

**8-channel Darlington current driver**

(Functional equivalent of TD62783AFN, TD67084AFN Toshiba)

The ILN62783D, ILN62783N, ILN62784D, ILN62784N are 8- channel current driver with common supply and ground.

The ILN62783D, ILN62783N, ILN62784D, ILN62784N are purposed in different devices: re-lays, lamps, displays (LED & gas discharge cells), telecommunication lines and logic devices.

**Main features:**

- The ILN62783D, ILN62784D are realized in 18-pin SO - package MS-013AB, ILN62783N, ILN62784N – in 18-pin DIP – package MS-001AC;
- output sustaining voltage up to 50 V;
- one channel output current up to 500 mA;
- output clamp diodes;
- single supply voltage of drivers.

Allowable value of electrostatic potential 2000V

Table 1 – Electric circuitry difference of ICs

IC marking	Number of serially connected diodes	Applicable with ICs
ILN62783D, ILN62783N	3	TTL, 5 V CMOS
ILN62784D, ILN62784N	6	6 ÷ 15 V P-MOS, CMOS

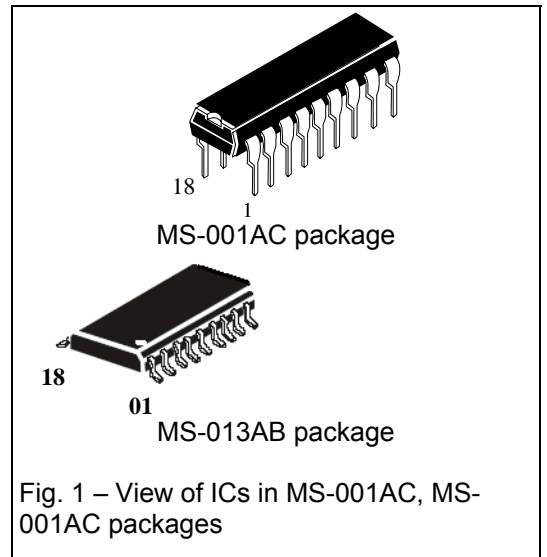


Fig. 1 – View of ICs in MS-001AC, MS-001AC packages

**Table 2 – Package pins**

Pin number (MS-013AB, MS-001AC packages)	Symbol	Description
01	IN 1	Input
02	IN 2	Input
03	IN 3	Input
04	IN 4	Input
05	IN 5	Input
06	IN 6	Input
07	IN 7	Input
08	IN 8	Input
09	Vcc	Supply voltage pin
10	GND	Common pin (ground)
11	OUT 8	Output
12	OUT 7	Output
13	OUT 6	Output
14	OUT 5	Output
15	OUT 4	Output
16	OUT 3	Output
17	OUT 2	Output
18	OUT 1	Output

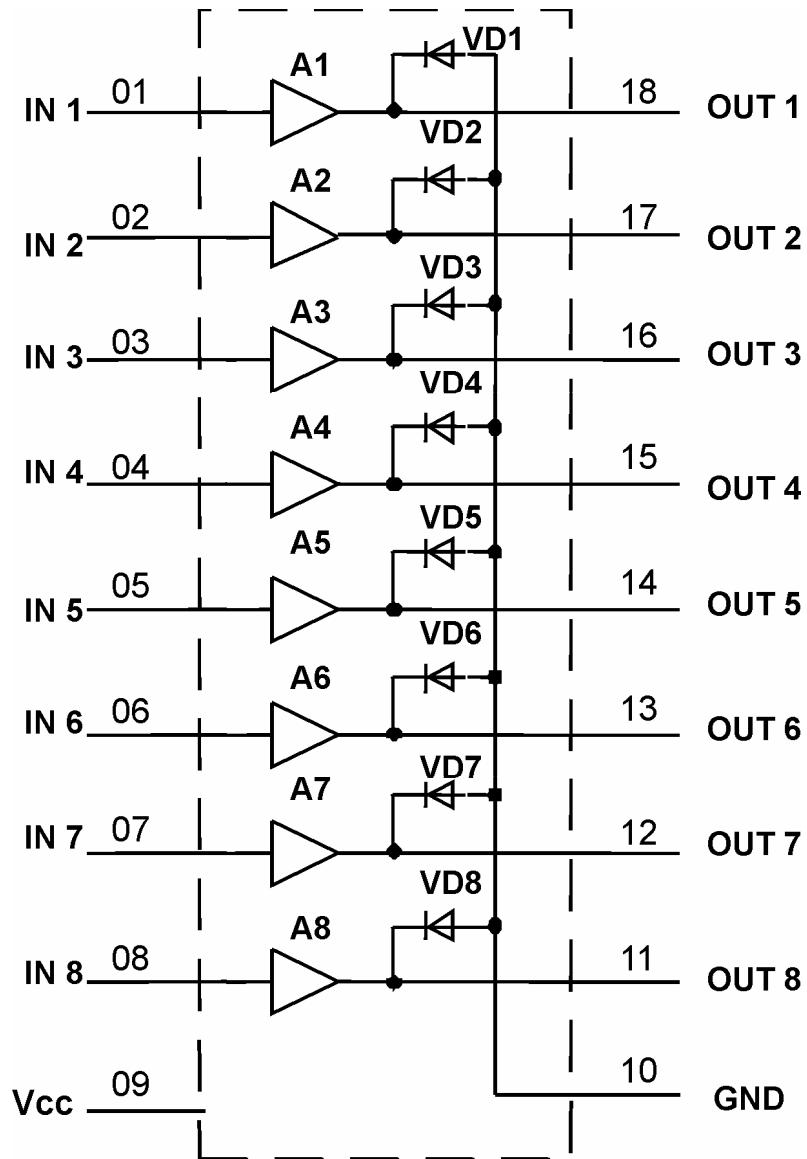


Fig 2 – Electric block diagram

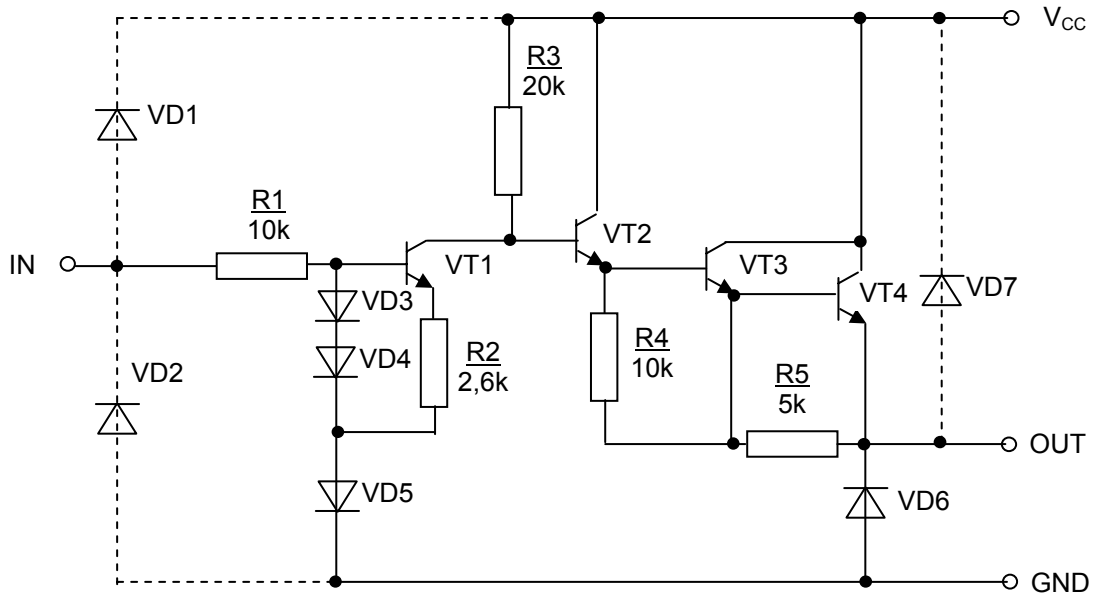


Fig. 3 – Electrical scheme of one channel of ILN62783D, ILN62783N

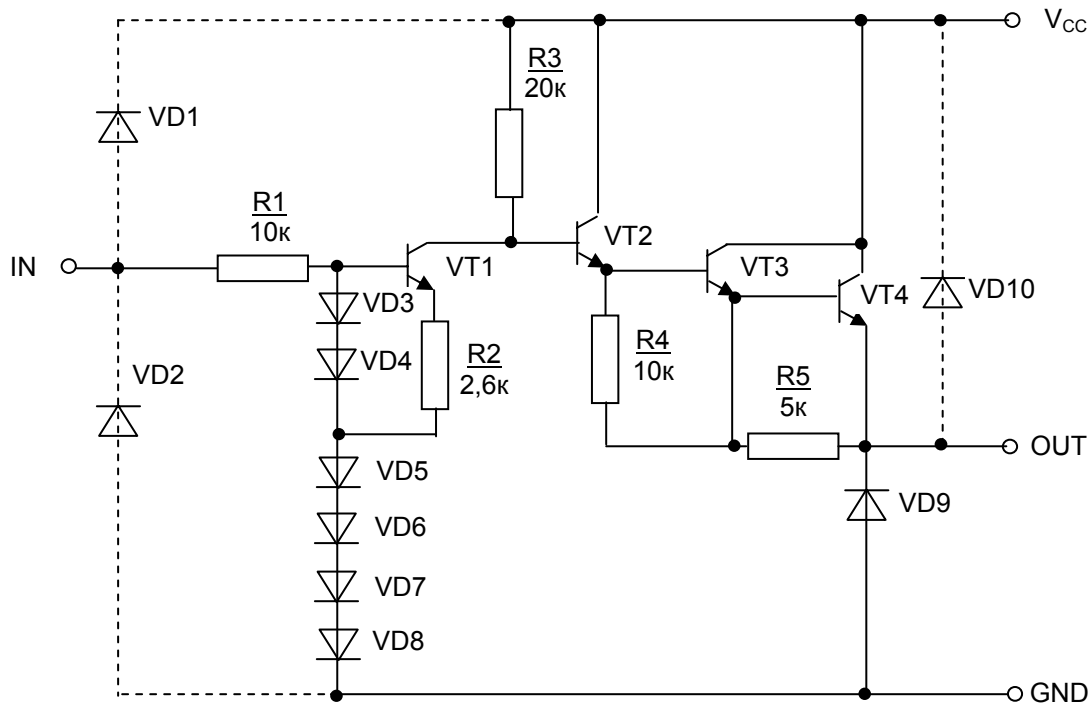


Fig. 4 – Electrical scheme of one channel of ILN62784D, ILN62784N

**Table 3 –Maximum ratings**

Symbol	Parameter	Norm		Unit
		Min	Max	
$V_{CC}$	Supply voltage	-0,5	50	V
$I_{OUT}$	Output current (one channel)	-	-500*	mA
$V_{IN}$	Input voltage ILN62783D, ILN62783N	-0,5	15	V
	ILN62784D, ILN62784N	-0,5	30	
$V_R$	Clamp diode reverse voltage	-	50	V
$I_F$	Clamp diode forward current	-	500	mA
$T_{stg}$	Storage temperature	-60	150	°C
$P_D$	Power dissipation**	-	0,96*	W

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\*On PCB with dimensions 50 × 50 × 1,6 mm, 40% Cu.  
\*\* Of ILN62083D, ILN62084D

**Table 4 – Recommended operation modes**

Symbol	Parameter	Norm		Unit
		Min	Max	
$V_{CC}$	Supply voltage	0	50	V
$I_{OUT}$	Output current (one channel) 8 channels at $T_{pw} = 25$ ms, $T_a = 85$ °C, $T_j = 120$ °C	Duty 10%	-350*	mA
		Duty 50%	-180*	
			-38*	
$V_R$	Clamp diode reverse voltage	-	50	V
$I_F$	Clamp diode forward current	-	400	mA
$P_D$	Power dissipation **	-	0,4*	W

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\*On PCB with dimensions 50 × 50 × 1,6 mm, 40% Cu.  
\*\* Of ILN62083D, ILN62084D

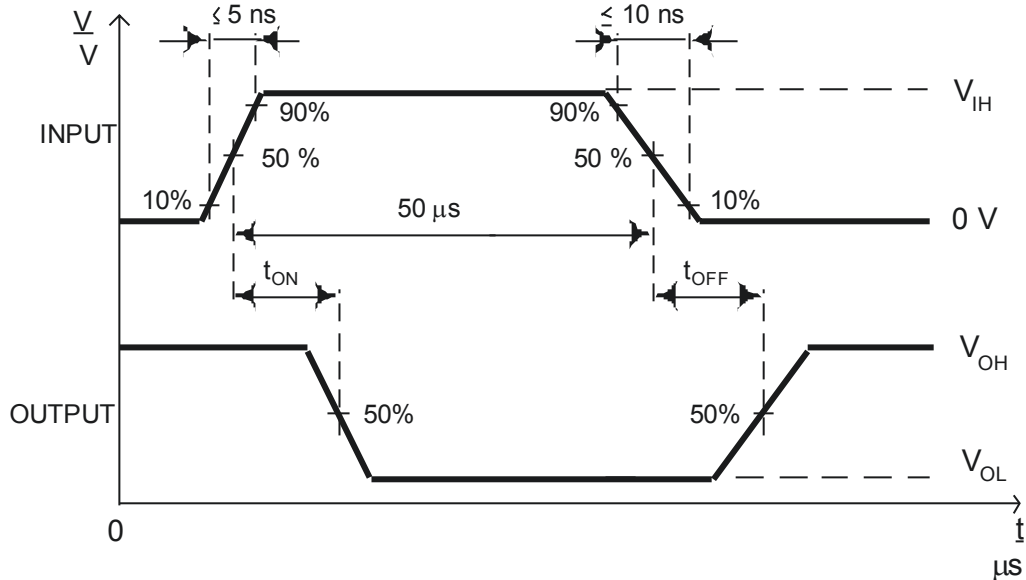
Table 5 – Electric parameters of ICs

Symbol	Parameter	Measurement mode	Norm		Ambient, temperature °C	Unit	
			Min	Max			
$V_{IN(ON)}$	Input voltage ILN62783D, ILN62783N ILN62784D, ILN62784N	$V_{CE} = 2\text{ V}$ $V_{CE} = 2,4\text{ V}$ $I_{OUT} = 350\text{ mA}$	-	$\frac{2,0}{2,4}$	$\frac{25\pm 10}{-40}$ 85	V	
			-	$\frac{4,5}{5,4}$			
$V_{IN(OFF)}$	Input voltage ILN62783D, ILN62783N ILN62784D, ILN62784N	$I_{OUT} = 500\ \mu\text{A}$	$\frac{0,8}{0,64}$	-	$\frac{25\pm 10}{-40}$ 85	V	
			$\frac{2,0}{1,6}$	-			
$I_{CC(ON)}$	Supply current ILN62783D, ILN62783N ILN62784D, ILN62784N	$V_{IN} = 2\text{ V}$ $V_{CC} = 50\text{ V}$ $V_{IN} = 4,5\text{ V}$ $V_{CC} = 50\text{ V}$	-	$\frac{2,5}{3,0}$	$\frac{25\pm 10}{-40}$ 85	mA	
			-	$\frac{2,5}{3,0}$			
$V_{CE(sat)}$	Output saturation voltage ILN62783D, ILN62783N	$I_{OUT} = -100\text{ mA}$ $V_{IN} = 2\text{ V}$	-	$\frac{1,8}{2,16}$	$\frac{25\pm 10}{-40}$ 85	V	
			$I_{OUT} = -225\text{ mA}$ $V_{IN} = 2\text{ V}$	-			$\frac{1,9}{2,28}$
				$I_{OUT} = -350\text{ mA}$ $V_{IN} = 2\text{ V}$			-
	ILN62784D, ILN62784N	$I_{OUT} = -100\text{ mA}$ $V_{IN} = 4,5\text{ V}$	-				$\frac{1,8}{2,16}$
			$I_{OUT} = -225\text{ mA}$ $V_{IN} = 4,5\text{ V}$	-			$\frac{1,9}{2,28}$
				$I_{OUT} = -350\text{ mA}$ $V_{IN} = 4,5\text{ V}$			-
$I_{CEX}$	Output leakage current	$V_{CC} = 50\text{ V}$ $V_{IN} = 0,4\text{ V}$	-		100	$25\pm 10$	$\mu\text{A}$
$V_F$	Clamp diode forward voltage	$I_F = 350\text{ mA}$ $I_F = 400\text{ mA}$	-	$\frac{2,0}{2,4}$	$\frac{25\pm 10}{-40}$ 85	V	
			-	$\frac{3,0}{3,6}$			
$I_{IN(ON)}$	Input current ILN62783D, ILN62783N ILN62784D, ILN62784N	$V_{IN} = 2,4\text{ V}$	-	$\frac{0,052}{0,062}$	$\frac{25\pm 10}{-40}$ 85	mA	
			$V_{IN} = 3,85\text{ V}$	-			$\frac{0,26}{0,31}$
		$V_{IN} = 5\text{ V}$		-			$\frac{0,13}{0,156}$
			$V_{IN} = 12\text{ V}$	-			$\frac{1,13}{1,356}$
$I_R$	Clamp diode reverse current	$V_R = 50\text{ V}$		-	$\frac{50}{60}$	$\mu\text{A}$	



Table 6 – Typical electric parameters at Ta = 25 °C

Symbol	Parameter	Measurement mode	Typical value	Unit
$t_{ON}$	Turn -ON delay	$R_L = 125 \Omega,$ $V_{OUT} = 50 V$	0,15	$\mu S$
$t_{OFF}$	Turn-OFF delay		$C_L = 15 pF$	3,0



Note

Pulse width is  $50 \mu s$ , ratio (duty cycle)  $100\% \cdot t_W / T = 10\%$  ( $t_W$  – pulse width,  $\mu s$ ;  $T$  – period,  $\mu s$ )

Fig. 5 – Time diagram of ILN62783D, ILN62784D, ILN62783N, ILN62784N at measurement of signal delay at turn -ON  $t_{ON}$  and turn-OFF switching  $t_{OFF}$

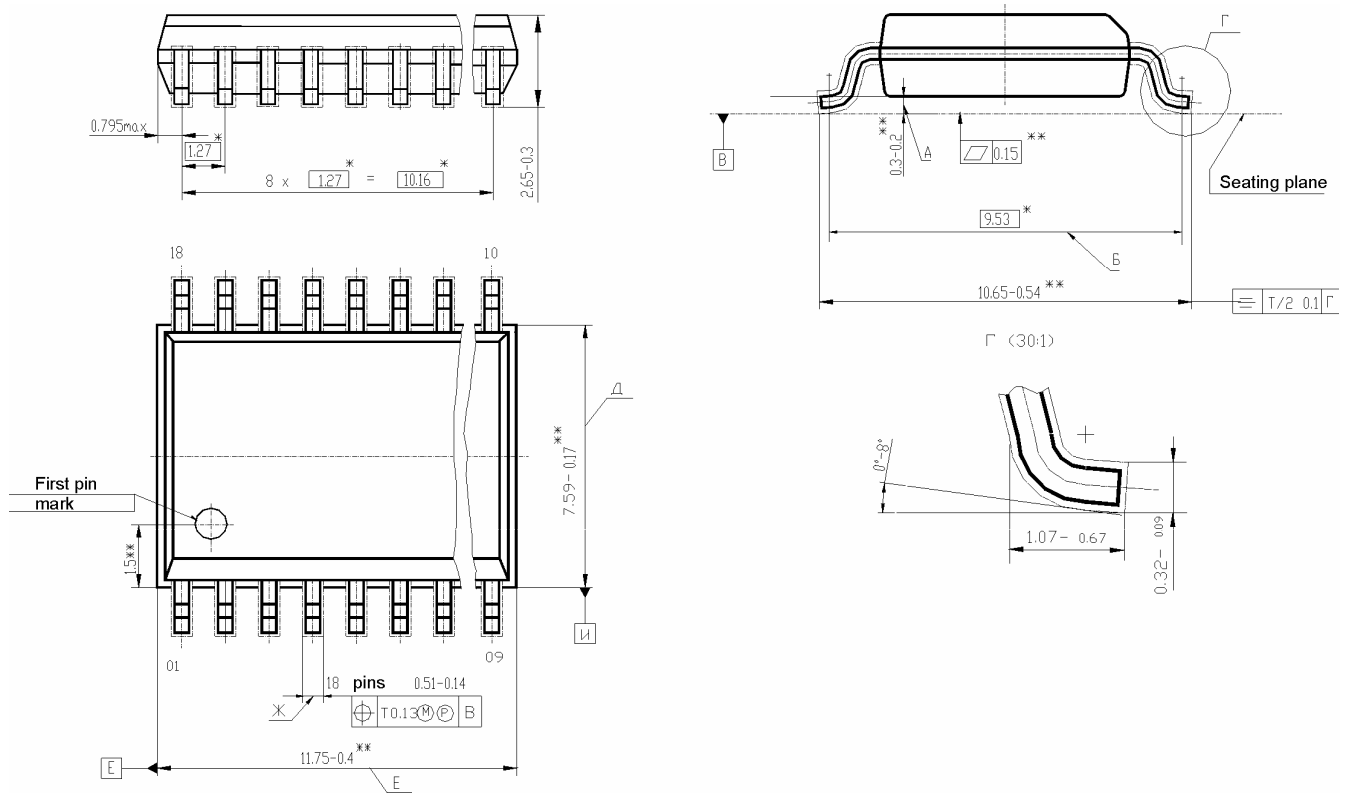


Fig. 6 - MS-013AB package outline drawing



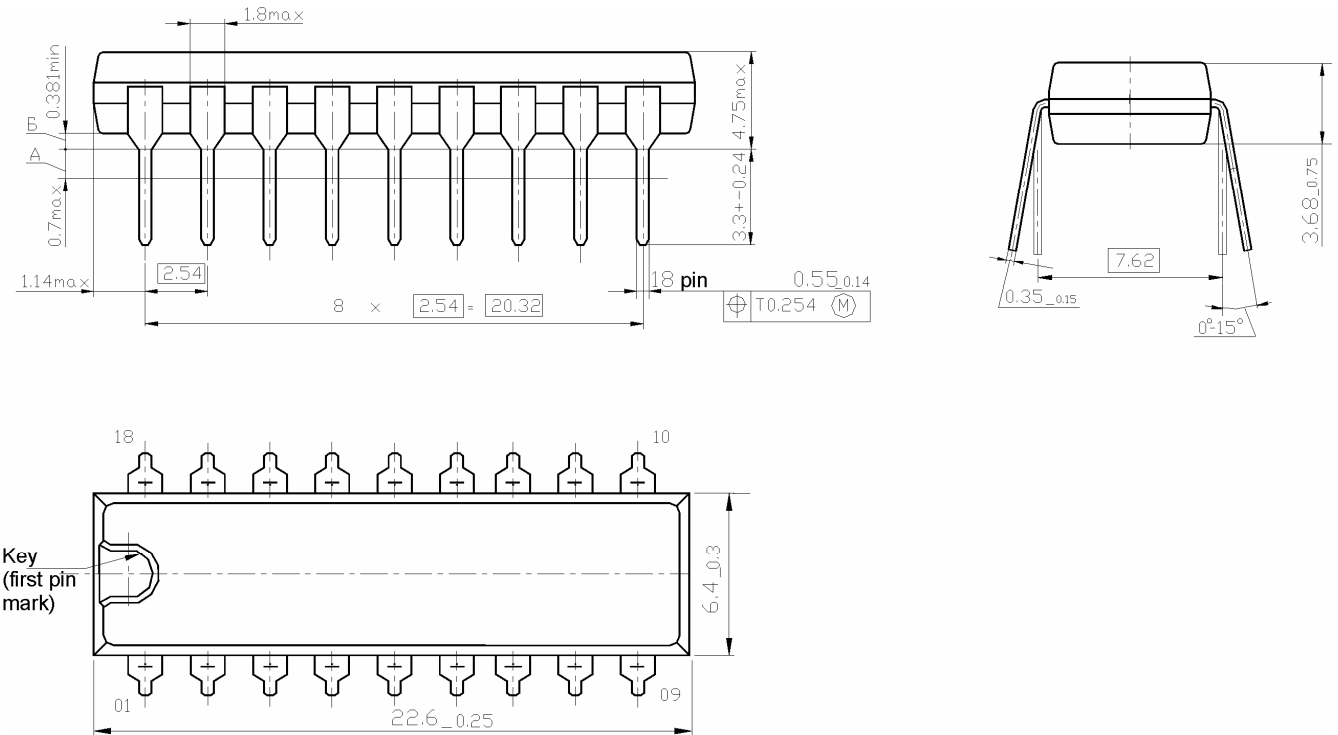
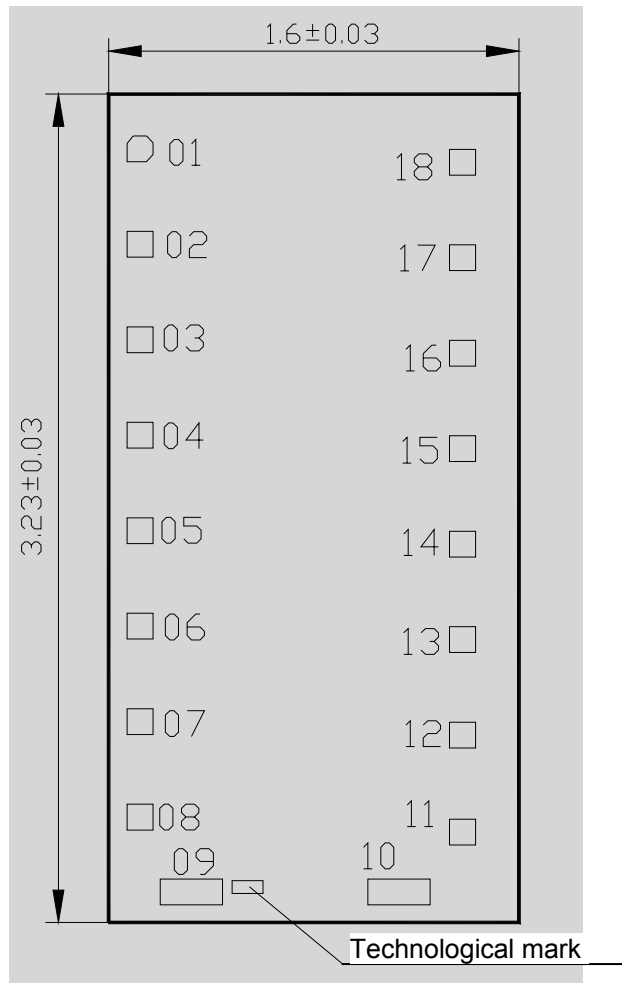


Fig 7 – MS-001AC package outline drawing



Coordinates of contact pads are indicated in table 7.

Technological mark on chip has coordinates, mm: left bottom corner  $x = 0,484$  ,  $y = 0,120$ .

Chip thickness  $0,35 \pm 0,02$  mm.

**Fig. 8 – Contact pad layout and coordinates**

**Table 7 – Coordinates of contact pads**

Contact pad number	Coordinates(left bottom corner), mm		Contact pad size, mm
	X	Y	
01	0,081	2,958	0,10 x 0,10
02	0,081	2,558	0,10 x 0,10
03	0,081	2,218	0,10 x 0,10
04	0,081	1,848	0,10 x 0,10
05	0,081	1,478	0,10 x 0,10
06	0,081	1,108	0,10 x 0,10
07	0,081	0,738	0,10 x 0,10
08	0,081	0,368	0,10 x 0,10
09	0,209	0,078	0,10 x 0,24
10	1,008	0,078	0,10 x 0,24
11	1,323	0,316	0,10 x 0,10
12	1,323	0,686	0,10 x 0,10
13	1,323	1,056	0,10 x 0,10
14	1,323	1,426	0,10 x 0,10
15	1,323	1,796	0,10 x 0,10
16	1,323	2,166	0,10 x 0,10
17	1,323	2,536	0,10 x 0,10
18	1,323	2,906	0,10 x 0,10

Note - Contact pad dimensions and coordinates are indicated under "Passivation" layer

**Table 8 - Technological mark**

IC marking	Technological mark
ILN62783D, ILN62783N	62783
ILN62784D, ILN62784N	62784

**Table 9 – Contact pad description**

Contact pad number	Symbol	Description
01	IN 1	Input
02	IN 2	Input
03	IN 3	Input
04	IN 4	Input
05	IN 5	Input
06	IN 6	Input
07	IN 7	Input
08	IN 8	Input
09	Vcc	Supply voltage pin
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11	OUT 8	Output
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15	OUT 4	Output
16	OUT 3	Output
17	OUT 2	Output
18	OUT 1	Output