8 channel Darlington current driver

The HT62783A, HT62784A are 8- channel current driver with common supply and ground.

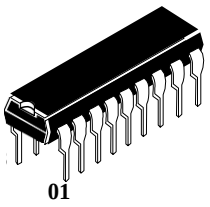
The HT62783A, HT62784A are purposed in different devices: re- lays, lamps, displays (LED & gas discharge cells), telecommunication lines and logic devices.

Main features:

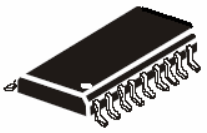
- The HT62783AR, HT62784AR are realized in 18-pin SOP18
- HT62783AN,HT62784AN – in 18-pin DIP18

- output sustaining voltage up to 50 V;
- one channel output current up to 500 mA;
- output clamp diodes;
- single supply voltage of drivers.

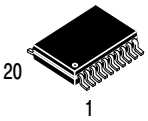
Allowable value of electrostatic potential 2000V



N SUFFIX
DIP18



W SUFFIX
WSOP18



T SUFFIX
TSSOP20

T_A= from -40 to 85 °C

Table 1 – Electric circuitry difference of ICs

IC marking	Number of serially connected diodes	Applicable with ICs
HT62783A	3	TTL, 5 V CMOS
HT62784A	6	6 ÷ 15 V P-MOS, CMOS

Schematics (each driver)

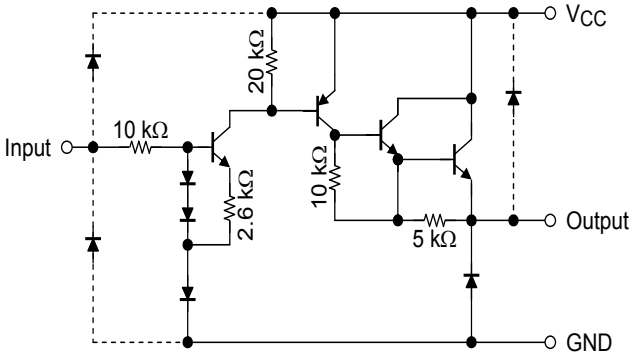
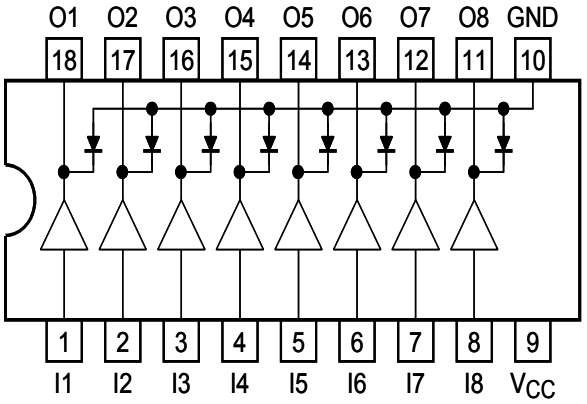
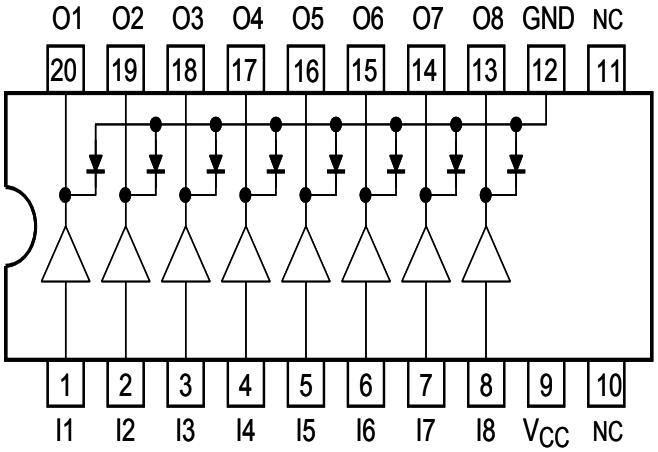


Table 2 -Pin Assignment (top view)

(WSOP18,DIP18)



(TSSOP20,SSOP20)



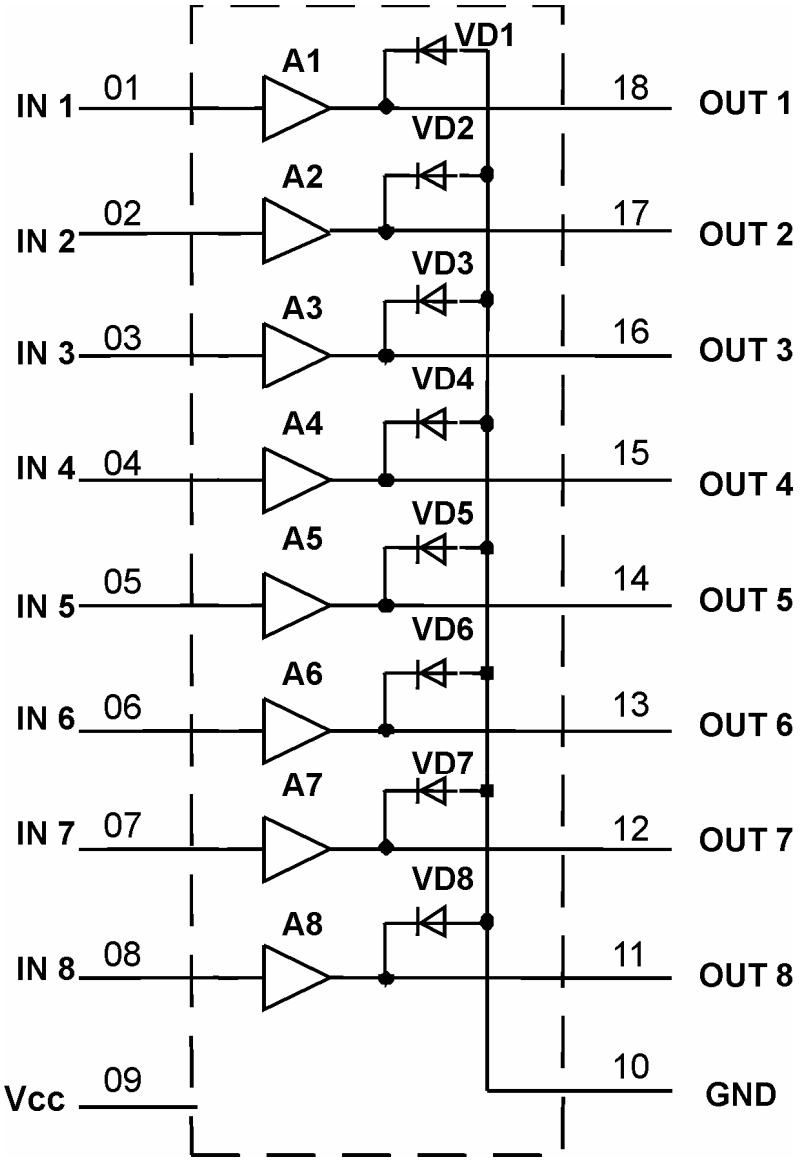


Fig 2 – Electric block diagram

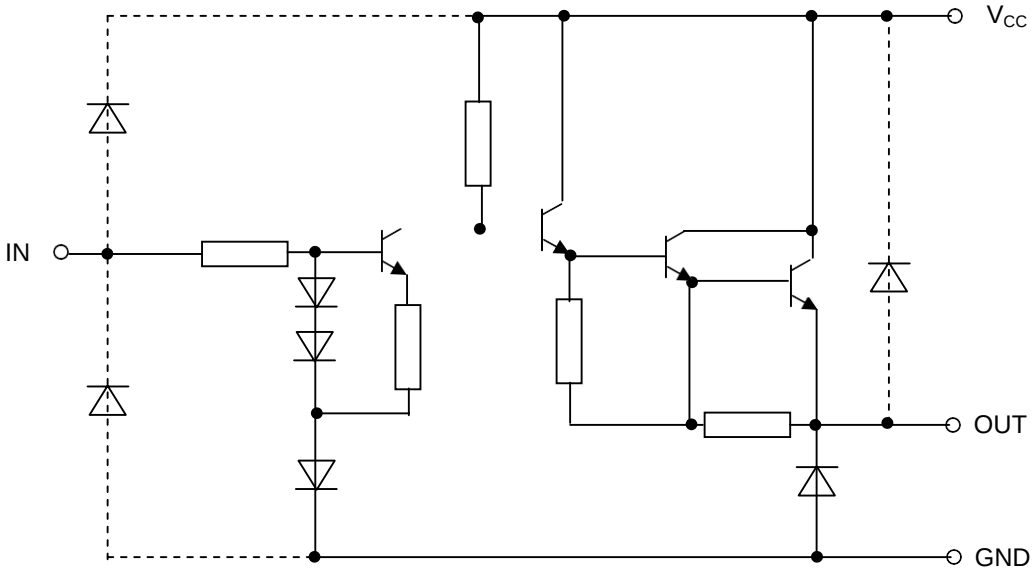


Fig. 3 – Electrical scheme of one channel of HT62783A

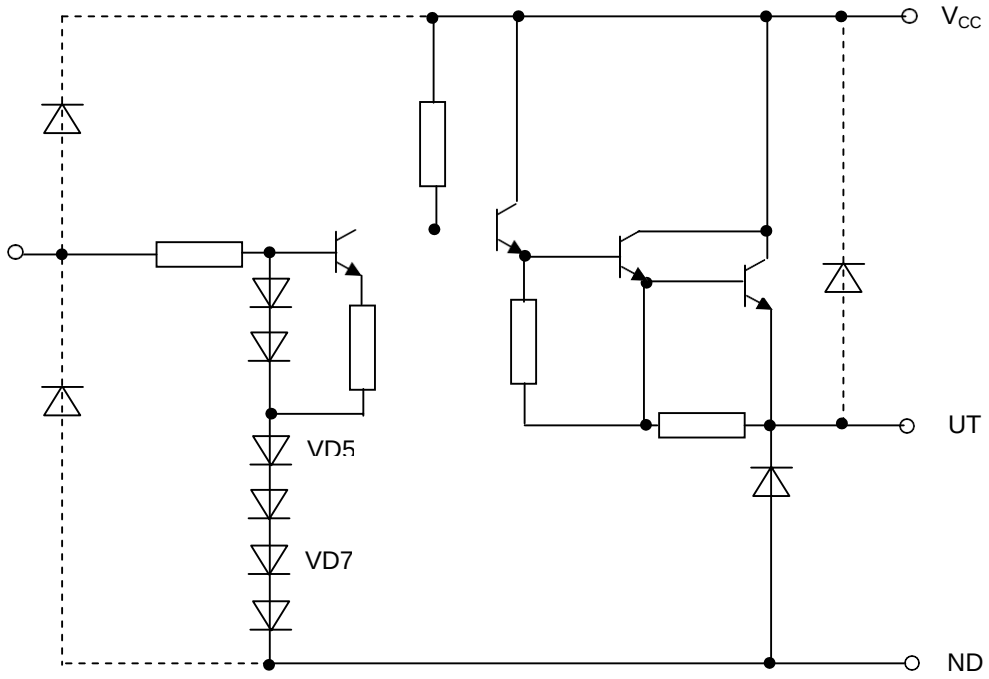


Fig. 4 – Electrical scheme of one channel of HT62784A

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 HT62783	-0,5	15	V
	HT62784	-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

*On PCB with dimensions 50 × 50 × 1,6 mm, 40% Cu.
** Of HT62783, HT62784

Table 4 – Recommended operation modes

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

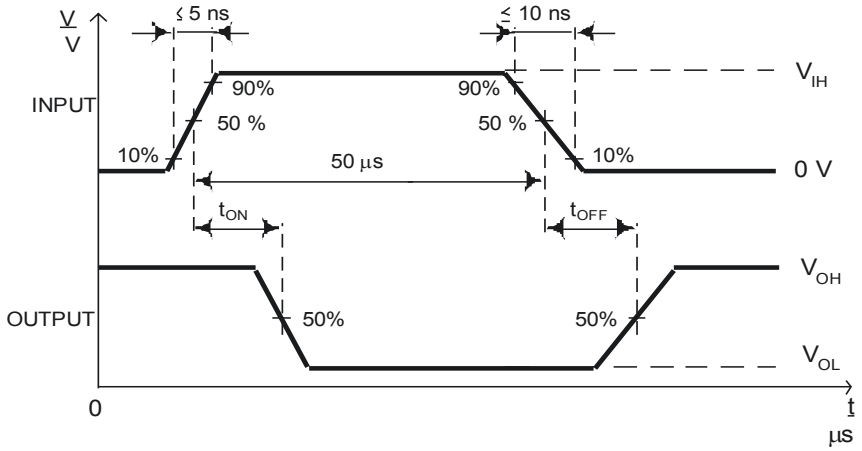
*On PCB with dimensions 50 × 50 × 1,6 mm, 40% Cu.
** Of HT62783, HT62784

Table 5 – Electric parameters of ICs

Symbol	Parameter	Measurement mode	Norm		Ambient, temperature °C	Unit
			Min	Max		
$V_{IN(ON)}$	Input voltage HT62783A	V_{CE} = 2 V V_{CE} = 2,4 V I_{OUT} = 350 mA	- -	2,0 2,4	25±10 -40 85	V
	HT62784A		-	4,5 5,4		
$V_{IN(OFF)}$	Input voltage HT62783A	I_{OUT} = 500 µA	0,8 0,64	-		
	HT62784A		2,0 1,6	-		
$I_{CC(ON)}$	Supply current HT62783A	V_{IN} = 2 V V_{CC} = 50 V	-	2,5 3,0	25±10 -40 85	mA
	HT62784A	V_{IN} = 4,5 V V_{CC} = 50 V				
$V_{CE(sat)}$	Output saturation voltage HT62783A	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		
	HT62784A	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	V_{CC} = 50 V V_{IN} = 0,4 V	-	100	25±10	µA
V_F	Clamp diode forward voltage	I_F = 350 mA	-	2,0 2,4	25±10 -40 85	V
		I_F = 400 mA	-	3,0 3,6		
$I_{IN((ON)}$	Input current HT62783A	V_{IN} = 2,4 V	-	0,052 0,062		mA
		V_{IN} = 3,85 V		0,26 0,31		
	HT62784A	V_{IN} = 5 V	-	0,13 0,156		
		V_{IN} = 12 V	-	1,13 1,356		
I_R	Clamp diode reverse current	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}	Turn -ON delay	R_L = 125 Ω, V_{OUT} = 50 V	0,15	μs
t_{OFF}	Turn-OFF delay	C_L = 15 pF	3,0	μs



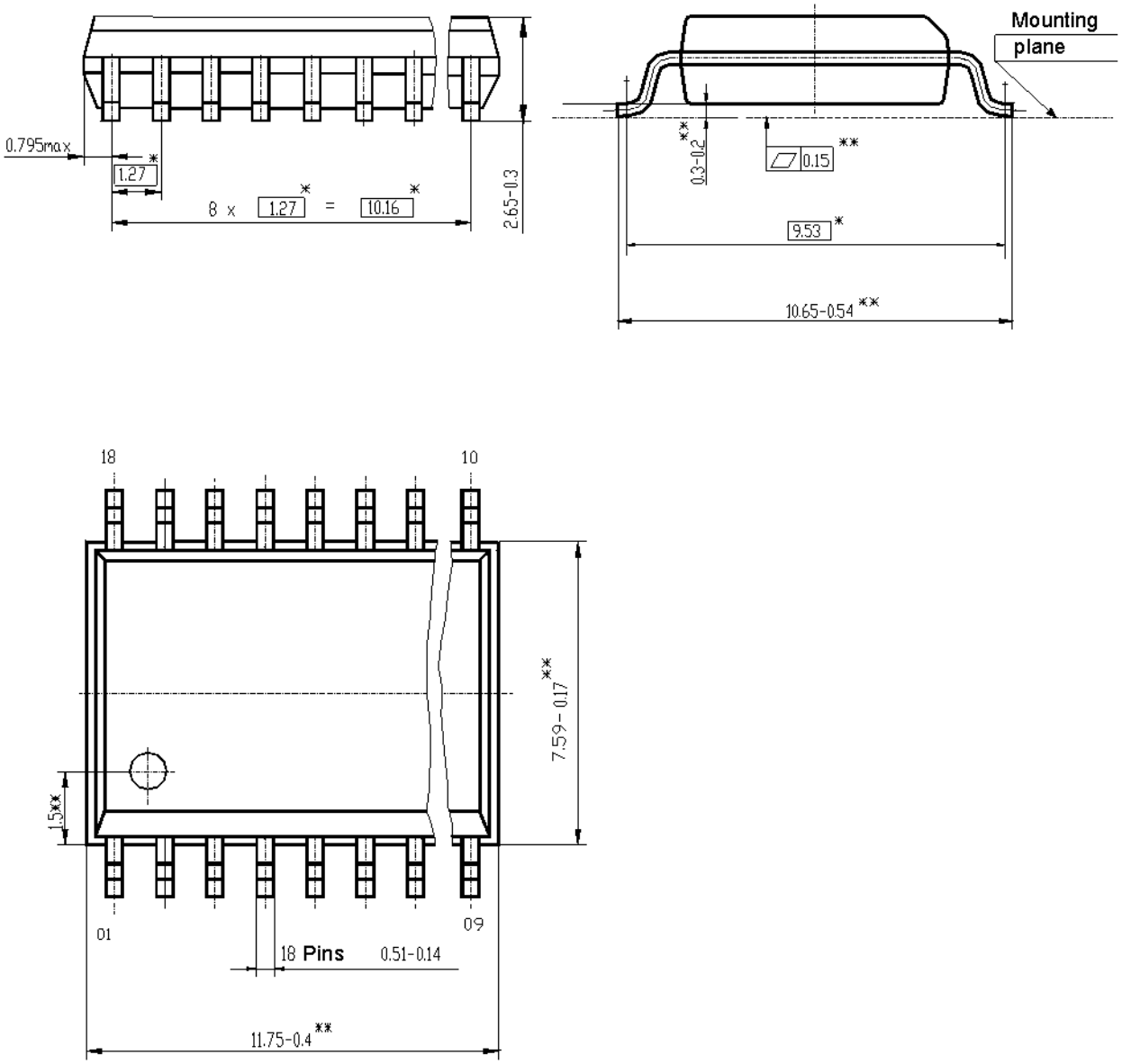
Note

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

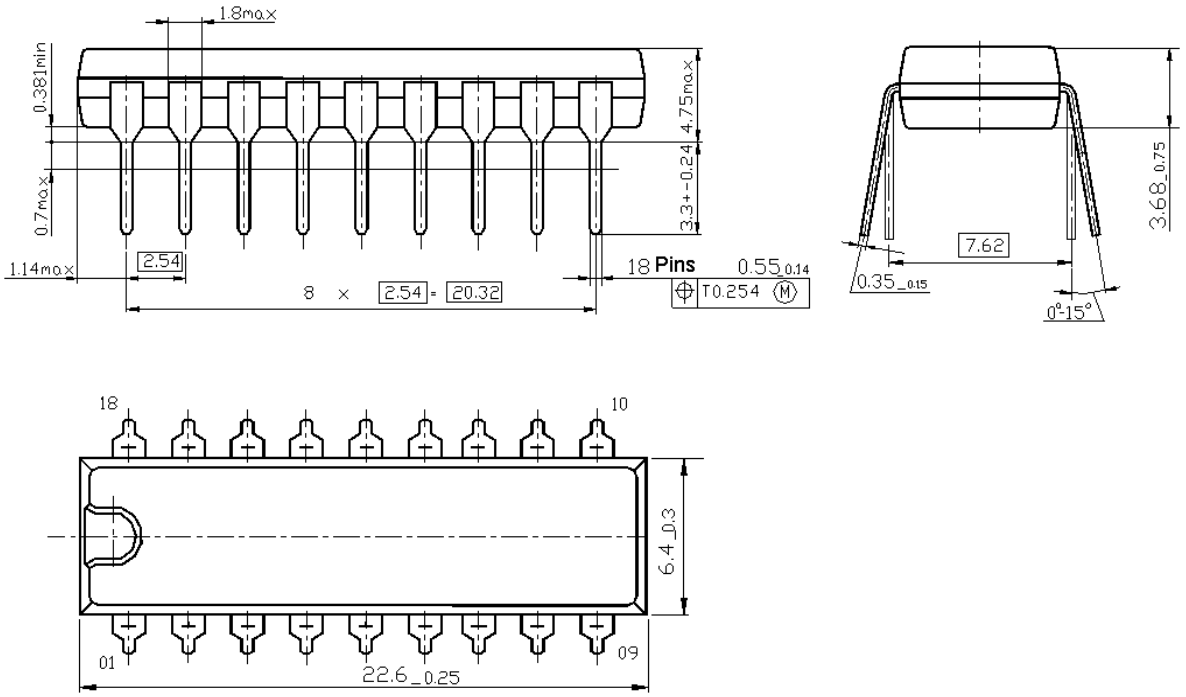
Fig. 5 – Time diagram of HT62783AR, HT62784AR, HT62783AN, HT62784AN at measurement of signal delay at turn -ON t_{ON} and turn-OFF switching t_{OFF}

Package dimensions

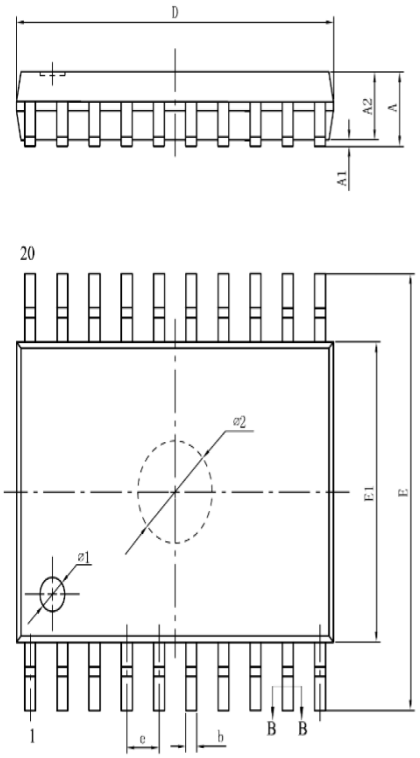
WSOP18

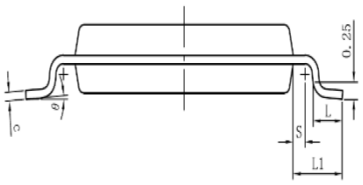


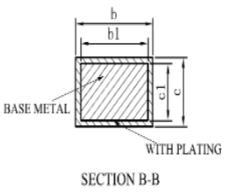
DIP18


1.8max
0.381min
0.7max
1.14max
2.54
8 × 2.54 = 20.32
3.3+-0.24
4.75max
18 Pins
0.55 0.14
T0.254 M
7.62
0.35 0.15
3.68 0.75
0°-15°
18
10
01
09
6.4 0.3
22.6 0.25

TSSOP20







SECTION B-B

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.80	1.00	1.05
b	0.19	—	0.30
b1	0.19	0.22	0.25
c	0.09	—	0.20
c1	0.09	—	0.16
D	6.40	6.50	6.60
E1	4.30	4.40	4.50
E	6.20	6.40	6.60
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00BSC		
S	0.20	—	—
Ø1	Ø0.8X0.05~0.10DP		
Ø2	Ø1.50X0.05~0.15DP		
θ	0	—	8°
L/F载体尺寸 (mil)	118*165(C)		