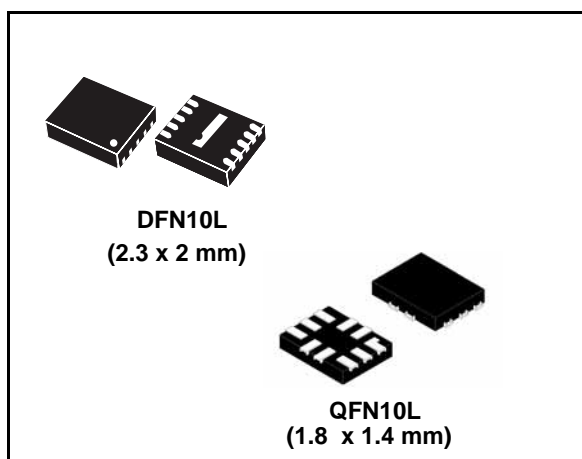


### Features

- Ultra low power dissipation:  
 $I_{CC} = 0.2 \text{ mA}$  (max.) at  $T_A = 85^\circ\text{C}$
- Low ON resistance  $V_{IN} = 0 \text{ V}$ :
  - $R_{ON} = 0.45 \Omega$  (max.  $T_A = 25^\circ\text{C}$ ) at  $V_{CC} = 4.3 \text{ V}$
  - $R_{ON} = 0.50 \Omega$  (max.  $T_A = 25^\circ\text{C}$ ) at  $V_{CC} = 3.6 \text{ V}$
  - $R_{ON} = 0.50 \Omega$  (max.  $T_A = 25^\circ\text{C}$ ) at  $V_{CC} = 3.0 \text{ V}$
- Wide operating voltage range:  
 $V_{CC}$  (OPR) = 1.65 to 4.3 V single supply
- 4.3 V tolerant and 1.8 V compatible threshold on digital control input at  $V_{CC} = 2.3$  to 4.3 V
- Latch-up performance exceeds 300 mA (JESD 17)
- ESD performance:  
 $HMB > 2 \text{ kV}$  (MIL STD 883 method 3015)

### Description

The STG3684A is a high-speed CMOS dual analog SPDT (single-pole dual-throw) switch or dual 2:1 multiplexer/demultiplexer bus switch fabricated using silicon gate C<sup>2</sup>MOS technology. Designed to operate from 1.65 to 4.3 V, this device is ideal for portable applications.



It offers very low ON resistance ( $R_{ON} < 0.5 \Omega$ ) at  $V_{CC} = 3.0 \text{ V}$ . The  $n_{IN}$  inputs are provided to control the independent channel switches  $n_{S1}$  and  $n_{S2}$ . The switches  $n_{S1}$  are ON (connected to common ports  $D_n$ ) when the  $n_{IN}$  input is held high and OFF (state of high impedance exists between the two ports) when  $n_{IN}$  is held low. The switches  $n_{S2}$  are ON (connected to common ports  $D_n$ ) when the  $n_{IN}$  input is held low and OFF (state of high impedance exists between the two ports) when  $n_{IN}$  is held high. Additional key features are fast switching speed, break-before-make delay time and ultra low power consumption. All inputs and outputs are equipped with protection circuits against static discharge, giving them ESD and excess transient voltage immunity.

**Table 1. Device summary**

| Order code  | Package               | Packaging     |
|-------------|-----------------------|---------------|
| STG3684AUTR | QFN10L (1.8 x 1.4 mm) | Tape and reel |
| STG3684ADTR | DFN10L (2.3 x 2 mm)   | Tape and reel |

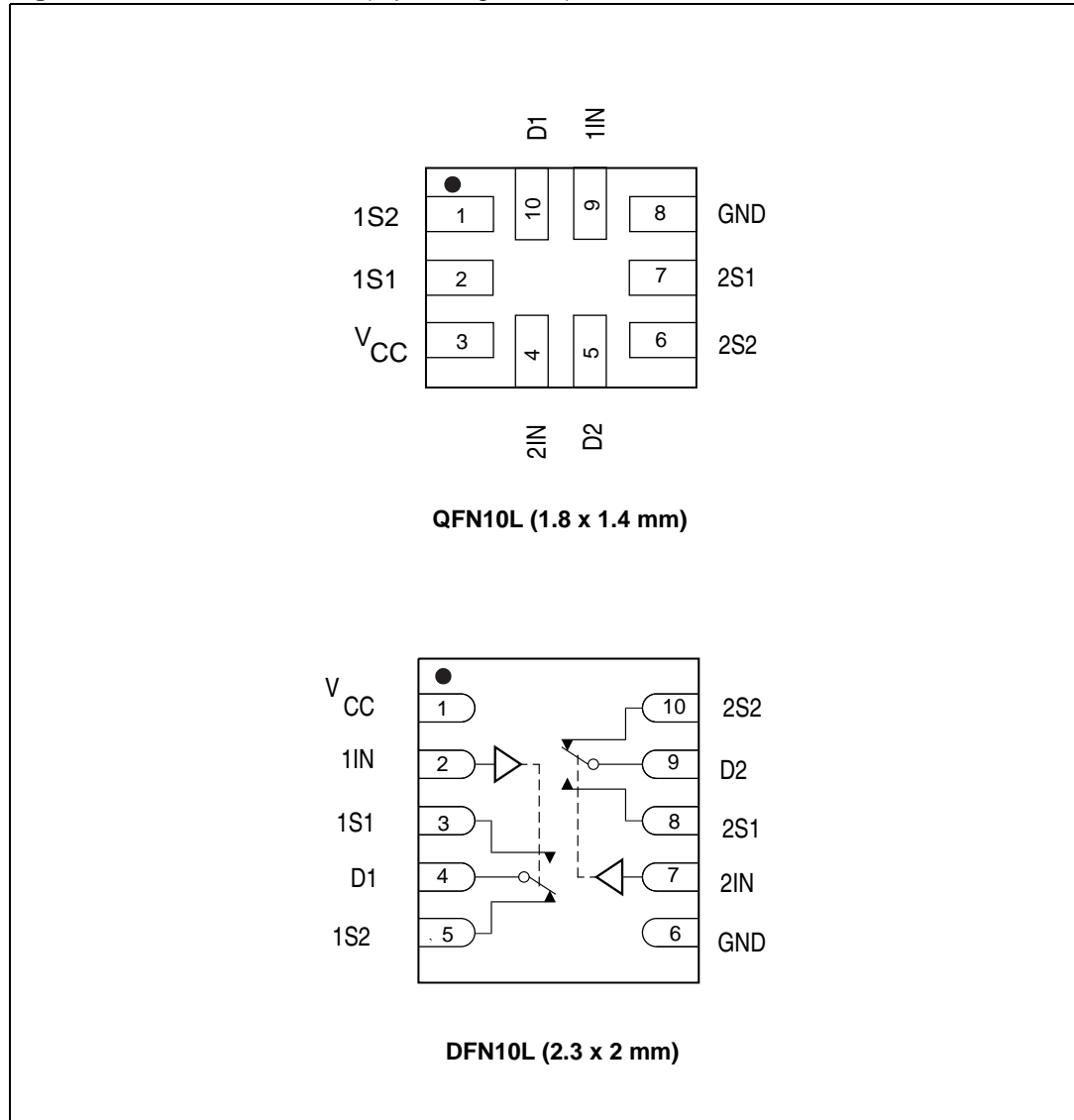
## Contents

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# 1 Pin settings

## 1.1 Pin connection

Figure 1. Pin connection (top through view)



## 1.2 Pin description

Table 2. Pin description

| Pin N.        |            | Symbol                   | Name and function       |
|---------------|------------|--------------------------|-------------------------|
| DFN10L        | QFN10L     |                          |                         |
| 2, 7          | 9, 4       | 1IN, 2IN                 | Controls                |
| 3, 8<br>5, 10 | 2, 1, 7, 6 | 1S1 to 2S1<br>1S2 to 2S2 | Independent channels    |
| 4, 9          | 10, 5      | D1, D2                   | Common channels         |
| -             | -          | NC                       | Not connected           |
| 6             | 8          | GND                      | Ground (0V)             |
| 1             | 3          | V <sub>CC</sub>          | Positive supply voltage |

Note: Exposed pad must be soldered to a floating plane. Do NOT connect to power or ground.

## 2 Input equivalent circuit and truth table

Figure 2. Input equivalent circuit

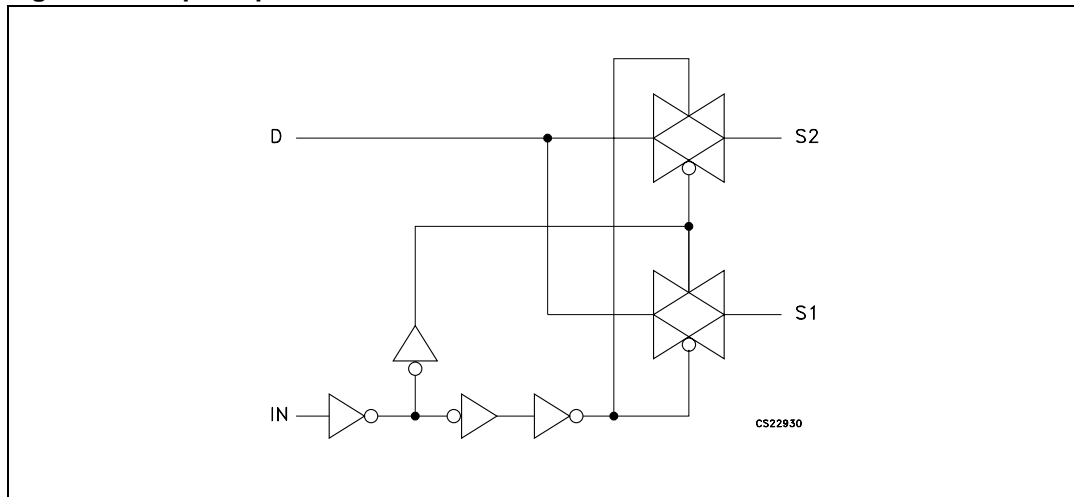


Table 3. Truth table

| IN | Switch S1          | Switch S2          |
|----|--------------------|--------------------|
| H  | ON                 | OFF <sup>(1)</sup> |
| L  | OFF <sup>(1)</sup> | ON                 |

1. High impedance

### 3 Maximum rating

Stressing the device above the rating listed in the “Absolute maximum ratings” table may cause permanent damage to the device. These are stress ratings only and operation of the device at these or any other conditions above those indicated in the Operating sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Refer also to the STMicroelectronics SURE Program and other relevant quality documents.

**Table 4. Absolute maximum ratings**

| Symbol                | Parameter   | Value                  | Unit             |
|-----------------------|---|------------------------|------------------|
| $V_{CC}$              | Supply voltage  | -0.5 to 5.5            | V                |
| $V_I$                 | DC input voltage  | -0.5 to $V_{CC} + 0.5$ | V                |
| $V_{IC}$              | DC control input voltage                                | -0.5 to 5.5            | V                |
| $V_O$                 | DC output voltage                                       | -0.5 to $V_{CC} + 0.5$ | V                |
| $I_{IKC}$             | DC input diode current on control pin ( $V_{IN} < 0$ V) | -50                    | mA               |
| $I_{IK}$              | DC Input diode current ( $V_{IN} < 0$ V)                | $\pm 50$               | mA               |
| $I_{OK}$              | DC Output diode current                                 | $\pm 20$               | mA               |
| $I_O$                 | DC Output current                                       | $\pm 300$              | mA               |
| $I_{OP}$              | DC Output current peak (pulse at 1 ms, 10% duty cycle)  | $\pm 500$              | mA               |
| $I_{CC}$ or $I_{GND}$ | DC $V_{CC}$ or ground current                           | $\pm 100$              | mA               |
| $P_D$                 | Power dissipation at $T_A = 70^\circ\text{C}$           | 1120                   | mW               |
| $T_{STG}$             | Storage temperature                                     | -65 to 150             | $^\circ\text{C}$ |
| $T_L$                 | Lead temperature (10 sec)                               | 300                    | $^\circ\text{C}$ |

#### 3.1 Recommended operating conditions

**Table 5. Recommended operating conditions**

| Symbol   | Parameter                              | Value                      | Unit             |      |
|----------|--|----------------------------|------------------|------|
| $V_{CC}$ | Supply voltage <sup>(1)</sup>          | 1.65 to 4.3                | V                |      |
| $V_I$    | Input voltage                          | 0 to $V_{CC}$              | V                |      |
| $V_{IC}$ | Control input voltage                  | 0 to 4.3                   | V                |      |
| $V_O$    | Output voltage                         | 0 to $V_{CC}$              | V                |      |
| $T_{op}$ | Operating temperature                  | -55 to 125                 | $^\circ\text{C}$ |      |
| dt/dv    | Input rise and fall time control input | $V_{CC} = 1.65$ to $2.7$ V | 0 to 20          | ns/V |
|          |  | $V_{CC} = 3.0$ to $4.3$ V  | 0 to 10          |      |

1. Truth table guaranteed: 1.2 to 4.3 V.

## 4 Electrical characteristics

Table 6. DC Specifications

| Symbol            | Parameter  | V <sub>CC</sub><br>(V) | Test<br>condition   | Value                   |      |       |                         |      |                         | Unit |     |
|-------------------|--|------------------------|---|-------------------------|------|-------|-------------------------|------|-------------------------|------|-----|
|                   |  |                        |   | T <sub>A</sub> = 25°C   |      |       | -40 to 85°C             |      | -55 to 125°C            |      |     |
|                   |  |                        |   | Min                     | Typ  | Max   | Min                     | Max  | Min                     |      | Max |
| V <sub>IH</sub>   | High level input<br>voltage                                  | 1.65 –<br>1.95         |   | 0.65<br>V <sub>CC</sub> |      |       | 0.65<br>V <sub>CC</sub> |      | 0.65<br>V <sub>CC</sub> |      | V   |
|                   |  | 2.3 –2.5               |   | 1.2                     |      |       | 1.2                     |      | 1.2                     |      |     |
|                   |  | 2.7 –3.0               |   | 1.3                     |      |       | 1.3                     |      | 1.3                     |      |     |
|                   |  | 3.0 –3.6               |   | 1.4                     |      |       | 1.4                     |      | 1.4                     |      |     |
|                   |  | 4.3                    |   | 1.5                     |      |       | 1.5                     |      | 1.5                     |      |     |
| V <sub>IL</sub>   | Low level input<br>voltage                                   | 1.65 –<br>1.95         |   |                         |      | 0.25  |                         | 0.25 |                         | 0.25 | V   |
|                   |  | 2.3 –2.5               |   |                         |      | 0.25  |                         | 0.25 |                         | 0.25 |     |
|                   |  | 2.7 –3.0               |   |                         |      | 0.25  |                         | 0.25 |                         | 0.25 |     |
|                   |  | 3.0 –3.6               |   |                         |      | 0.30  |                         | 0.30 |                         | 0.30 |     |
|                   |  | 4.3                    |   |                         |      | 0.40  |                         | 0.40 |                         | 0.40 |     |
| R <sub>ON</sub>   | Switch ON<br>resistance <sup>(1)</sup>                       | 4.3                    | V <sub>S</sub> = 0 V to<br>V <sub>CC</sub><br>I <sub>S</sub> = 100 mA |                         | 0.40 | 0.45  |                         | 0.50 |                         |      | Ω   |
|                   |  | 3.6                    |   |                         | 0.40 | 0.50  |                         | 0.60 |                         |      |     |
|                   |  | 3.0                    |   |                         | 0.40 | 0.50  |                         | 0.60 |                         |      |     |
|                   |  | 2.3                    |   |                         | 0.48 | 0.70  |                         | 0.80 |                         |      |     |
|                   |  | 1.8                    |   |                         | 0.55 | 0.9   |                         | 1.0  |                         |      |     |
| ΔR <sub>ON</sub>  | ON resistance<br>match between<br>channels <sup>(1)(2)</sup> | 2.7                    | V <sub>S</sub> = 1.5 V<br>I <sub>S</sub> = 100 mA                     |                         | 0.1  |       |                         |      |                         | Ω    |     |
| R <sub>FLAT</sub> | ON resistance<br>flatness <sup>(3)</sup>                     | 4.3                    | V <sub>S</sub> = 1.5 V<br>I <sub>S</sub> = 100 mA                     |                         | 0.15 | 0.20  |                         | 0.20 |                         |      | Ω   |
|                   |  | 3.6                    |   |                         | 0.15 | 0.20  |                         | 0.20 |                         |      |     |
|                   |  | 3.0                    |   |                         | 0.15 | 0.20  |                         | 0.20 |                         |      |     |
|                   |  | 2.7                    |   |                         | 0.15 | 0.20  |                         | 0.20 |                         |      |     |
|                   |  | 2.3                    |   |                         | 0.20 | 0.25  |                         | 0.25 |                         |      |     |
|                   |  | 1.65                   |   |                         | 0.35 | 0.45  |                         | 0.45 |                         |      |     |
| I <sub>OFF</sub>  | OFF state<br>leakage current<br>(nSn), (Dn)                  | 4.3                    | V <sub>S</sub> =0.3 or<br>4 V   |                         |      | ±20   |                         | ±100 |                         | nA   |     |
| I <sub>IN</sub>   | Input leakage<br>current                                     | 0 –4.3                 | V <sub>IN</sub> = 0 to<br>4.3 V                                       |                         |      | ±0.05 |                         | ±1   |                         | μA   |     |

**Table 6. DC Specifications (continued)**

| Symbol            | Parameter                                    | V <sub>CC</sub> (V) | Test condition                               | Value                 |     |       |             |      |              | Unit |     |
|-------------------|--|---------------------|--|-----------------------|-----|-------|-------------|------|--------------|------|-----|
|                   |  |                     |  | T <sub>A</sub> = 25°C |     |       | -40 to 85°C |      | -55 to 125°C |      |     |
|                   |  |                     |  | Min                   | Typ | Max   | Min         | Max  | Min          |      | Max |
| I <sub>CC</sub>   | Quiescent supply current (1)                 | 1.65 – 4.3          | V <sub>IN</sub> = V <sub>CC</sub> or GND     |                       |     | ±0.05 |             | ±0.2 |              | ±1   | μA  |
| I <sub>CCLV</sub> | Quiescent supply current low voltage driving | 4.3                 | V <sub>1IN</sub> , V <sub>2IN</sub> = 1.65 V |                       | ±37 | ±50   |             | ±100 |              |      | μA  |
|                   |  |                     | V <sub>1IN</sub> , V <sub>2IN</sub> = 1.80 V |                       | ±33 | ±40   |             | ±50  |              |      |     |
|                   |  |                     | V <sub>1IN</sub> , V <sub>2IN</sub> = 2.60 V |                       | ±12 | ±20   |             | ±30  |              |      |     |

1. Guaranteed by design
2. ΔR<sub>ON</sub> = R<sub>ON(max)</sub> - R<sub>ON(min)</sub>.
3. Flatness is defined as the difference between the maximum and minimum value of on-resistance as measured over the specified analog signal ranges.

**Table 7. AC electrical characteristics (C<sub>L</sub> = 35 pF, R<sub>L</sub> = 50 Ω, t<sub>r</sub> = t<sub>f</sub> ≤ 6 ns)**

| Symbol                              | Parameter                    | V <sub>CC</sub> (V) | Test condition  | Value                 |      |     |             |     |              | Unit |     |
|-------------------------------------|------------------------------|---------------------|---|-----------------------|------|-----|-------------|-----|--------------|------|-----|
|                                     |                              |                     |   | T <sub>A</sub> = 25°C |      |     | -40 to 85°C |     | -55 to 125°C |      |     |
|                                     |                              |                     |   | Min                   | Typ  | Max | Min         | Max | Min          |      | Max |
| t <sub>PLH</sub> , t <sub>PHL</sub> | Propagation delay            | 1.65 – 1.95         |   |                       | 0.45 |     |             |     |              |      | ns  |
|                                     |                              | 2.3 – 2.7           |   |                       | 0.40 |     |             |     |              |      |     |
|                                     |                              | 3.0 – 3.3           |   |                       | 0.30 |     |             |     |              |      |     |
|                                     |                              | 3.6 – 4.3           |   |                       | 0.30 |     |             |     |              |      |     |
| t <sub>ON</sub>                     | Turn-ON time                 | 1.65 – 1.95         | V <sub>S</sub> = 0.8 V  |                       | 120  |     |             |     |              |      | ns  |
|                                     |                              | 2.3 – 2.7           | V <sub>S</sub> = 1.5 V  |                       | 65   | 85  |             | 90  |              |      |     |
|                                     |                              | 3.0 – 3.3           |   |                       | 42   | 55  |             | 65  |              |      |     |
|                                     |                              | 3.6 – 4.3           |   |                       | 40   | 55  |             | 65  |              |      |     |
| t <sub>OFF</sub>                    | Turn-OFF time                | 1.65 – 1.95         | V <sub>S</sub> = 0.8 V  |                       | 45   |     |             |     |              |      | ns  |
|                                     |                              | 2.3 – 2.7           | V <sub>S</sub> = 1.5 V  |                       | 18   | 30  |             | 40  |              |      |     |
|                                     |                              | 3.0 – 3.3           |   |                       | 16   | 30  |             | 40  |              |      |     |
|                                     |                              | 3.6 – 4.3           |   |                       | 15   | 30  |             | 40  |              |      |     |
| t <sub>D</sub>                      | Break-before make time delay | 1.65 – 1.95         | C <sub>L</sub> = 35 pF<br>R <sub>L</sub> = 50 Ω<br>V <sub>S</sub> = 1.5 V | 2                     | 80   |     |             |     |              |      | ns  |
|                                     |                              | 2.3 – 2.7           |   | 2                     | 60   |     |             |     |              |      |     |
|                                     |                              | 3.0 – 3.3           |   | 2                     | 55   |     |             |     |              |      |     |
|                                     |                              | 3.6 – 4.3           |   | 2                     | 50   |     |             |     |              |      |     |



**Table 7. AC electrical characteristics** ( $C_L = 35 \text{ pF}$ ,  $R_L = 50 \text{ } \Omega$ ,  $t_r = t_f \leq 6 \text{ ns}$ ) (continued)

| Symbol | Parameter        | $V_{CC}$<br>(V) | Test<br>condition   | Value                    |     |     |                                    |     |                                     | Unit |     |
|--------|------------------|-----------------|---|--------------------------|-----|-----|------------------------------------|-----|-------------------------------------|------|-----|
|        |                  |                 |   | $T_A = 25^\circ\text{C}$ |     |     | $-40 \text{ to } 85^\circ\text{C}$ |     | $-55 \text{ to } 125^\circ\text{C}$ |      |     |
|        |                  |                 |   | Min                      | Typ | Max | Min                                | Max | Min                                 |      | Max |
| Q      | Charge injection | 1.65 –1.95      | $C_L = 100\text{pF}$<br>$R_L = 1 \text{ M}\Omega$<br>$V_{GEN} = 0 \text{ V}$<br>$R_{GEN} = 0 \text{ } \Omega$ |                          | 43  |     |                                    |     |                                     | pC   |     |
|        |                  | 2.3 –2.7        |   |                          | 51  |     |                                    |     |                                     |      |     |
|        |                  | 3.0 –3.3        |   |                          | 51  |     |                                    |     |                                     |      |     |
|        |                  | 3.6 –4.3        |   |                          | 49  |     |                                    |     |                                     |      |     |

**Table 8. Analog switch characteristics** ( $C_L = 5 \text{ pF}$ ,  $R_L = 50 \text{ } \Omega$ ,  $T_A = 25^\circ\text{C}$ )

| Symbol   | Parameter                                 | $V_{CC}$<br>(V) | Test condition  | Value                    |      |     |                                    |     |                                     | Unit |     |
|----------|---|-----------------|---|--------------------------|------|-----|------------------------------------|-----|-------------------------------------|------|-----|
|          |   |                 |   | $T_A = 25^\circ\text{C}$ |      |     | $-40 \text{ to } 85^\circ\text{C}$ |     | $-55 \text{ to } 125^\circ\text{C}$ |      |     |
|          |   |                 |   | Min                      | Typ  | Max | Min                                | Max | Min                                 |      | Max |
| OIRR     | Off isolation <sup>(1)</sup>              | 1.65 –4.3       | $V_S = 1 \text{ V}_{RMS}$<br>$f = 100 \text{ kHz}$  |                          | -66  |     |                                    |     |                                     |      | dB  |
| Xtalk    | Crosstalk                                 | 1.65 –4.3       | $V_S = 1 \text{ V}_{RMS}$<br>$f = 100 \text{ kHz}$  |                          | -72  |     |                                    |     |                                     |      | dB  |
| THD      | Total harmonic distortion                 | 2.3 –4.3        | $R_L = 600 \text{ } \Omega$<br>$V_{IN} = 2V_{PP}$<br>$f = 20 \text{ Hz to } 20 \text{ kHz}$ |                          | 0.02 |     |                                    |     |                                     |      | %   |
| BW       | -3dB bandwidth                            | 1.65 –4.3       | $R_L = 50 \text{ } \Omega$  |                          | 55   |     |                                    |     |                                     |      | MHz |
| $C_{IN}$ | Control pin input capacitance             |                 |   |                          | 5    |     |                                    |     |                                     |      | pF  |
| $C_{Sn}$ | Sn port capacitance                       | 3.3             | $f = 1 \text{ MHz}$   |                          | 40   |     |                                    |     |                                     |      |     |
| $C_D$    | D port capacitance when switch is enabled | 3.3             | $f = 1 \text{ MHz}$   |                          | 114  |     |                                    |     |                                     |      |     |

1. Off Isolation =  $20\text{Log}_{10}(V_D/V_S)$ ,  $V_D$  = output.  $V_S$  = input at off switch

# 5 Test circuit

Figure 3. ON resistance

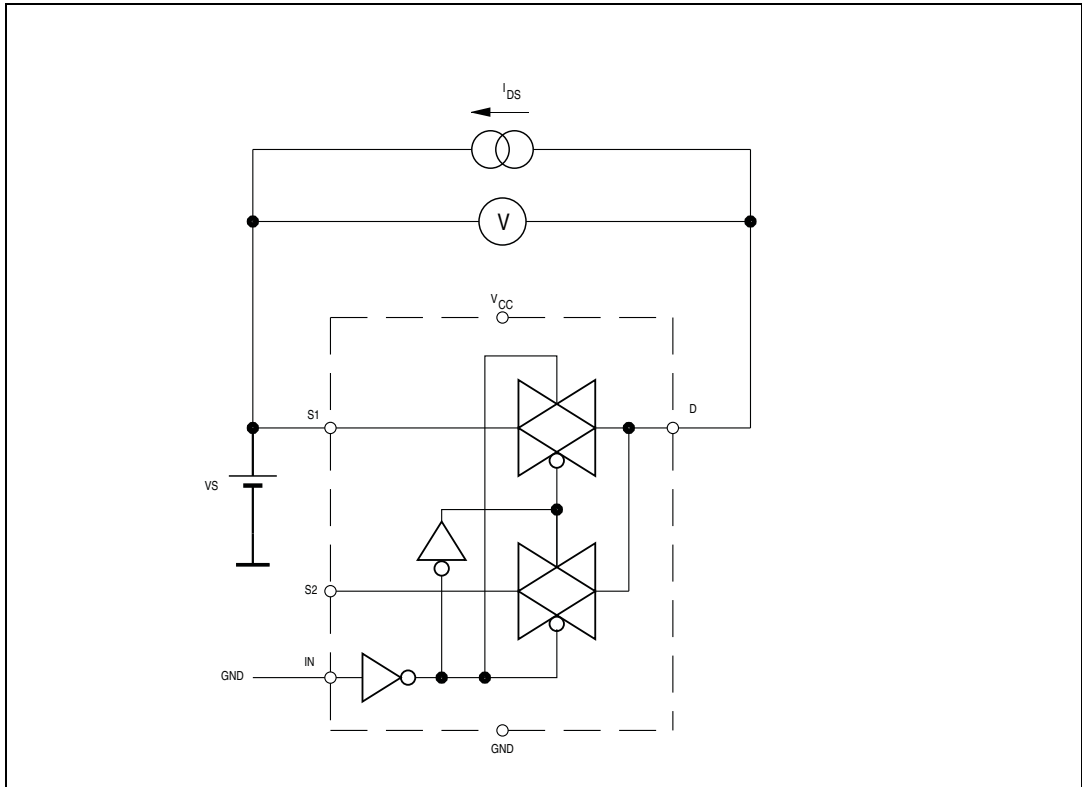
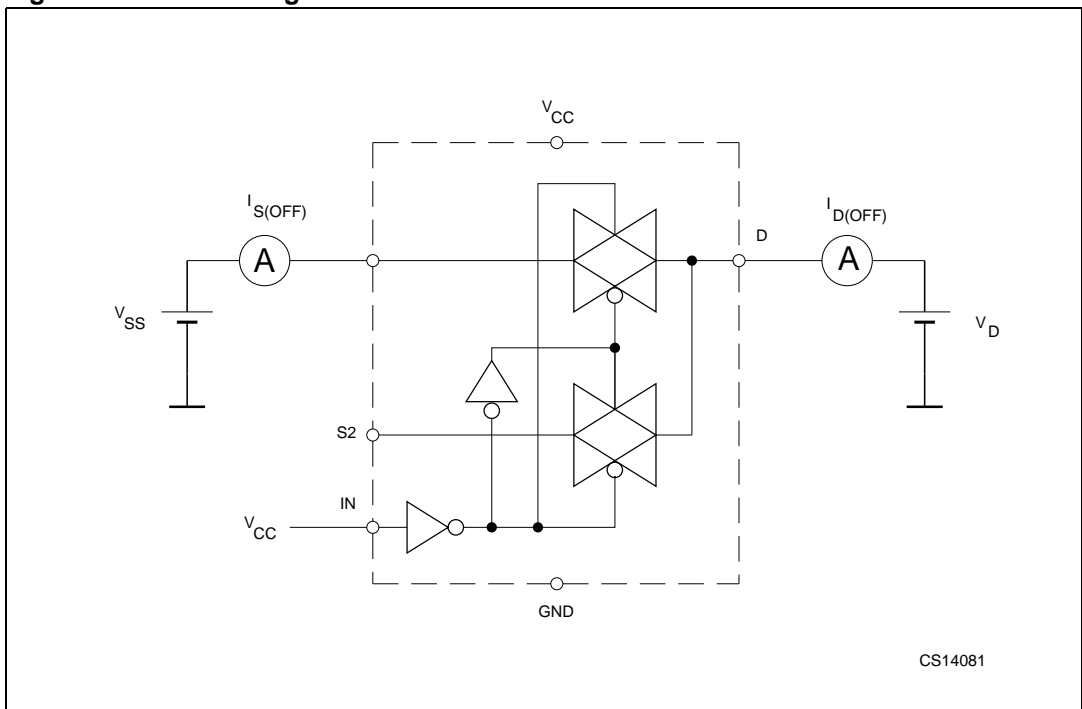


Figure 4. OFF leakage



CS14081

Figure 5. OFF isolation

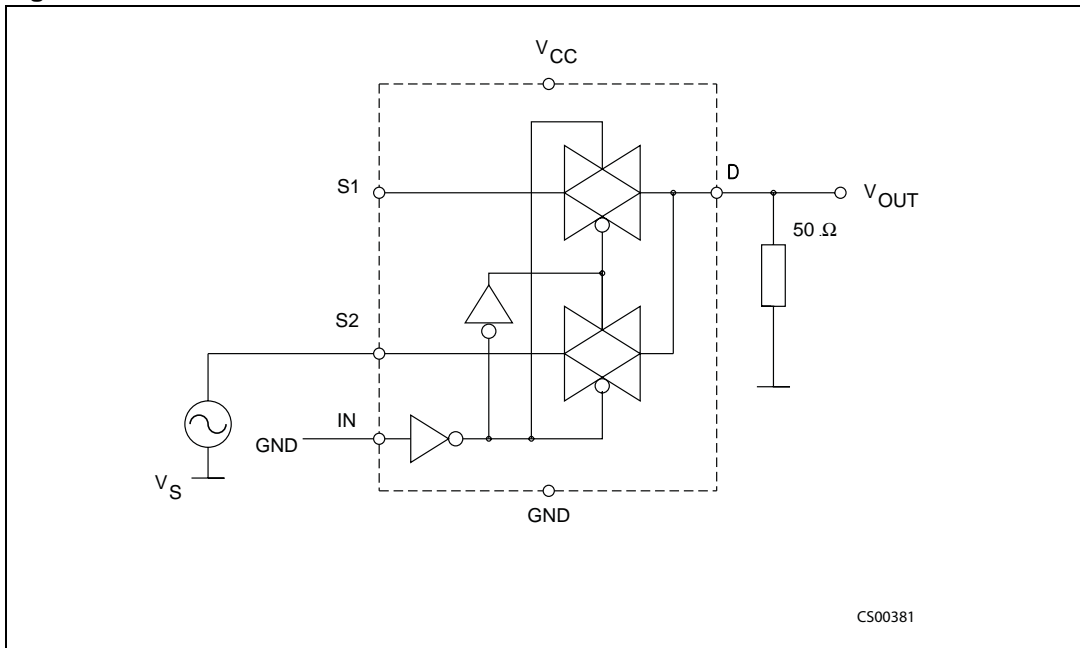


Figure 6. Bandwidth

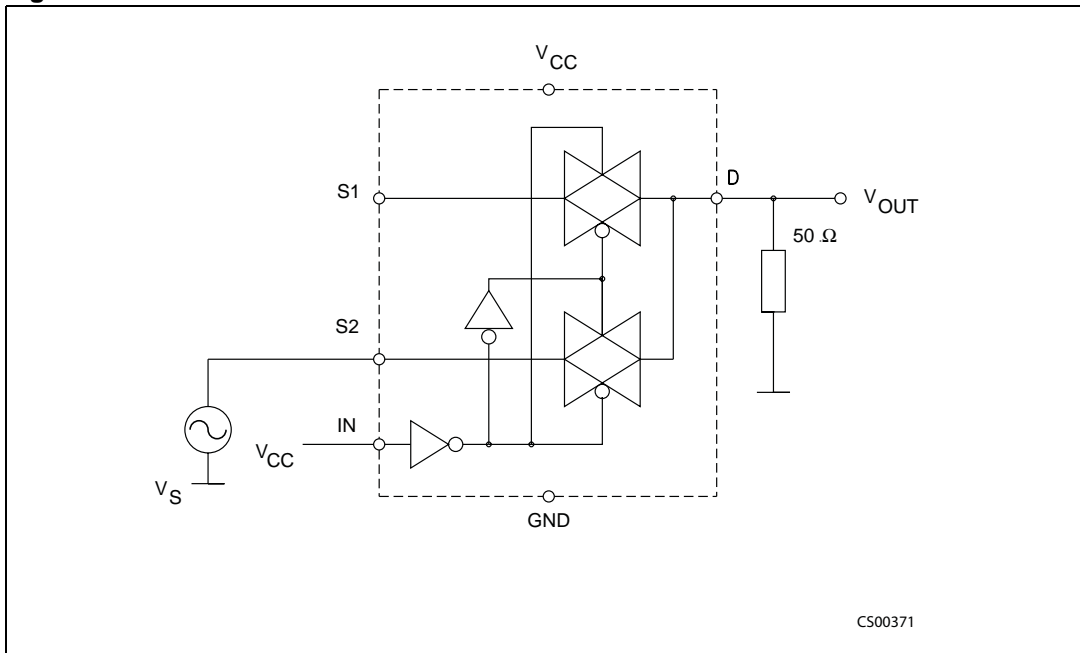


Figure 7. Channel-to-channel crosstalk

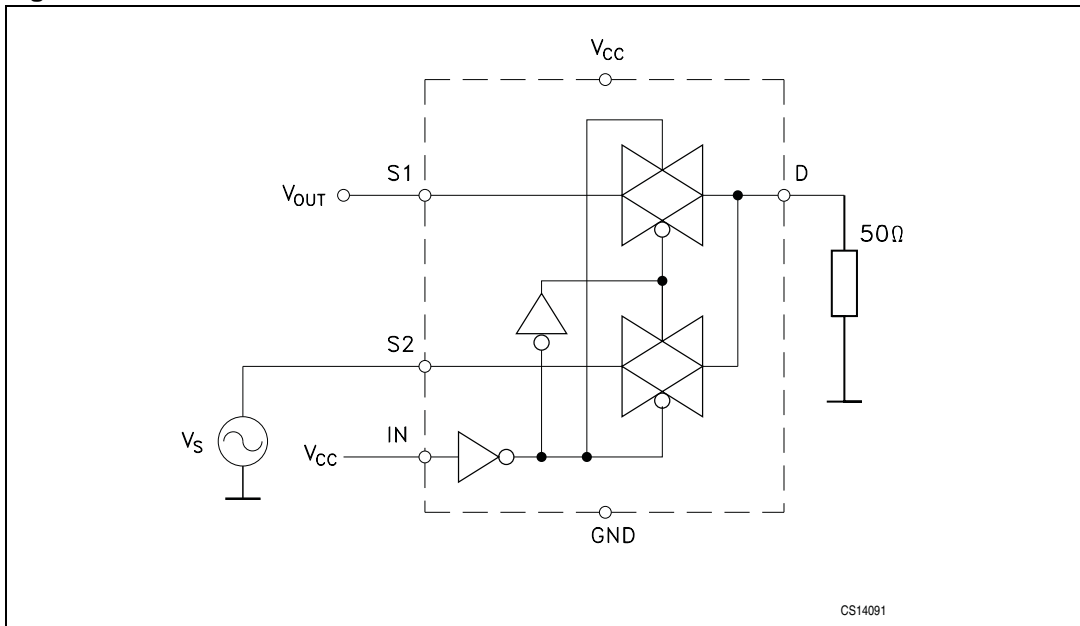
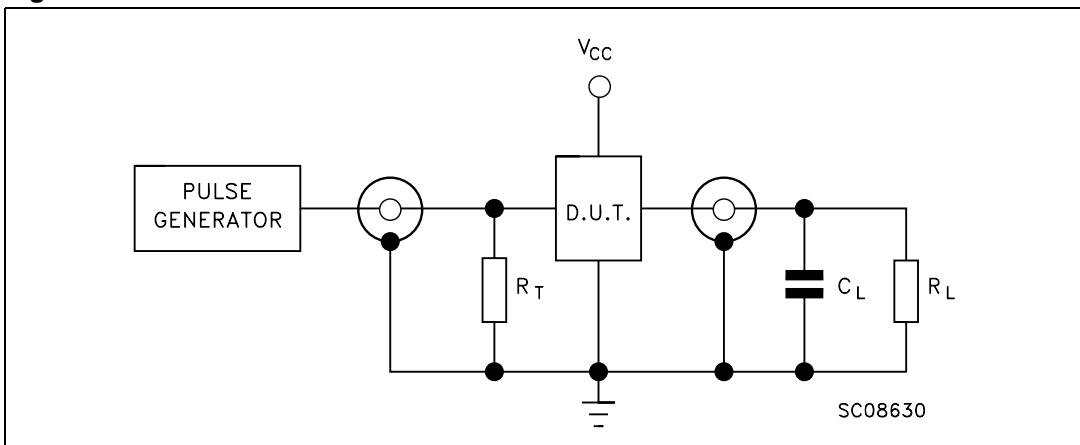


Figure 8. Test circuit



$C_L = 5/35$  pF or equivalent (includes jig and probe capacitance)

$R_L = 50 \Omega$  or equivalent

$R_T = Z_{OUT}$  of pulse generator (typically  $50 \Omega$ )

Figure 9. Break-before-make time delay

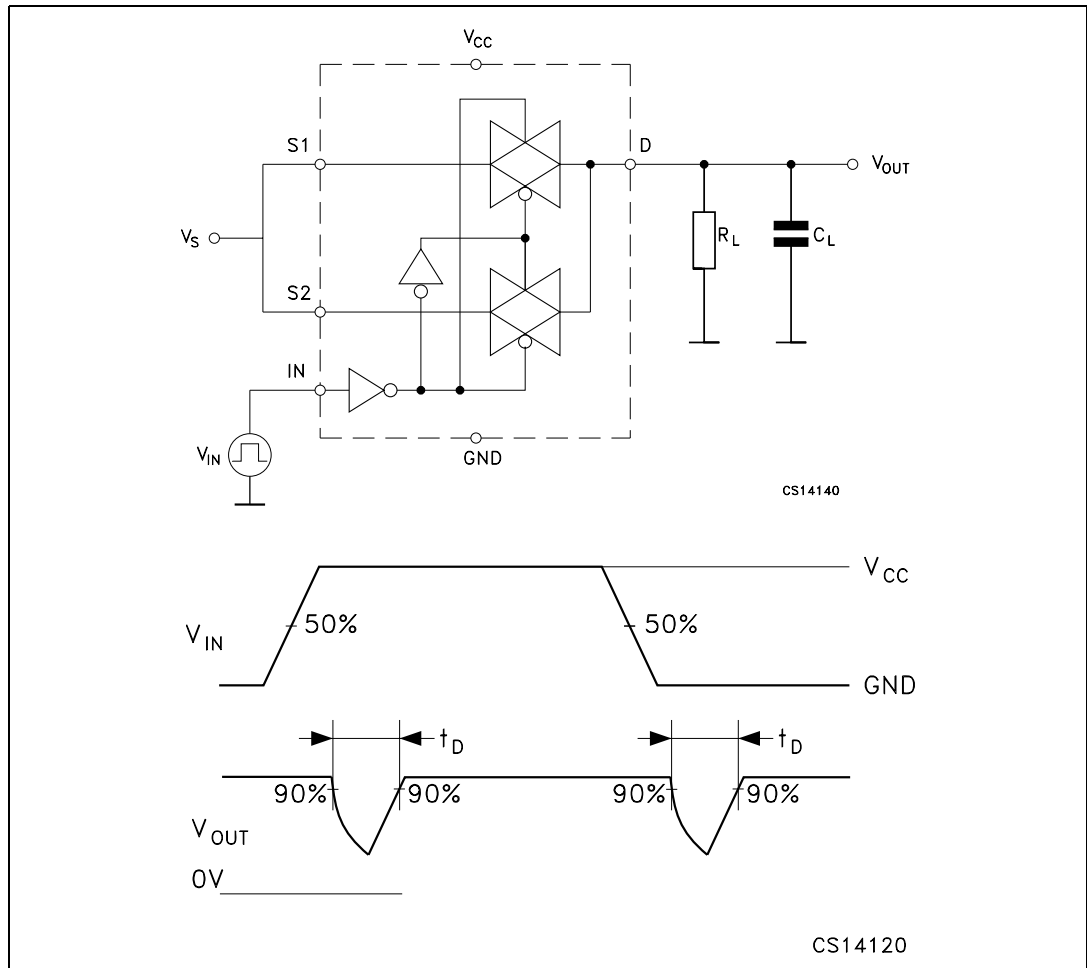


Figure 10. Charge injection ( $V_{GEN} = 0\text{ V}$ ,  $R_{GEN} = 0\ \Omega$ ,  $R_L = 1\text{ M}\Omega$ ,  $C_L = 100\text{ pF}$ )

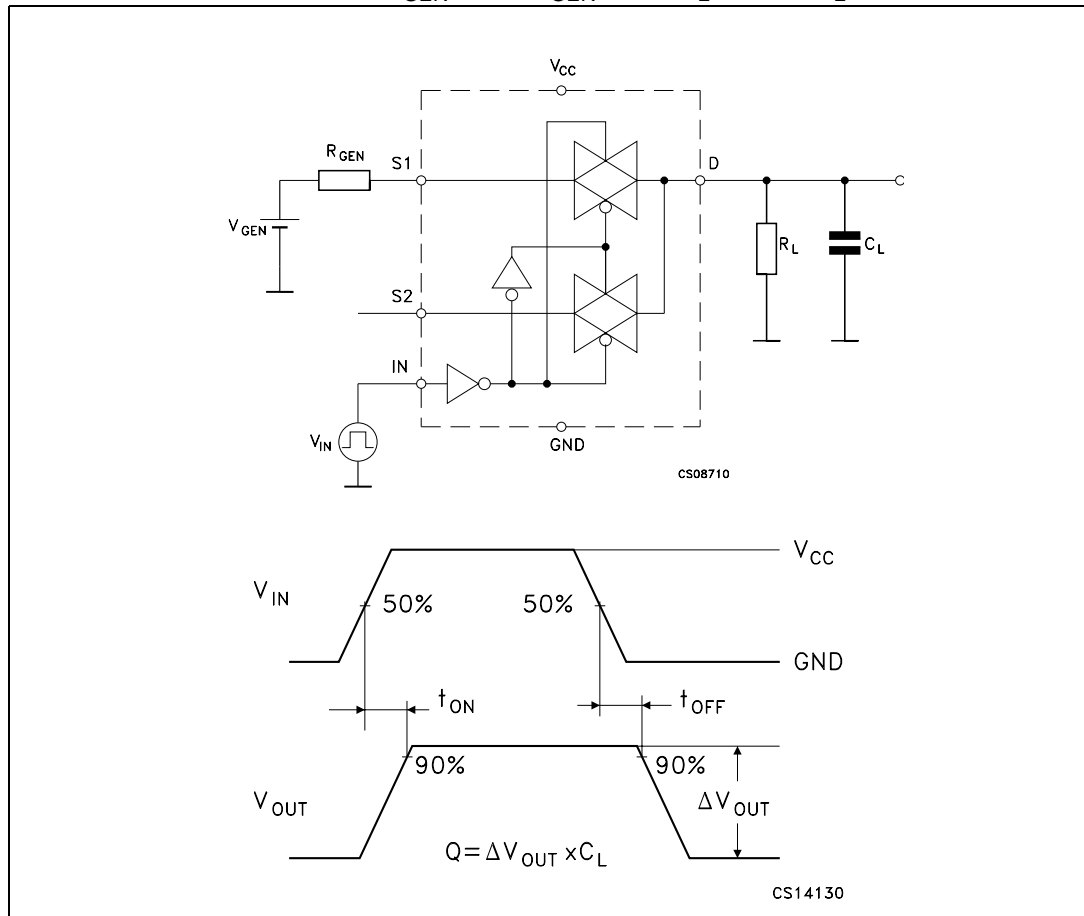
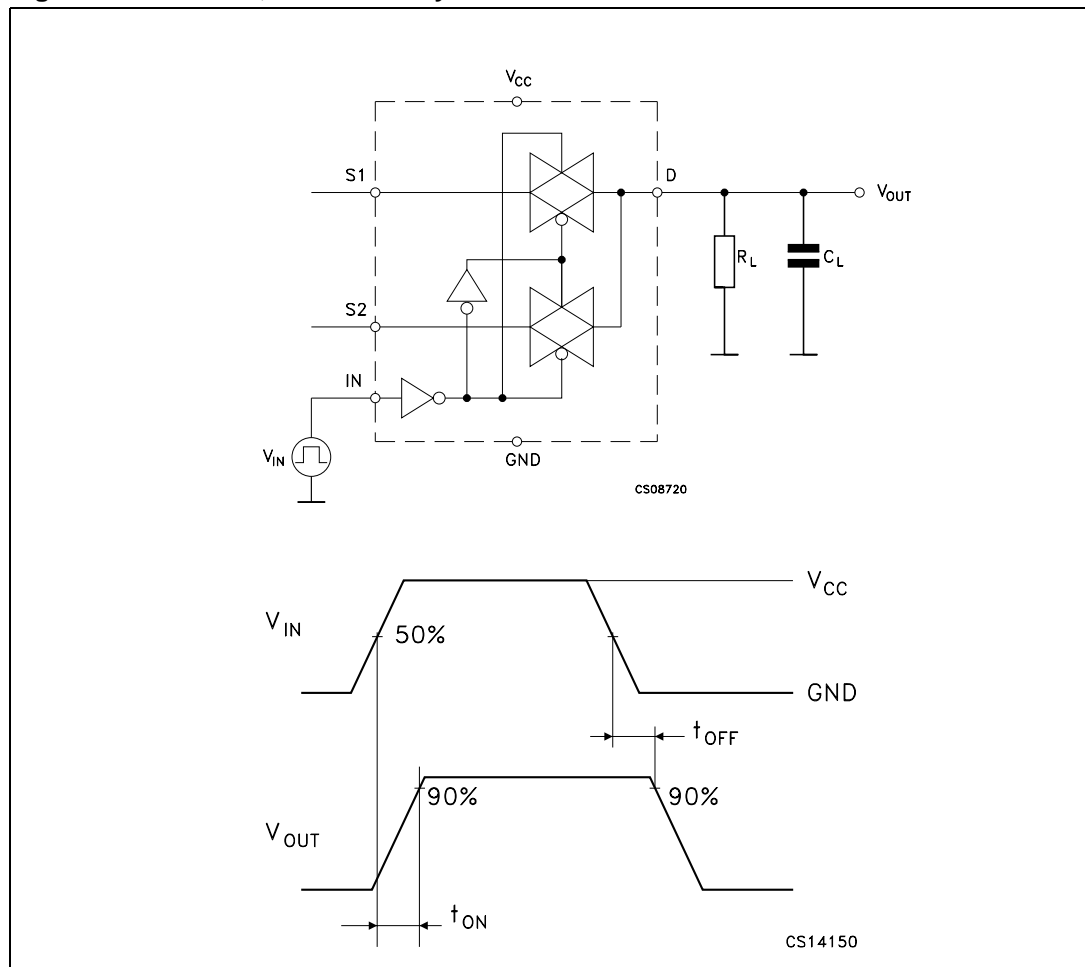


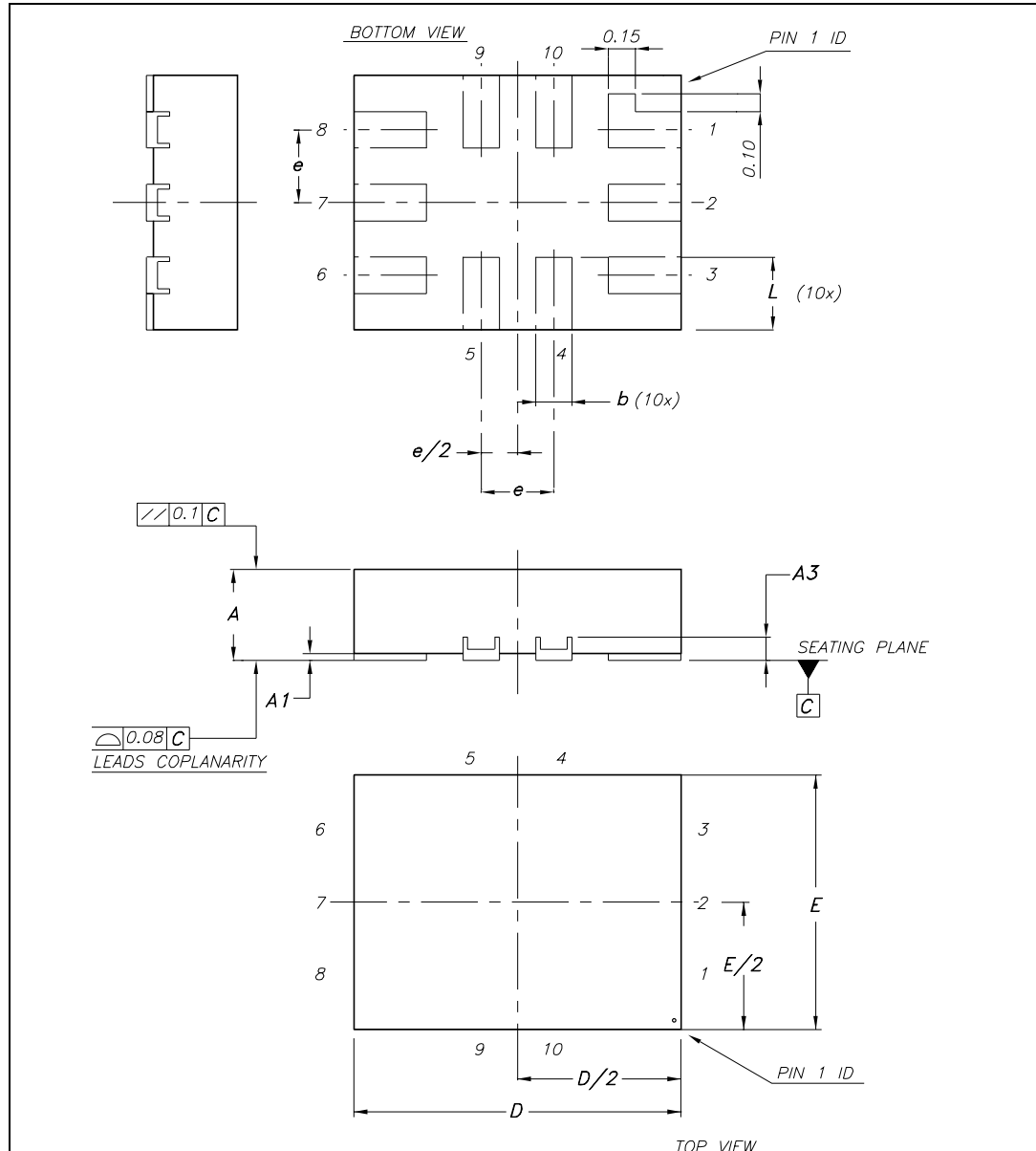
Figure 11. Turn-on, Turn-off delay time



## 6 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com).

Figure 12. QFN10L (1.8 x 1.4 mm) package outline



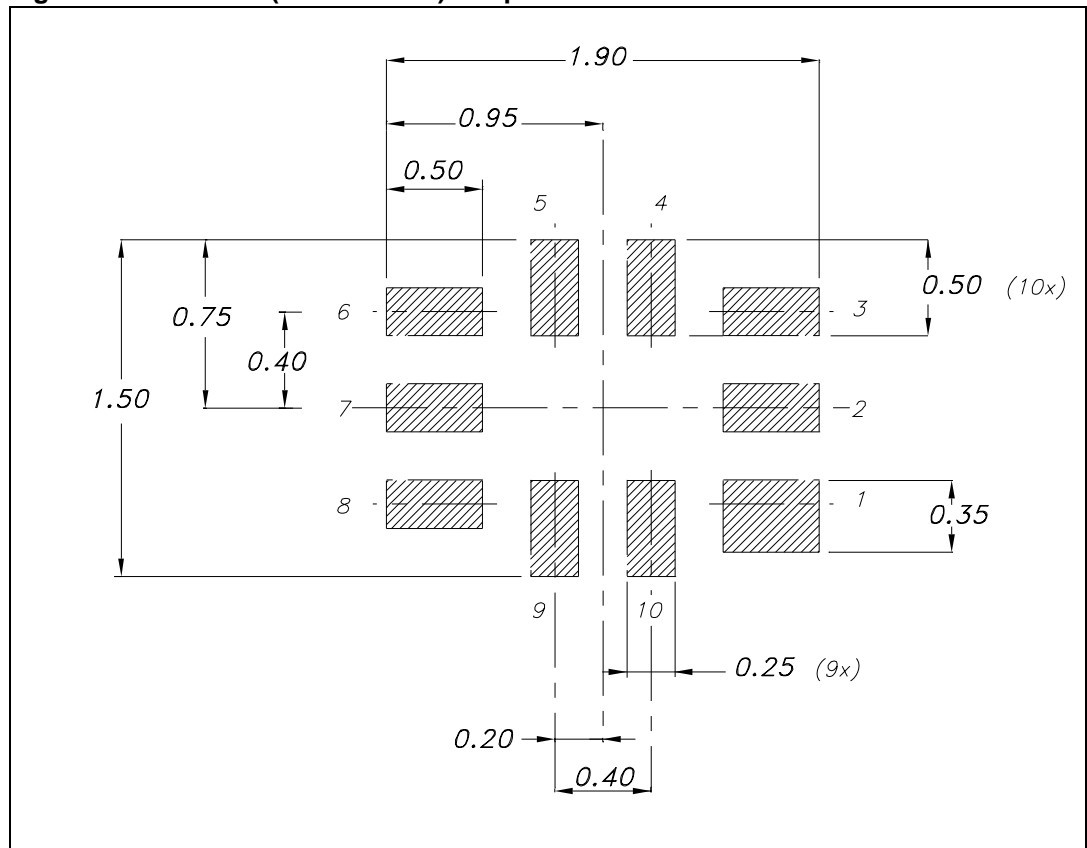
1. Drawing not to scale.



Table 9. QFN10L (1.8 x 1.4 mm) mechanical data

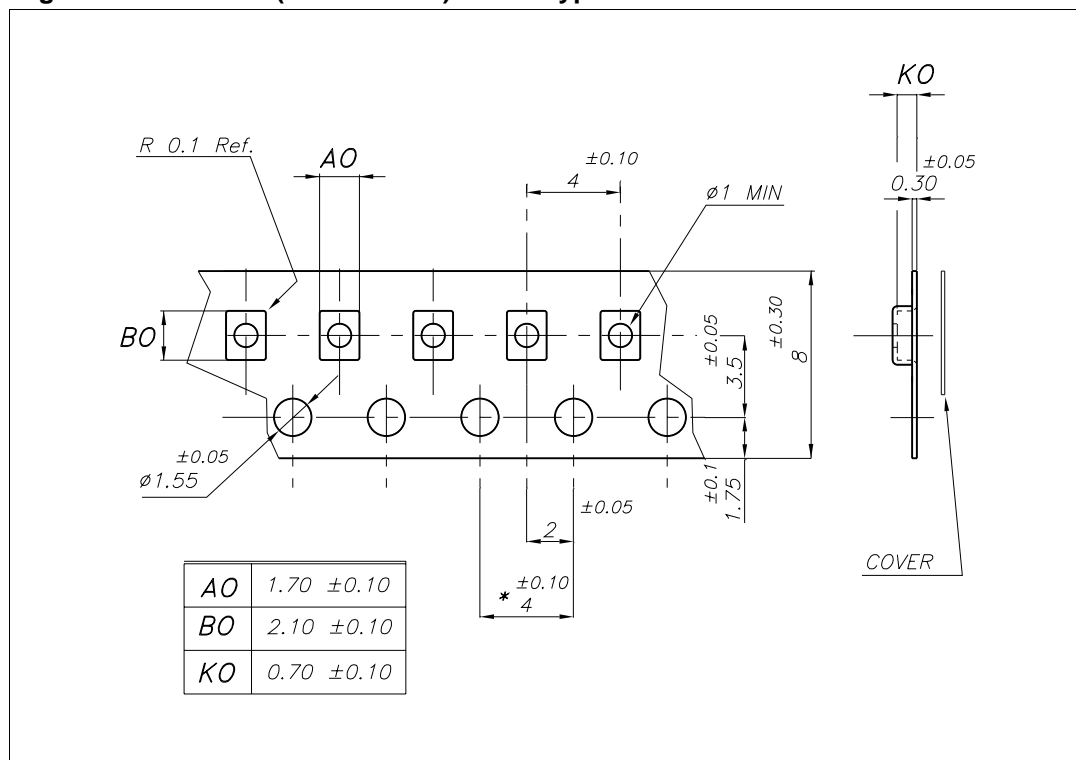
| Symbol | millimeters |      |      | inches |       |       |
|--------|-------------|------|------|--------|-------|-------|
|        | Nom         | Min  | Max  | Nom    | Min   | Max   |
| A      | 0.50        | 0.45 | 0.55 | 0.020  | 0.017 | 0.021 |
| A1     | 0.02        | 0    | 0.05 | 0.001  | 0     | 0.002 |
| A3     | 0.127       |      |      | 0.005  | 0     | 0     |
| b      | 0.20        | 0.15 | 0.25 | 0.007  | 0.006 | 0.010 |
| D      | 1.80        | 1.70 | 1.90 | 0.070  | 0.066 | 0.074 |
| E      | 1.40        | 1.30 | 1.50 | 0.055  | 0.051 | 0.059 |
| e      | 0.40        |      |      | 0.015  |       |       |
| L      | 0.40        | 0.30 | 0.50 | 0.015  | 0.011 | 0.020 |

Figure 13. QFN10L (1.8 x 1.4 mm) footprint recommendations



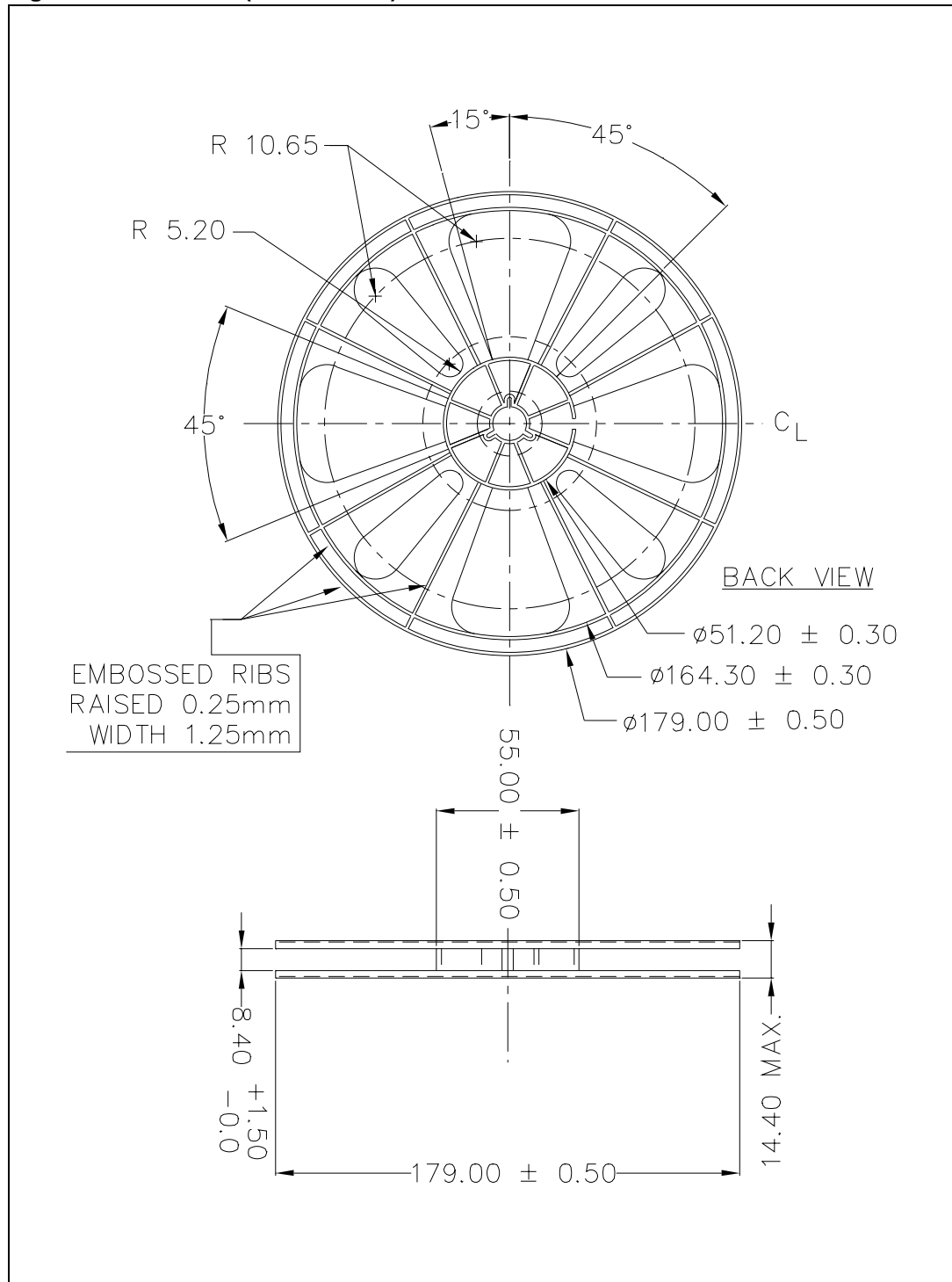
1. Drawing not to scale.

Figure 14. QFN10L (1.8 x 1.4 mm) carrier type



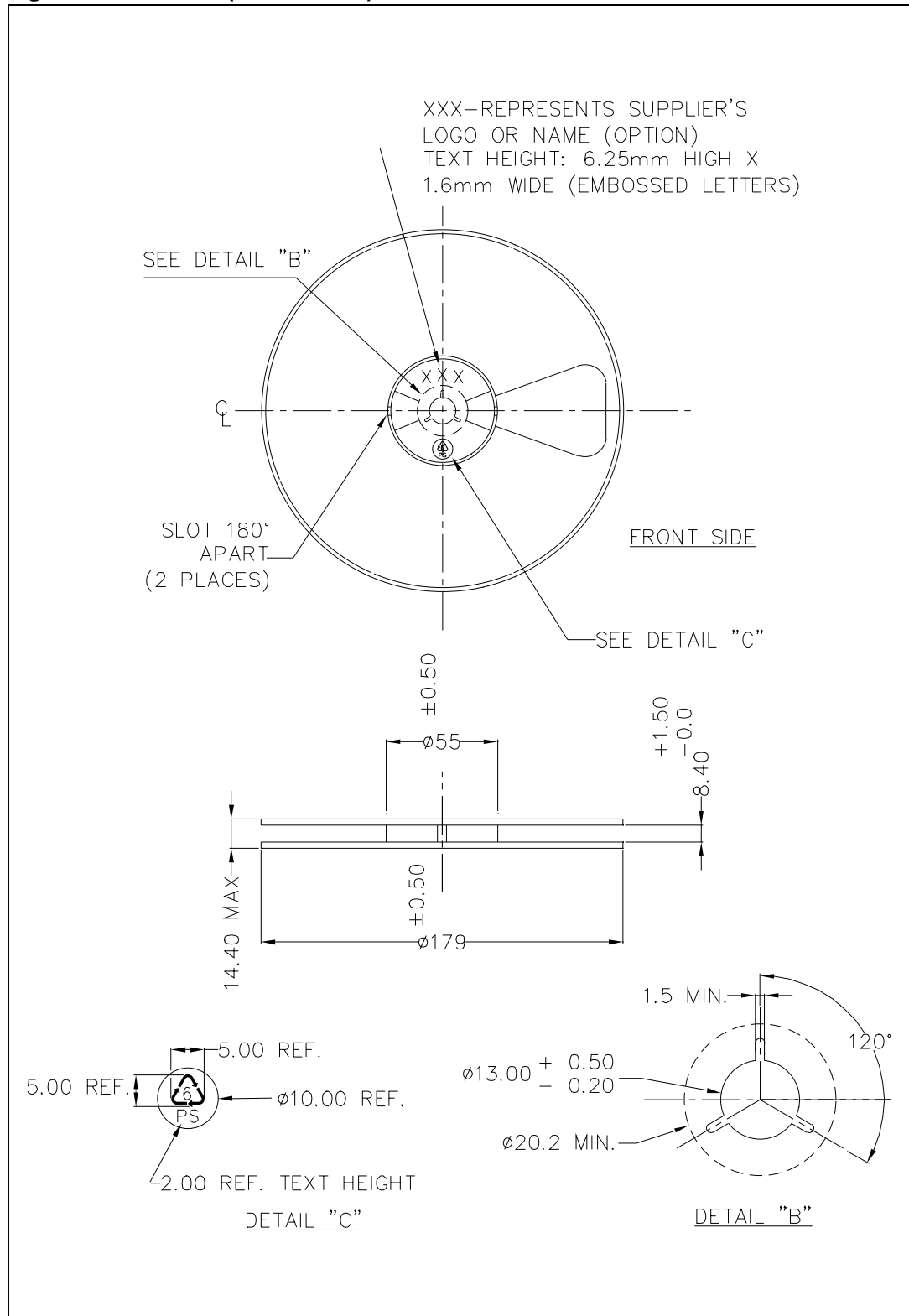
1. Drawing not to scale.

Figure 15. QFN10L (1.8 x 1.4 mm) reel information - back view



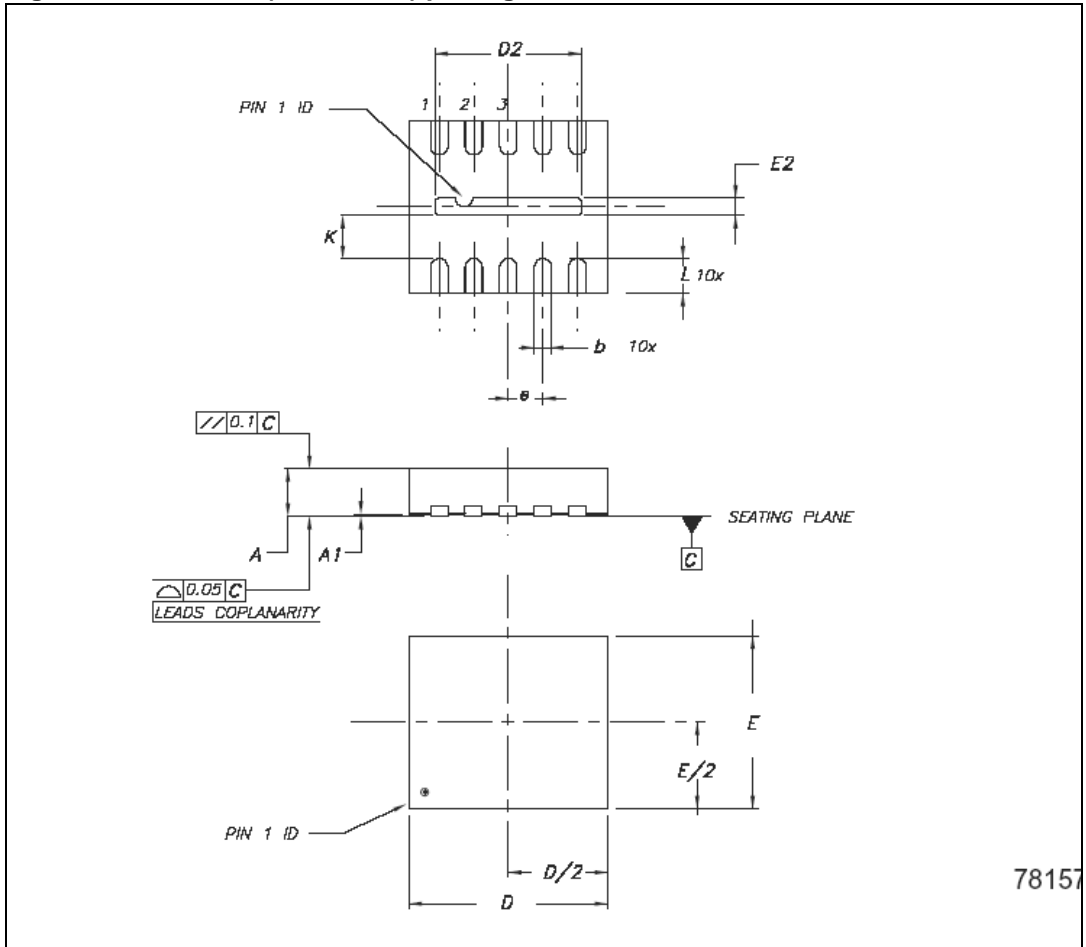
1. Drawing not to scale.

Figure 16. QFN10L (1.8 x 1.4 mm) reel information - front side



1. Drawing not to scale.

Figure 17. DFN10L (2 x 2.3 mm) package outline

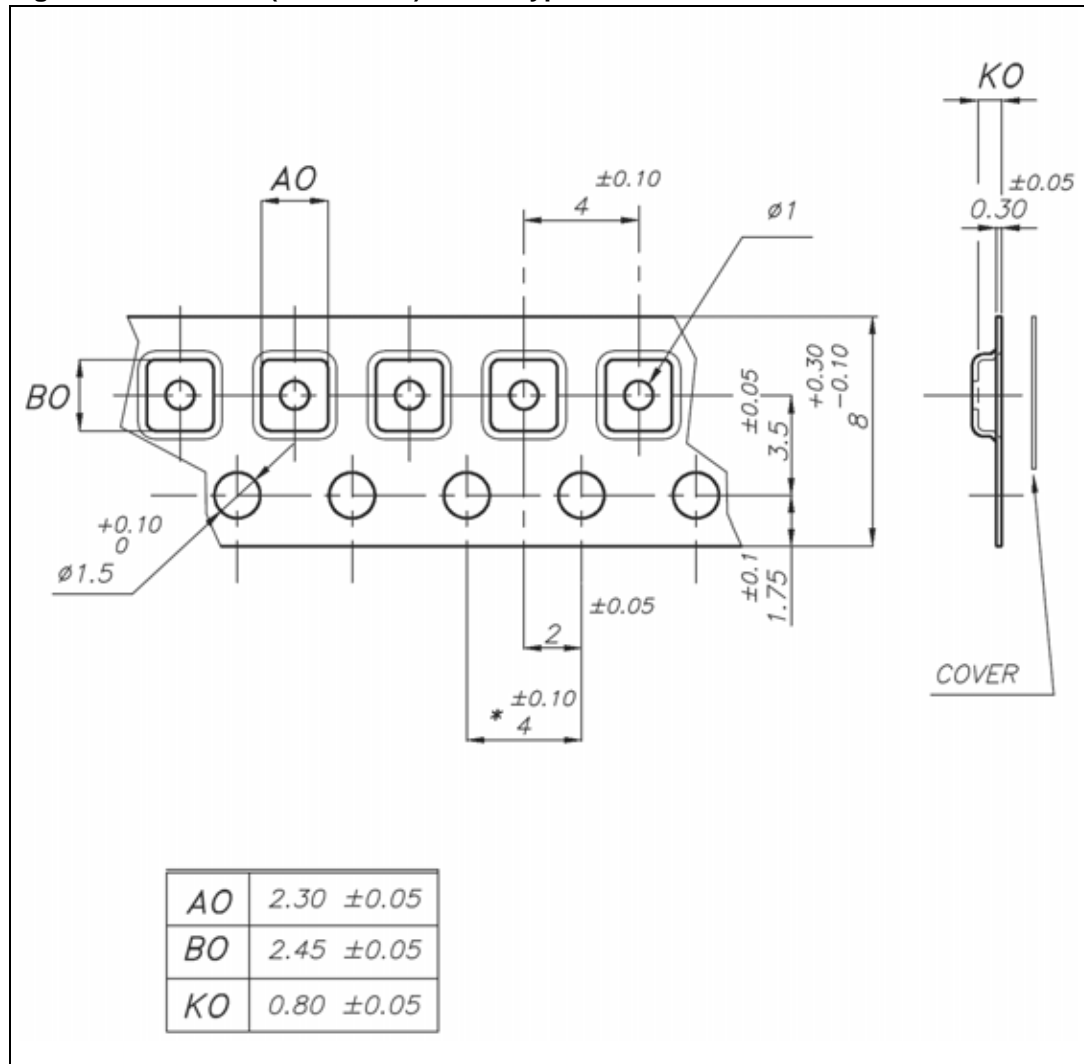


1. Drawing not to scale.

Table 10. DFN10L (2 x 2.3 mm) mechanical data

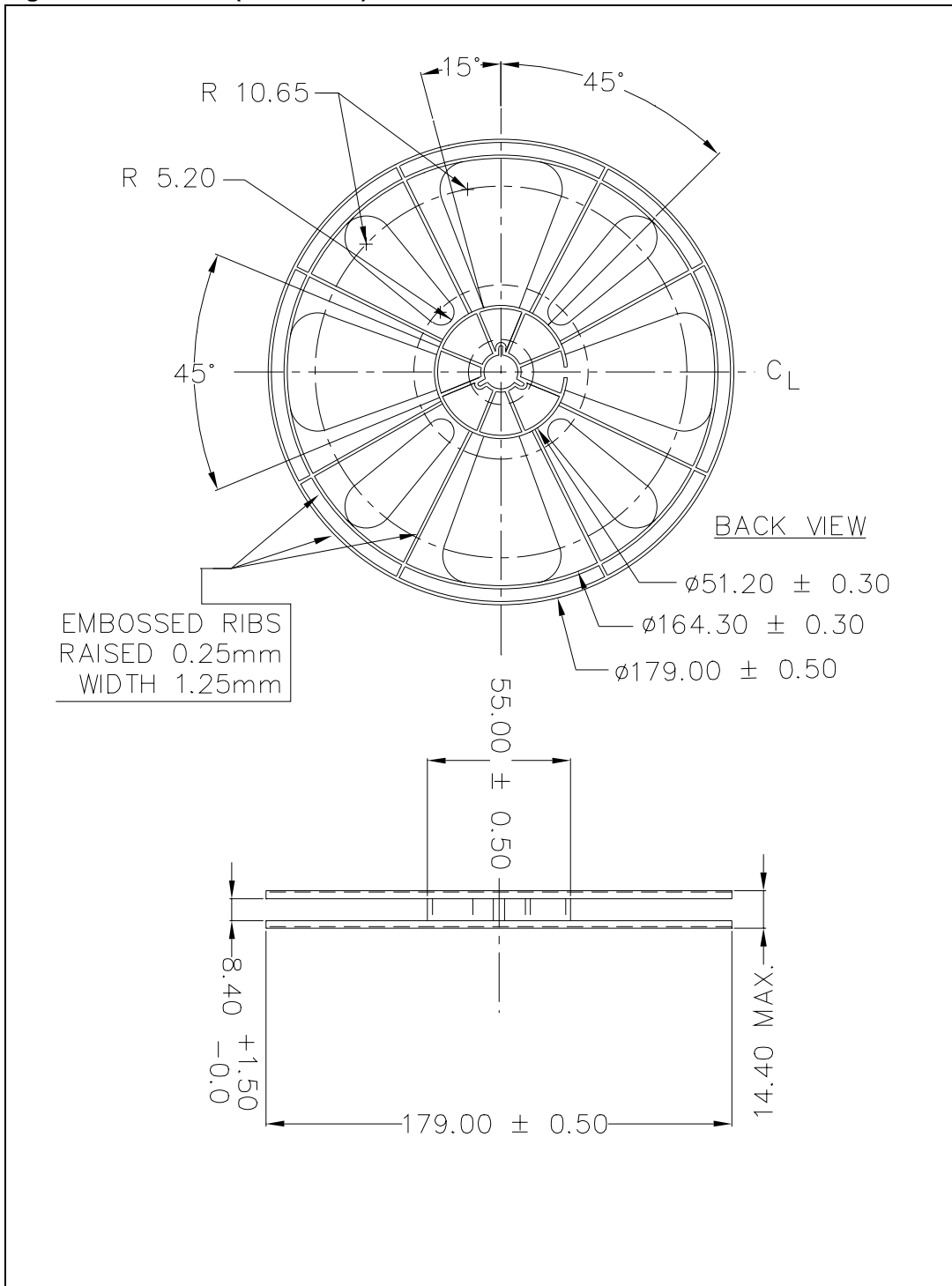
| Symbol | millimeters |      |      | mils |      |      |
|--------|-------------|------|------|------|------|------|
|        | Min         | Typ  | Max  | Min  | Typ  | Max  |
| A      | 0.50        | 0.55 | 0.60 | 19.7 | 21.7 | 23.6 |
| A1     |             | 0.02 | 0.05 |      | 0.8  | 2.0  |
| b      | 0.15        | 0.20 | 0.25 | 5.9  | 7.9  | 9.8  |
| D      | 2.20        | 2.30 | 2.40 | 86.6 | 90.6 | 94.5 |
| D2     | 1.65        | 1.70 | 1.75 | 65.0 | 66.9 | 68.9 |
| E      | 1.90        | 2    | 2.10 | 74.8 | 78.7 | 82.7 |
| E2     | 0.15        | 0.20 | 0.25 | 5.9  | 7.9  | 9.8  |
| e      |             | 0.40 |      |      | 15.7 |      |
| L      | 0.35        | 0.40 | 0.45 | 13.8 | 15.7 | 17.7 |
| K      | 0.20        |      |      | 7.9  |      |      |

Figure 18. DFN10L (2 x 2.3 mm) carrier type



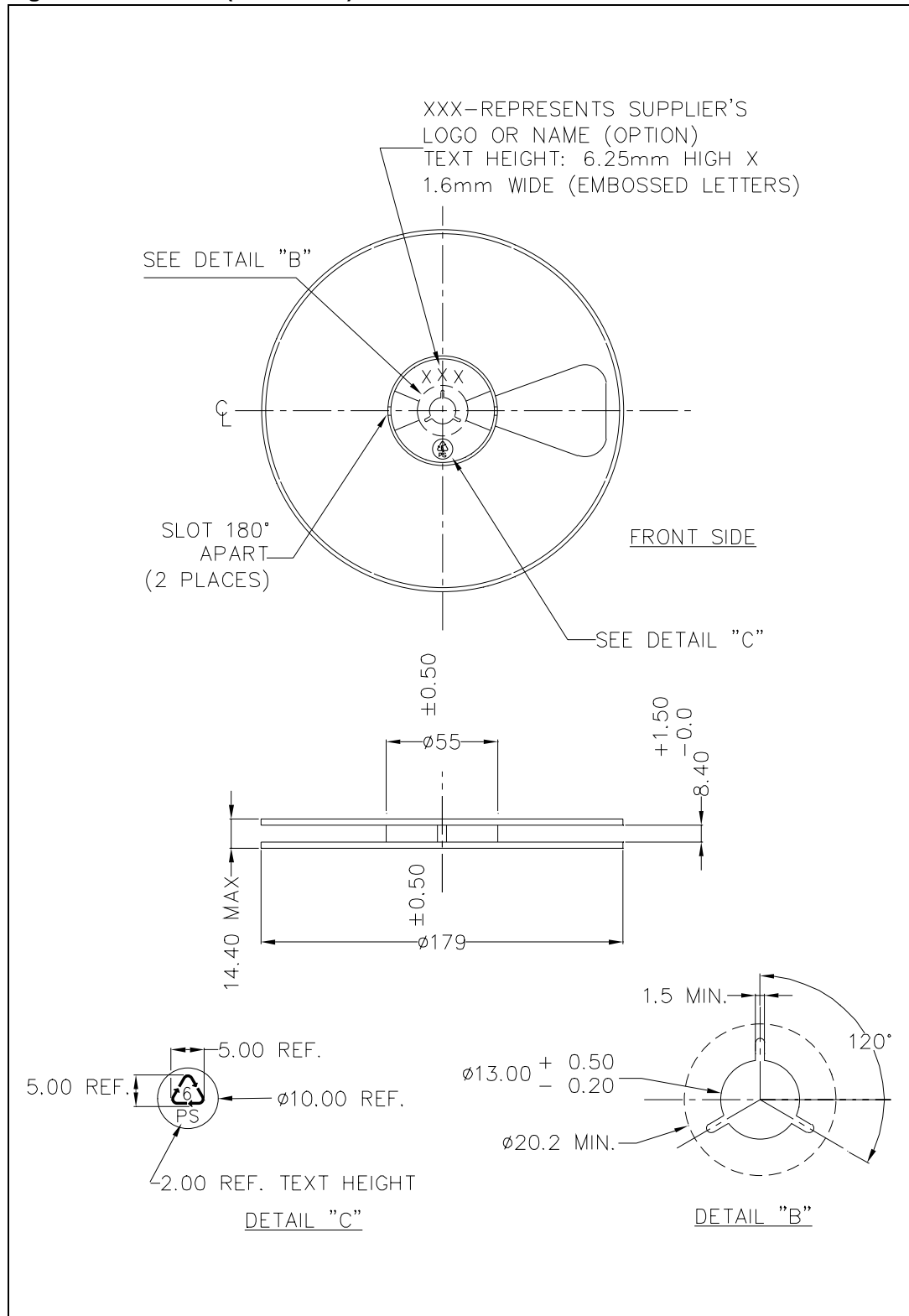
1. Drawing not to scale.

Figure 19. DFN10L (2 x 2.3 mm) reel information - back view



1. Drawing not to scale.

Figure 20. DFN10L (2 x 2.3 mm) reel information - front side



1. Drawing not to scale.



## 7 Revision history

**Table 11. Document revision history**

| Date         | Revision | Changes  |
|--------------|----------|--|
| 04-Jul-2005  | 1        | First release  |
| 22-Aug-2005  | 2        | The $V_{CC}$ and $V_{IC}$ values has been changed on <a href="#">Table 4 on page 6</a>   |
| 15-May-2006  | 3        | New template, few updates  |
| 21-Jun-2006  | 4        | Mechanical data updated  |
| 10-Sept-2007 | 5        | Removed STG3684QTR order code, small text changes, updated <a href="#">Figure 3 on page 10</a> , <a href="#">Figure 4 on page 10</a> , <a href="#">Figure 5 on page 11</a> , <a href="#">Figure 6 on page 11</a> , layout restructured |

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