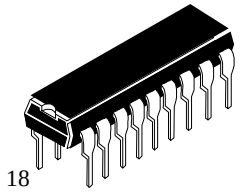
8-channel Darlington current driver

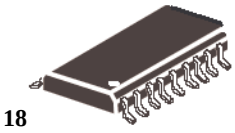
(Functional equivalent of TD62783AFN, TD62784AFN Toshiba)

The HM62783AD, HM62783AN, HM62784AD, HM62784AN are eight current drivers with common power supply and ground.

The HM62783AD, HM62783AN, HM62784AD, HM62784AN are purposed to use different devices: relays, lamps, displays (LED & gas discharge cells), in fluorescent indicators, telecommunication lines and logic devices.



MS-001AC package



MS-013AB package

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

Main features:

- The HM62783AD, HM62784AD are realized in 18-pin SO - package MS-013AB, HM62783AN, HM62784AN – in 18-pin DIP – package MS-001AC;
- High output voltage up to 50 V;
- One channel output current up to minus 500 mA;
- Output clamp diodes
- Single supply voltage 50V

Permissible value of electrostatic potential 2000V

Table 1 – Electric circuitry difference of ICs

IC marking	Quantity of serially connected diodes	Applicable with ICs
HM62783AD, HM62783AN	3	TTL, 5 V CMOS
HM62784AD, HM62784AN	6	6 ÷ 15 V P-MOS, CMOS

Table 2 – Package pins and contact pad description

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

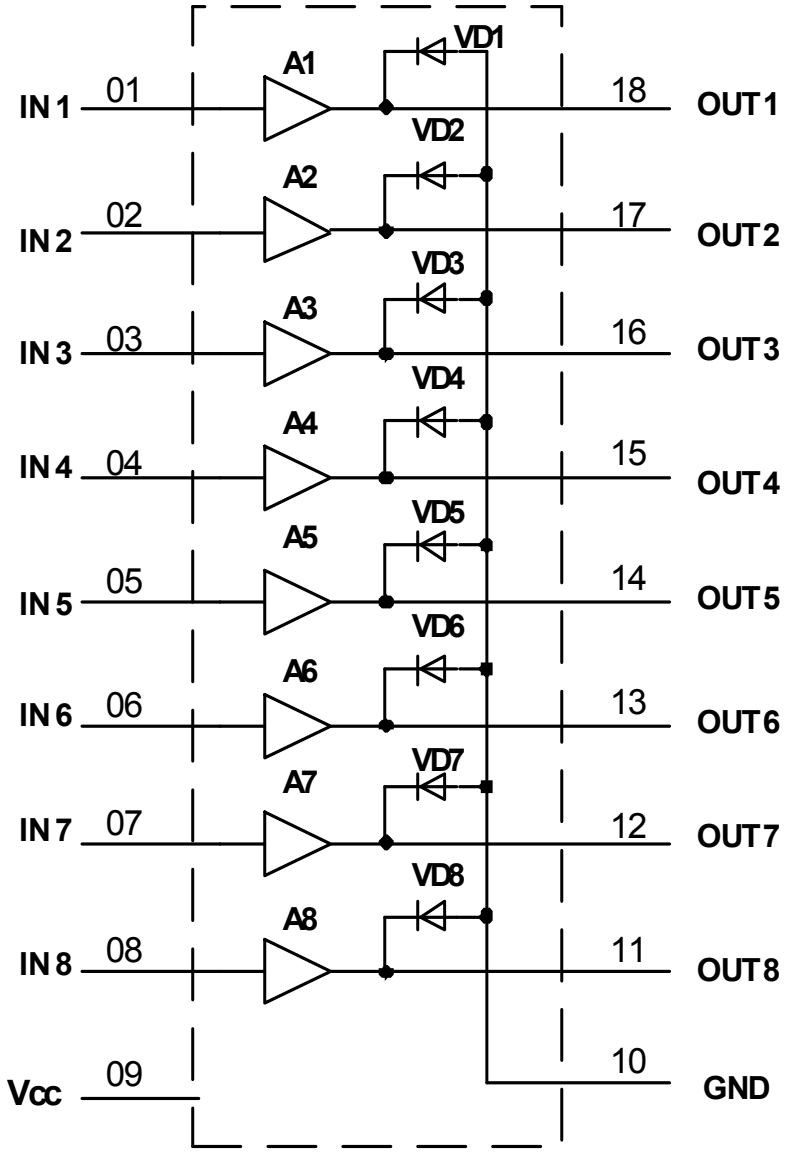


Fig 2 – Electric block diagram

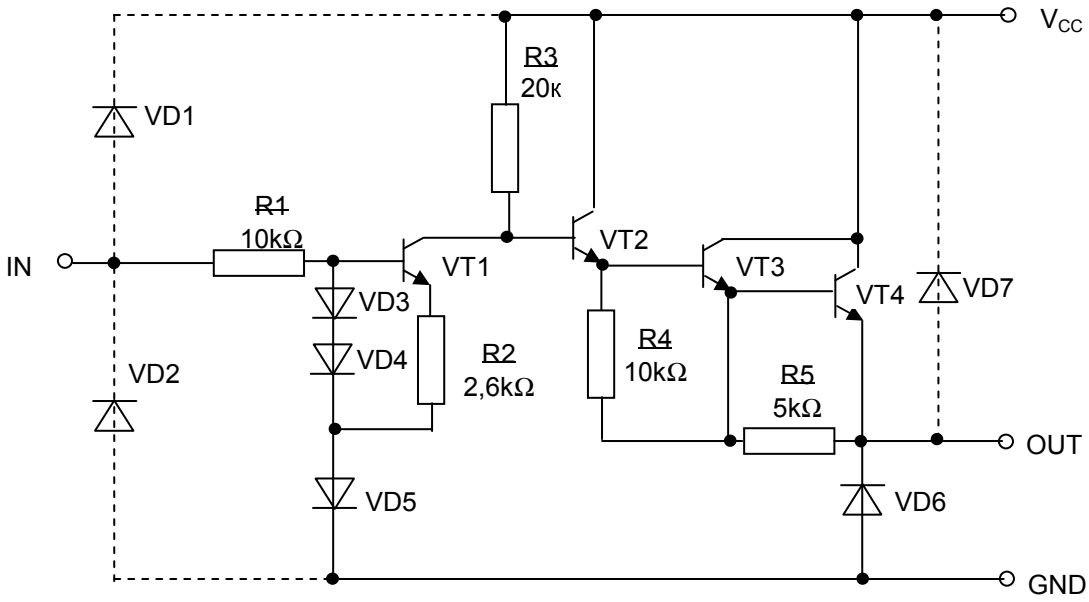


Fig. 3 – Electrical scheme of one channel of ICs HM62783AD, HM62783AN

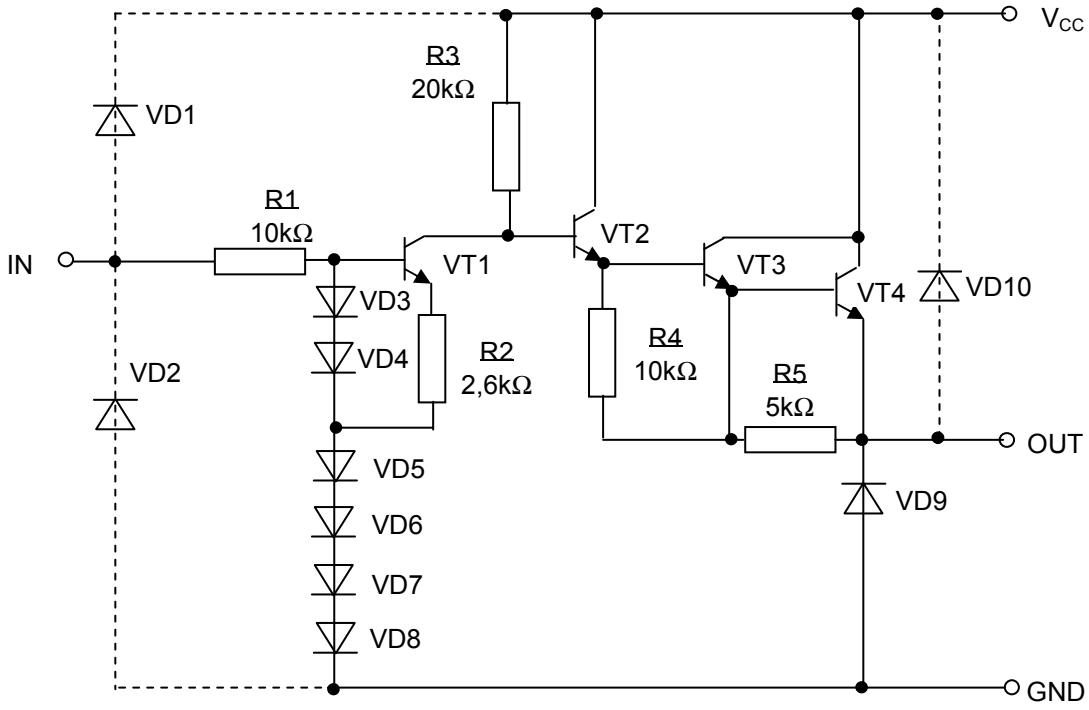


Fig. 4 – Electrical scheme of one channel of ICs HM62784AD, HM62784AN

Table 3 –Maximum ratings

Symbol	Parameter	Norm		Unit
		Min	Max	
V_{CC}	Supply voltage	-	50	V
I_{OUT}	Output current (one channel)	-	-500	mA
V_{IN}	Input voltage for HM62783AD, HM62783AN	-0,5	15	V
	for HM62784AD, HM62784AN	-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	^oC

Table 4 – Recommended operation modes

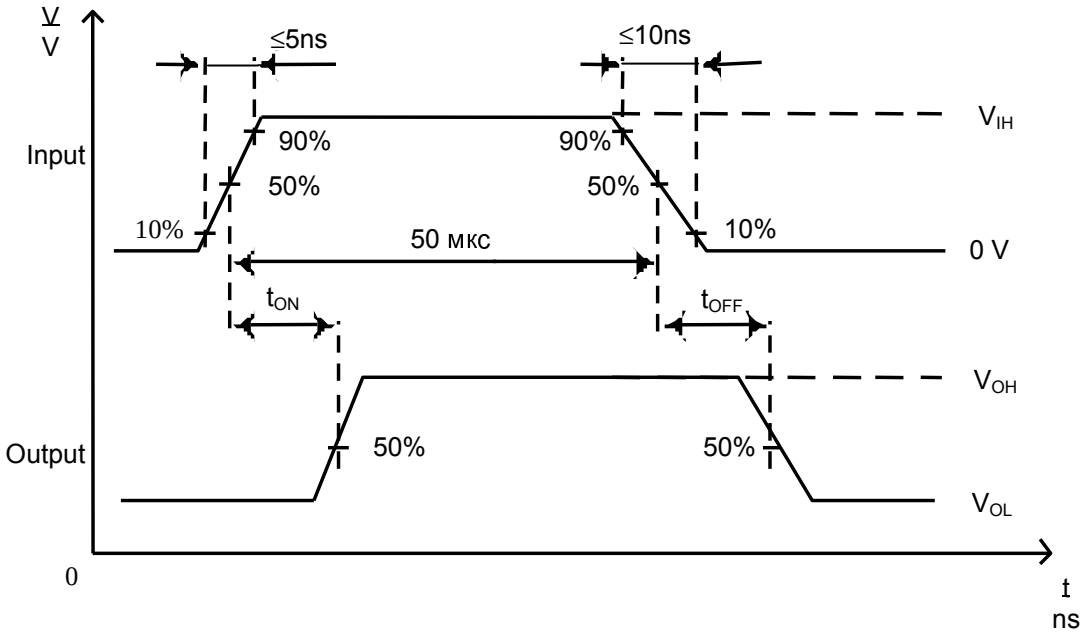
Symbol	Parameter	Norm		Unit
		Min	Max	
V_{CC}	Supply voltage	-	50	V
I_{OUT}	Output current (one channel)	-	-350	mA
V_R	Control pin diode reverse voltage	-	50	V
I_F	Control pin diode forward current	-	400	mA

Table 5 – Electric parameters of ICs

Symbol	Parameter	Measurement mode	Norm		Ambient, temperature °C	Unit
			Min	Max		
$V_{IN(ON)}$	Input voltage at open (ON) state of output, HM62783AD, HM62783AN	I_{OUT} = -350 mA V_{CE} = 2 V	-	2,0 2,4	25±10 -40 85	V
	HM62784AD, HM62784AN		-	4,5 5,4		
$V_{IN(OFF)}$	Input voltage at close (OFF) state of output, HM62783AD, HM62783AN	I_{OUT} = -500 µA	0,8 0,64	-		V
	HM62784AD, HM62784AN		2,0 1,6	-		
$Icc_{(ON)}$	Consumption current HM62783AD, HM62783AN	V_{IN} = 2 V V_{CC} = 50 V	-	2,5 3,0		mA
	HM62784AD, HM62784AN	VIN = 4,5 V V_{CC} = 50 V				
$V_{CE(sat)}$	Collector-emitter saturation voltage HM62783AD, HM62783AN	I_{OUT} = -100 mA V_{IN} = 2 V	-	1,8 2,16		V
		I_{OUT} = -225 mA V_{IN} = 2 V	-	1,9 2,28		
		I_{OUT} = -350 mA V_{IN} = 2 V	-	2,0 2,4		
	HM62784AD, HM62784AN	I_{OUT} = -100 mA V_{IN} = 4,5 V	-	1,8 2,16		
		I_{OUT} = -225 mA V_{IN} = 4,5 V	-	1,9 2,28		
		I_{OUT} = -350 mA V_{IN} = 4,5 V	-	2,0 2,4		
I_{CEX}	Output leakage current at close (OFF) state of output	V_{CC} = 50 V V_{IN} = 0,4 V	-	100	25±10	µA
V_F	Forward DC voltage of clamp diode	I_F = 350 mA	-	2,0 2,4	25±10 -40 85	V
$I_{IN(ON)}$	Input current HM62783AD, HM62783AN	V_{IN} = 2,4 V	-	0,052 0,062		mA
		V_{IN} = 3,85 V	-	0,26 0,31		
	HM62784AD, HM62784AN	VIN = 5 V	-	0,13 0,156		
		V_{IN} = 12 V	-	1,13 1,356		
I_R	Reverse current of clamp diode	V_R = 50 V	-	50 60		µA

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

Symbol	Parameter	Measurement mode	Typical value	Unit
t_{ON}	Switch -ON delay	R_L = 125 Ω, V_{CC} = 50 V	0,15	µs
t_{OFF}	Switch-OFF delay	C_L = 15 pF	3,0	µs



Pulse width 50 µs, ratio (duty cycle) 100% • t_W / T = 10% (t_W – pulse width, µs; T – period , µs)

Fig. 5 – Time diagram of HM62783AD, HM62784AD, HM62783AN, HM62784AN at measurement of signal delay at switching -ON t_{ON} and switching -OFF t_{OFF}

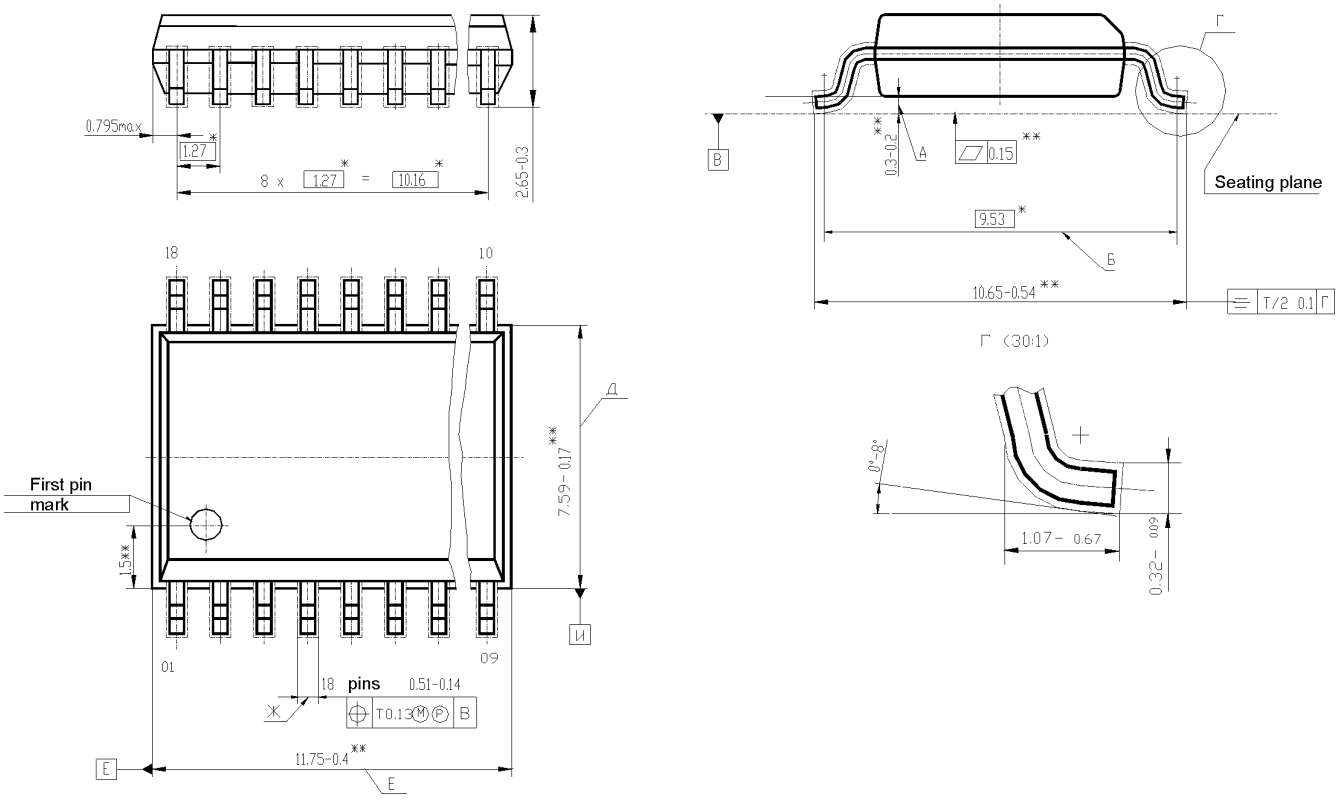


Fig. 6 MS-013AB package outline drawing

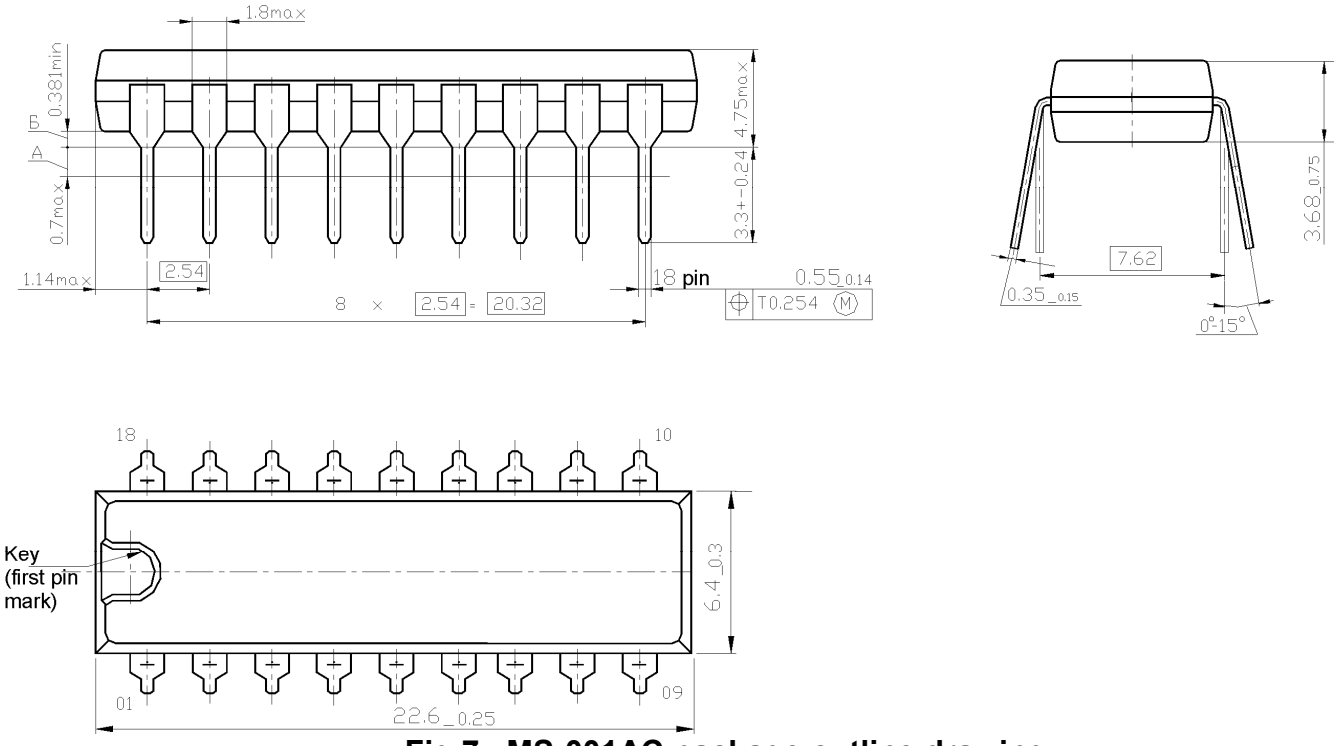


Fig 7 –MS-001AC package outline drawing