamic characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); test circuit Figure 13.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = −40 °C to +85 °C [1]						
t_{PHL}, t_{PLH}	propagation delay A to Bn or Bn to A	see Figure 10				
		V_{CC} = 1.65 V to 1.95 V	-	-	2	ns
		V_{CC} = 2.3 V to 2.7 V	-	-	1.2	ns
		V_{CC} = 2.7 V	-	-	1.0	ns
		V_{CC} = 3 V to 3.6 V	-	-	0.8	ns
		V_{CC} = 4.5 V to 5.5 V	-	-	0.6	ns
t_{PZH}, t_{PZL}	turn-on time S to Bn	see Figure 11				
		V_{CC} = 1.65 V to 1.95 V	1.0	8.7	14	ns
		V_{CC} = 2.3 V to 2.7 V	1.0	5.3	7.5	ns
		V_{CC} = 2.7 V	1.0	4.9	6.0	ns
		V_{CC} = 3 V to 3.6 V	0.5	4.0	5.5	ns
		V_{CC} = 4.5 V to 5.5 V	0.5	3.0	4.0	ns
t_{PHZ}, t_{PLZ}	turn-off time S to Bn	see Figure 11				
		V_{CC} = 1.65 V to 1.95 V	2.5	6.0	8.5	ns
		V_{CC} = 2.3 V to 2.7 V	2.0	4.4	6.0	ns
		V_{CC} = 2.7 V	1.5	4.2	5.0	ns
		V_{CC} = 3 V to 3.6 V	1.5	3.6	4.5	ns
		V_{CC} = 4.5 V to 5.5 V	0.8	2.9	3.5	ns
t_D	break-before-make time	see Figure 12 [2]				
		V_{CC} = 1.65 V to 1.95 V	0.5	-	-	ns
		V_{CC} = 2.3 V to 2.7 V	0.5	-	-	ns
		V_{CC} = 2.7 V	0.5	-	-	ns
		V_{CC} = 3 V to 3.6 V	0.5	-	-	ns
		V_{CC} = 4.5 V to 5.5 V	0.5	-	-	ns
T_{amb} = −40 °C to +125 °C						
t_{PHL}, t_{PLH}	propagation delay A to Bn or Bn to A	see Figure 10				
		V_{CC} = 1.65 V to 1.95 V	-	-	3.0	ns
		V_{CC} = 2.3 V to 2.7 V	-	-	2.0	ns
		V_{CC} = 2.7 V	-	-	1.5	ns
		V_{CC} = 3 V to 3.6 V	-	-	1.5	ns
		V_{CC} = 4.5 V to 5.5 V	-	-	1.0	ns

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Table 10: Dynamic characteristics *...continued*

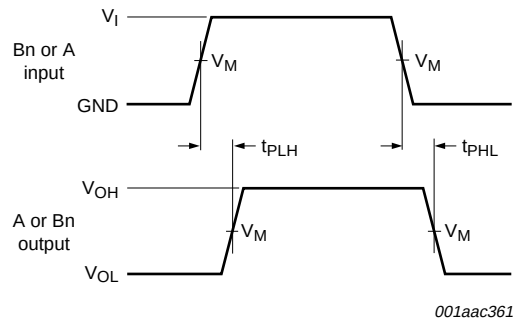
At recommended operating conditions; voltages are referenced to GND (ground = 0 V); test circuit Figure 13.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_{PZH}, t_{PZL}	turn-on time S to Bn	see Figure 11				
		V_{CC} = 1.65 V to 1.95 V	1.0	-	14.0	ns
		V_{CC} = 2.3 V to 2.7 V	1.0	-	7.5	ns
		V_{CC} = 2.7 V	1.0	-	6.0	ns
		V_{CC} = 3 V to 3.6 V	0.5	-	5.5	ns
		V_{CC} = 4.5 V to 5.5 V	0.5		4.0	ns
t_{PHZ}, t_{PLZ}	turn-off time S to Bn	see Figure 11				
		V_{CC} = 1.65 V to 1.95 V	2.5	-	8.5	ns
		V_{CC} = 2.3 V to 2.7 V	2.0	-	6.0	ns
		V_{CC} = 2.7 V	1.5	-	5.0	ns
		V_{CC} = 3 V to 3.6 V	1.5	-	4.5	ns
		V_{CC} = 4.5 V to 5.5 V	0.8	-	3.5	ns
t_D	break-before-make time	see Figure 12 [2]				
		V_{CC} = 1.65 V to 1.95 V	0.5	-	-	ns
		V_{CC} = 2.3 V to 2.7 V	0.5	-	-	ns
		V_{CC} = 2.7 V	0.5	-	-	ns
		V_{CC} = 3 V to 3.6 V	0.5	-	-	ns
		V_{CC} = 4.5 V to 5.5 V	0.5	-	-	ns

[1] Typical values are measured at T_{amb} = 25 °C and nominal V_{CC}.

[2] Break-before-make specified by design.

13. Waveforms



Measurement points are given in Table 11.

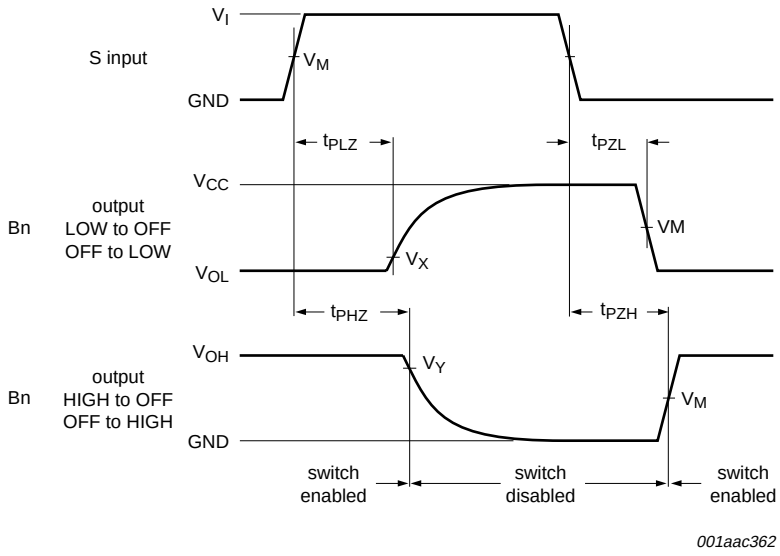
Logic levels: V_{OL} and V_{OH} are typical output voltage drop that occur with the output load.

Fig 10. Input (Bn or A) to output (A or Bn) propagation delays

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Table 11: Measurement points

Supply voltage	Input	Output
V_{CC}	V_M	V_M
1.65 V to 5.5 V	$0.5V_{CC}$	$0.5V_{CC}$



Measurement points are given in Table 12.

Logic levels: V_{OL} and V_{OH} are typical output voltage drop that occur with the output load.

Fig 11. Turn-on and turn-off times

Table 12: Measurement points

Supply voltage	Input	Output		
V_{CC}	V_M	V_M	V_X	V_Y
1.65 V to 5.5 V	$0.5V_{CC}$	$0.5V_{CC}$	V_{OL} + 0.3 V	V_{OH} − 0.3 V

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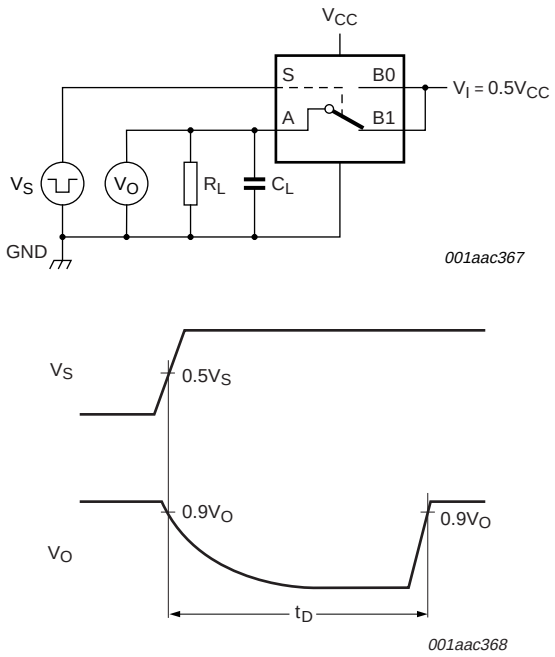
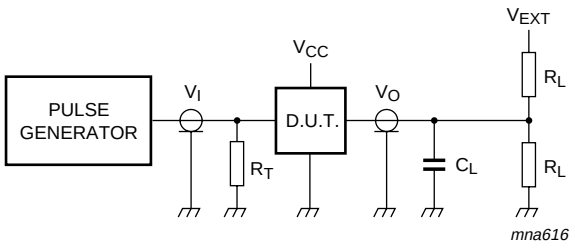


Fig 12. Test circuit for measuring break-before-make timing



Test data is given in Table 13.

Definitions test circuit:

R_T = Termination resistance should be equal to output impedance Z_o of the pulse generator.

C_L = Load capacitance including jig and probe capacitance.

R_L = Load resistance.

V_{EXT} = Test voltage for switching times.

Fig 13. Load circuitry for switching times

Table 13: Test data

Supply voltage	Input		Load		V_{EXT}		
V_{CC}	V_I	t_r, t_f	C_L	R_L	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
1.65 V to 1.95 V	V_{CC}	≤ 2.0 ns	50 pF	500 Ω	open	GND	$2V_{CC}$
2.3 V to 2.7 V	V_{CC}	≤ 2.0 ns	50 pF	500 Ω	open	GND	$2V_{CC}$
2.7 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	$2V_{CC}$
3 V to 3.6 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	$2V_{CC}$
4.5 V to 5.5 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	$2V_{CC}$

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14. Additional dynamic characteristics

Table 14: Additional dynamic characteristics

At recommended operating conditions; typical values measured at T_{amb} = 25 °C.

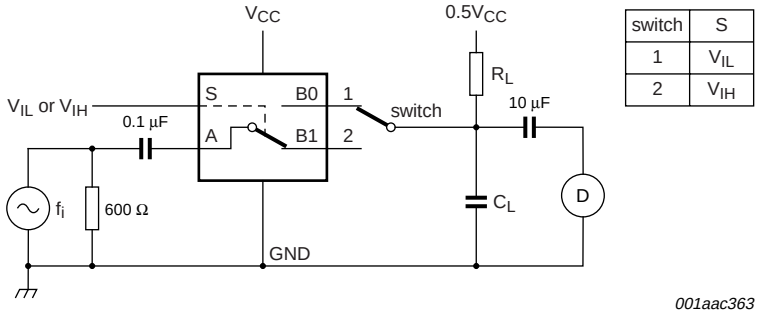
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
d_{sin}	sine-wave distortion	f_i = 600 Hz to 20 kHz; R_L = 600 Ω; C_L = 50 pF; V_I = 0.5 V (p-p); see Figure 14					
		V_{CC} = 1.65 V		-	0.260	-	%
		V_{CC} = 2.3 V		-	0.078	-	%
		V_{CC} = 3.0 V		-	0.078	-	%
		V_{CC} = 4.5 V		-	0.078	-	%
$f_{(-3dB)}$	switch ON-state signal frequency response	R_L = 50 Ω; C_L = 5 pF; see Figure 15	[1]				
		V_{CC} = 1.65 V		-	200	-	MHz
		V_{CC} = 2.3 V		-	300	-	MHz
		V_{CC} = 3.0 V		-	300	-	MHz
		V_{CC} = 4.5 V		-	300	-	MHz
$\alpha_{OFF(ft)}$	switch OFF-state signal feed-through attenuation	R_L = 50 Ω; C_L = 5 pF; f_i = 10 MHz; see Figure 16	[2]				
		V_{CC} = 1.65 V		-	–42	-	dB
		V_{CC} = 2.3 V		-	–42	-	dB
		V_{CC} = 3.0 V		-	–40	-	dB
		V_{CC} = 4.5 V		-	–40	-	dB
$V_{ct(sw-sw)}$	crosstalk between switches	R_L = 50 Ω; C_L = 5 pF; f_i = 10 MHz; see Figure 17					
		V_{CC} = 1.65 V		-	–68	-	dB
		V_{CC} = 2.3 V		-	–70	-	dB
		V_{CC} = 3.0 V		-	–70	-	dB
		V_{CC} = 4.5 V		-	–70	-	dB
Q	charge injection	C_L = 0.1 nF; V_{gen} = 0 V; R_{gen} = 0 Ω; f = 1 MHz; R_L = 1 MΩ; see Figure 18	[3]				
		V_{CC} = 1.8 V		-	< 0.003	-	pC
		V_{CC} = 2.5 V		-	0.004	-	pC
		V_{CC} = 3.3 V		-	0.0045	-	pC
		V_{CC} = 4.5 V		-	0.0045	-	pC
		V_{CC} = 5.5 V		-	0.0045	-	pC

[1] Adjust f_i voltage to obtain 0 dBm level at output. Increase f_i frequency until dB meter reads –3 dB.

[2] Adjust f_i voltage to obtain 0 dBm level at input.

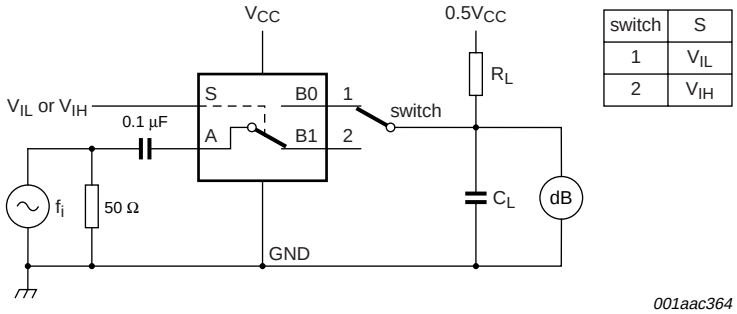
[3] Definition: $Q = \Delta V_O \times C_L$. Guaranteed by design.

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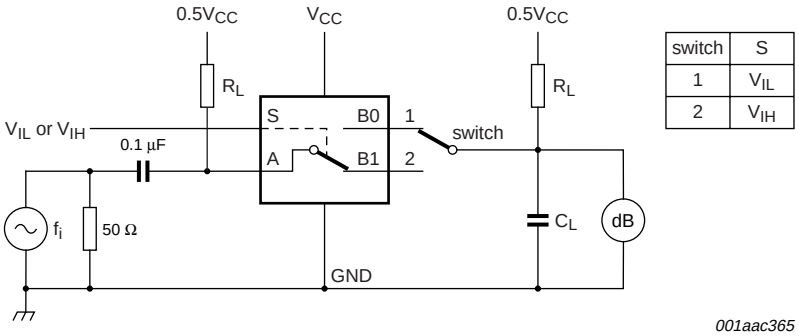
switch	S
1	V_{IL}
2	V_{IH}

Fig 14. Test circuit for measuring sine-wave distortion



switch	S
1	V_{IL}
2	V_{IH}

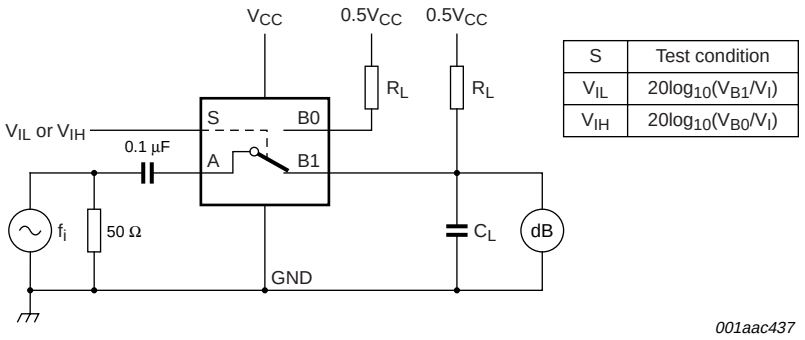
Fig 15. Test circuit for measuring the frequency response when switch is in ON-state



switch	S
1	V_{IL}
2	V_{IH}

Fig 16. Test circuit for measuring feed-through attenuation when switch is in OFF-state

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S	Test condition
V_{IL}	$20\log_{10}(V_{B1}/V_I)$
V_{IH}	$20\log_{10}(V_{B0}/V_I)$

Fig 17. Test circuit for measuring crosstalk between switches

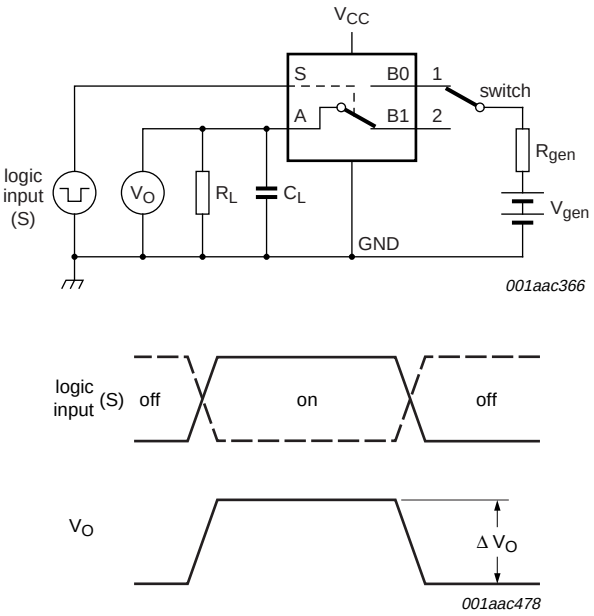
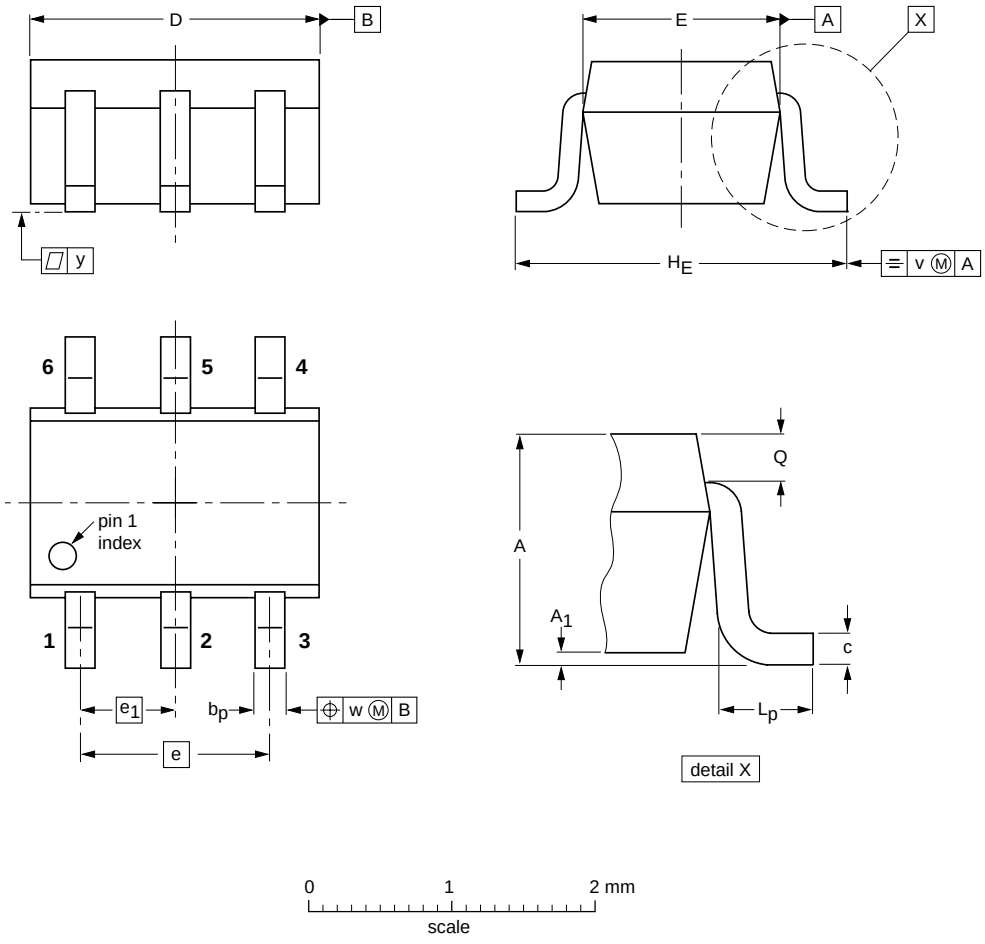


Fig 18. Test circuit for measuring charge injection

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15. Package outline

Plastic surface mounted package; 6 leads **SOT363**



DIMENSIONS (mm are the original dimensions)

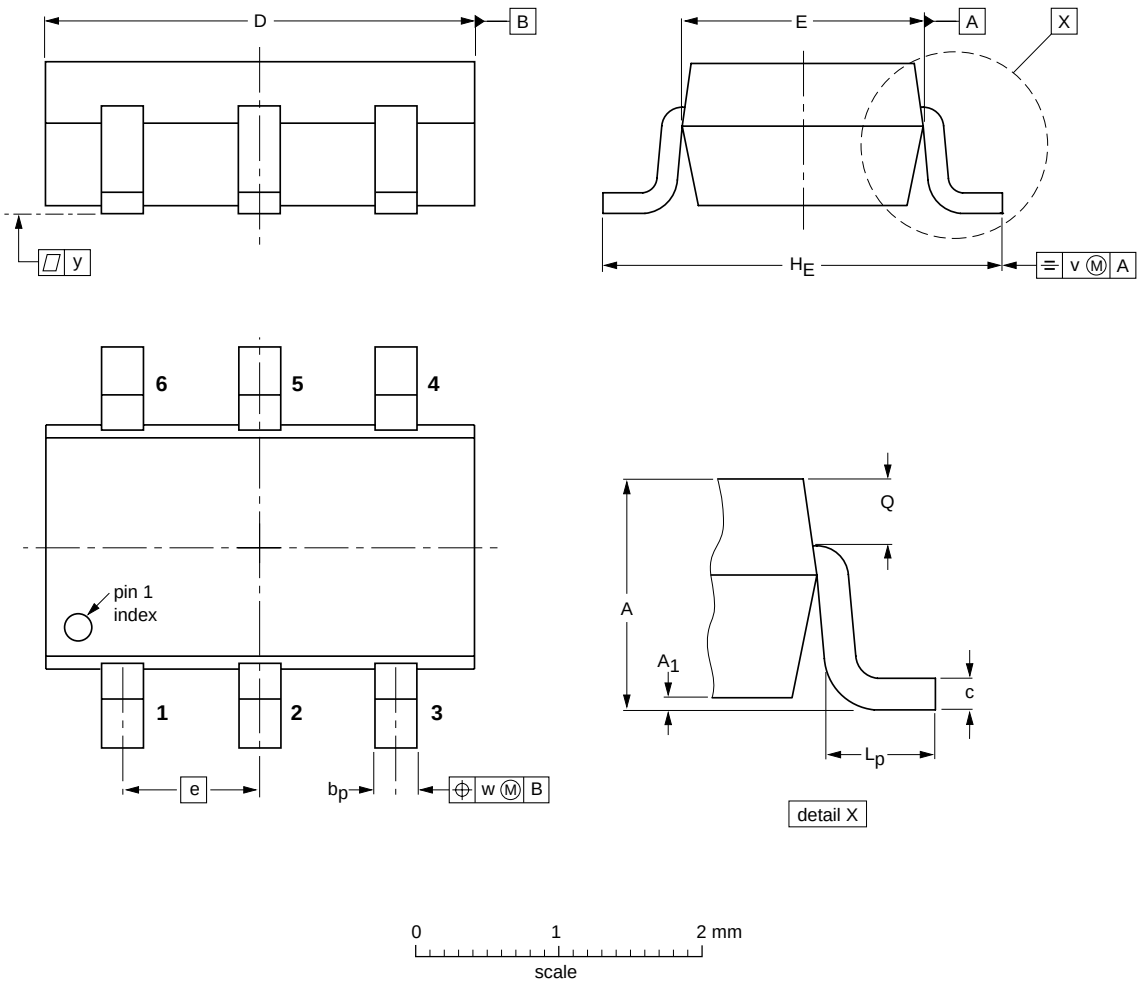
UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT363			SC-88			~~97-02-28~~ 04-11-08

Fig 19. Package outline SOT363 (SC-88)

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Plastic surface mounted package; 6 leads **SOT457**



DIMENSIONS (mm are the original dimensions)

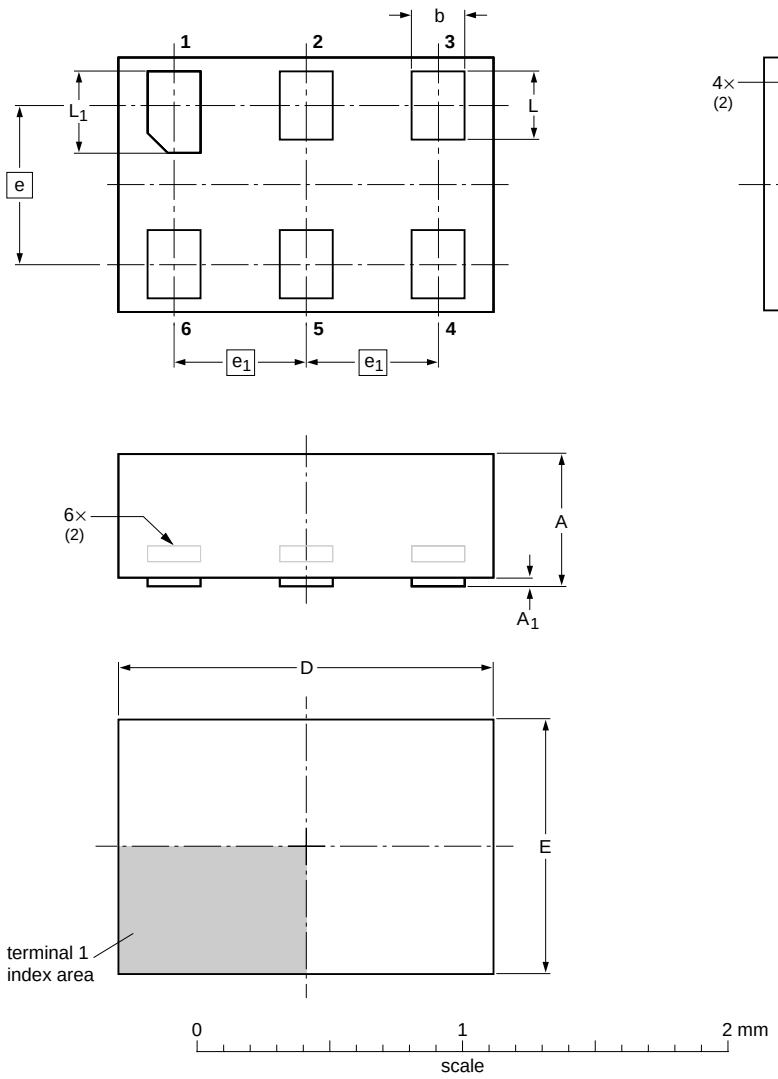
UNIT	A	A_1	b_p	c	D	E	e	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1 0.013	0.40 0.25	0.26 0.10	3.1 2.7	1.7 1.3	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT457			SC-74			~~01-05-04~~ 04-11-08

Fig 20. Package outline SOT457 (SC-74)

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XSON6: plastic extremely thin small outline package; no leads; 6 terminals; body 1 x 1.45 x 0.5 mm **SOT886**



DIMENSIONS (mm are the original dimensions)

UNIT	A(1) max	A1 max	b	D	E	e	e1	L	L1
mm	0.5	0.04	0.25 0.17	1.5 1.4	1.05 0.95	0.6	0.5	0.35 0.27	0.40 0.32

Notes

1. Including plating thickness.
2. Can be visible in some manufacturing processes.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT886		MO-252				~~04-07-15~~ 04-07-22

Fig 21. Package outline SOT886 (XSON6)

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16. Revision history

Table 15: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
74LVC1G3157_1	20050207	Product data sheet	-	9397 750 14524	-

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17. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

[1] Please consult the most recently issued data sheet before initiating or completing a design.

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

18. Definitions

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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