

8CH DARLINGTON SINK DRIVER

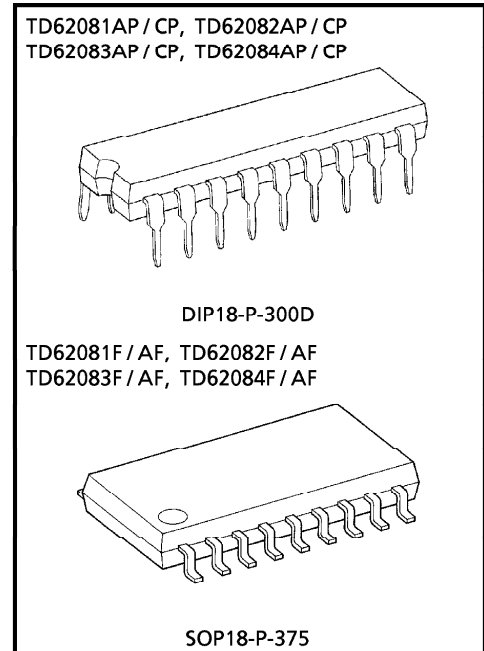
The TD62081AP/CP/F/AF Series are high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.

All units feature integral clamp diodes for switching inductive loads.

Applications include relay, hammer, lamp and display (LED) drivers.

FEATURES

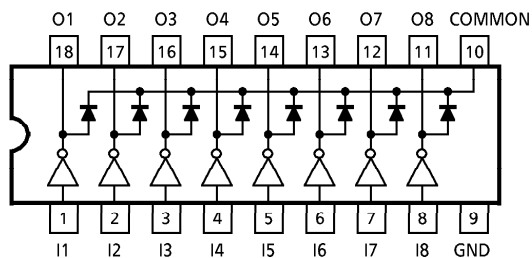
- Output current (single output)
500mA (Max.) (TD62081AP/F/AF series)
400mA (Max.) (TD62081CP series)
- High sustaining voltage output
35V (Min.) (TD62081F series)
50V (Min.) (TD62081AP/AF series)
100V (Min.) (TD62081CP series)
- Output clamp diodes
- Inputs compatible with various types of logic.
- Package type-AP, CP : DIP-18pin
- Package type-F, AF : SOP-18pin



Weight DIP18-P-300D : 1.478g (Typ.)
SOP18-P-375 : 0.41g (Typ.)

TYPE	INPUT BASE RESISTOR	DESIGNATION
TD62081AP/CP/F/AF	External	General Purpose
TD62082AP/CP/F/AF	10.5-k Ω + 7V Zenner diode	14~25V PMOS
TD62083AP/CP/F/AF	2.7k Ω	TTL, 5V CMOS
TD62084AP/CP/F/AF	10.5k Ω	6~15V PMOS, CMOS

PIN CONNECTION (TOP VIEW)



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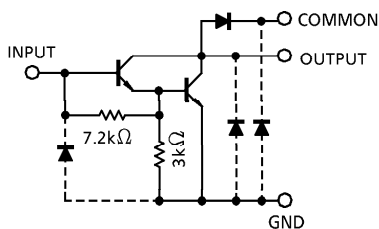
TD62081AP - 1

1995 - 5 - 29

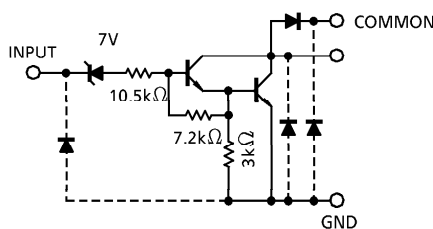
TOSHIBA CORPORATION

SCHEMATICS (EACH DRIVER)

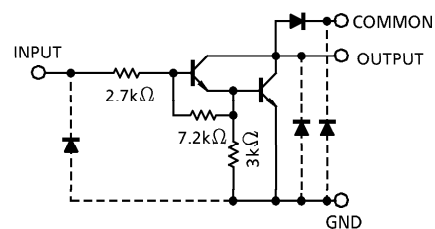
TD62081AP/CP/F/AF



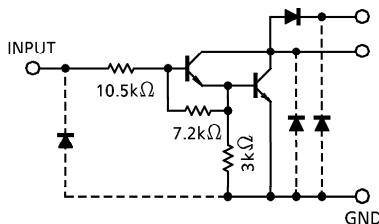
TD62082AP/CP/F/AF



TD62083AP/CP/F/AF



TD62084AP/CP/F/AF



(Note) The input and output parasitic diodes cannot be used as clamp diodes.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage	AP, AF	V _{CE (SUS)}	- 0.5~50	V
	CP		- 0.5~100	
	F		- 0.5~35	
Output Current	CP	I _{OUT}	500	mA / ch
			400	
Input Voltage		V _{IN (Note 1)}	- 0.5~30	V
Input Current		I _{IN (Note 2)}	25	mA
Clamp Diode Reverse Voltage	AP, AF	V _R	50	V
	CP		100	
	F		35	
Clamp Diode Forward Current	CP	I _F	500	mA
			400	
Power Dissipation	AP, CP	P _D	1.47	W
	F, AF		0.96	
Operating Temperature		T _{opr}	- 40~85	°C
Storage Temperature		T _{stg}	- 55~150	°C

(Note 1) Except TD62081AP/CP/F/AF

(Note 2) Only TD62081AP/CP/F/AF

RECOMMENDED OPERATING CONDITIONS ($T_a = -40 \sim 85^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage	AP, AF	$V_{CE(SUS)}$		0	—	50	V
	CP			0	—	100	
	F			0	—	35	
Output Current	AP, CP	I_{OUT}	$T_{pw} = 25\text{ms}$, Duty = 10%, 8 Circuits	0	—	347	mA / ch
			$T_{pw} = 25\text{ms}$, Duty = 50%, 8 Circuits	0	—	123	
	F, AF		$T_{pw} = 25\text{ms}$, Duty = 10%, 8 Circuits	0	—	268	
			$T_{pw} = 25\text{ms}$, Duty = 50%, 8 Circuits	0	—	90	
Input Voltage	Except TD62081AP/ CP/F/AF	V_{IN}		0	—	30	V
Input Voltage (Output On)	TD62082AP/ CP/F/AF	$V_{IN(ON)}$		14	—	30	V
	TD62083AP/ CP/F/AF			3.5	—	30	
	TD62084AP/ CP/F/AF			8	—	30	
Input Current	Only TD62081AP/ CP/F/AF	I_{IN}		0	—	5	mA
Clamp Diode Reverse Voltage	AP, AF	V_R		—	—	50	V
	CP			—	—	100	
	F			—	—	35	
Clamp Diode Forward Current		I_F		—	—	400	mA
	CP			—	—	320	
Power Dissipation	AP, CP	P_D		—	—	0.52	W
	F, AF			—	—	0.4	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

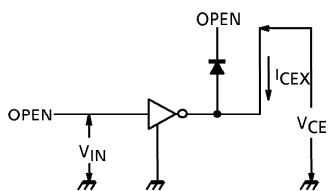
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Leakage Current	AP, AF CP F	I _{CEX}	1	V _{CE} = 50V	Ta = 25°C	—	—	50	
				V _{CE} = 100V					
				V _{CE} = 35V					
	AP, AF CP F			TD62082	V _{CE} = 50V	Ta = 85°C	—	—	100
					V _{CE} = 100V				
					V _{CE} = 35V				
	AP, AF CP F			TD62084	V _{CE} = 50V	V _{IN} = 6V	—	—	500
					V _{CE} = 100V				
					V _{CE} = 35V				
	AP, AF CP F			TD62084	V _{CE} = 50V	V _{IN} = 1V	—	—	500
					V _{CE} = 100V				
					V _{CE} = 35V				
Collector-Emitter Saturation Voltage		V _{CE} (sat)	2	I _{OUT} = 350mA, I _{IN} = 500μA	—	1.3	1.6	V	
				I _{OUT} = 200mA, I _{IN} = 350μA	—	1.1	1.3		
				I _{OUT} = 100mA, I _{IN} = 250μA	—	0.9	1.1		
Input Current	TD62082AP / CP / F / AF	I _{IN} (ON)	2	V _{IN} = 17V	—	0.82	1.25	mA	
	TD62083AP / CP / F / AF			V _{IN} = 3.85V	—	0.93	1.35		
	TD62084AP / CP / F / AF			V _{IN} = 5V	—	0.35	0.5		
				V _{IN} = 12V	—	1.0	1.45		
		I _{IN} (OFF)	4	I _{OUT} = 500μA, Ta = 85°C	50	65	—	μA	
Input Voltage (Output On)	TD62082AP / CP / F / AF	V _{IN} (ON)	5	V _{CE} = 2V, I _{OUT} = 300mA	—	—	13	V	
	TD62083AP / CP / F / AF			V _{CE} = 2V, I _{OUT} = 200mA	—	—	2.4		
				V _{CE} = 2V, I _{OUT} = 250mA	—	—	2.7		
	TD62084AP / CP / F / AF			V _{CE} = 2V, I _{OUT} = 300mA	—	—	3.0		
				V _{CE} = 2V, I _{OUT} = 125mA	—	—	5.0		
				V _{CE} = 2V, I _{OUT} = 200mA	—	—	6.0		
				V _{CE} = 2V, I _{OUT} = 275mA	—	—	7.0		
				V _{CE} = 2V, I _{OUT} = 350mA	—	—	8.0		
DC Current Transfer Ratio		h _{FE}	2	V _{CE} = 2V, I _{OUT} = 350mA	1000	—	—		
Clamp Diode Reverse Current		I _R	6	Ta = 25°C (Note)	—	—	50	μA	
				Ta = 85°C (Note)	—	—	100		
Clamp Diode Forward Voltage	CP	V _F	7	I _F = 350mA	—	—	2.0	V	
				I _F = 280mA	—	—	1.8		
Input Capacitance		C _{IN}	—		—	15	—	pF	

(Note) V_R = V_R MAX.

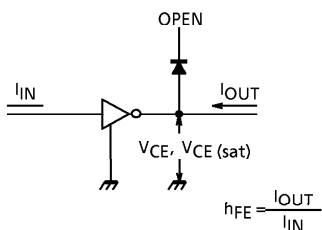
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-On Delay	AP, AF	t_{ON}	8	$R_L = 125\Omega, V_{OUT} = 50V$	—	0.1	—	μs
	CP			$R_L = 312\Omega, V_{OUT} = 100V$	—	0.1	—	
	F			$R_L = 87.5\Omega, V_{OUT} = 35V$	—	0.1	—	
Turn-Off Delay	AP, AF	t_{OFF}		$R_L = 125\Omega, V_{OUT} = 50V$	—	0.2	—	
	CP			$R_L = 312\Omega, V_{OUT} = 100V$	—	3.0	—	
	F			$R_L = 87.5\Omega, V_{OUT} = 35V$	—	0.2	—	

TEST CIRCUIT

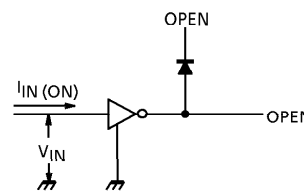
1. I_{CEX}



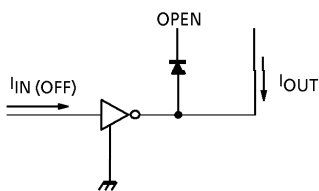
2. $V_{CE(sat)}, h_{FE}$



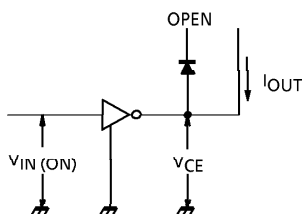
3. $I_{IN(ON)}$



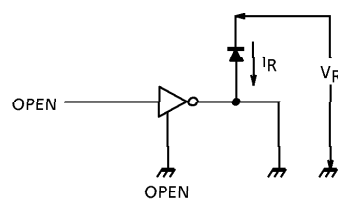
4. $I_{IN(OFF)}$



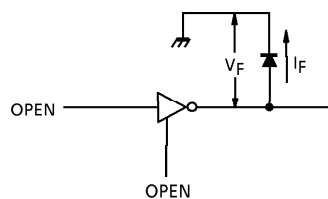
5. $V_{IN(ON)}$



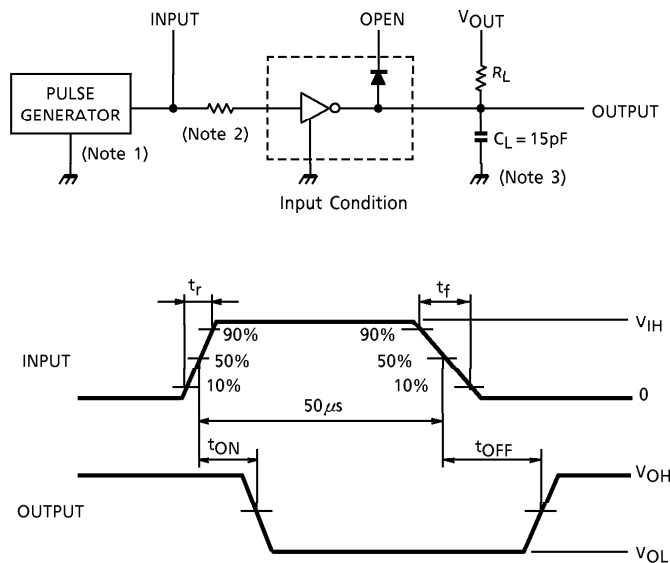
6. I_R



7. V_F



8. t_{ON} , t_{OFF}

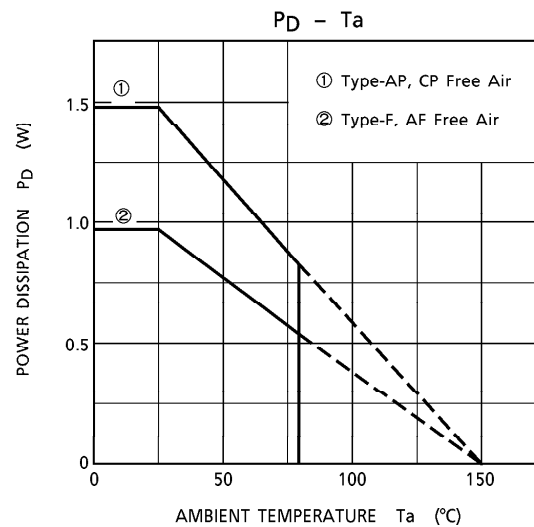
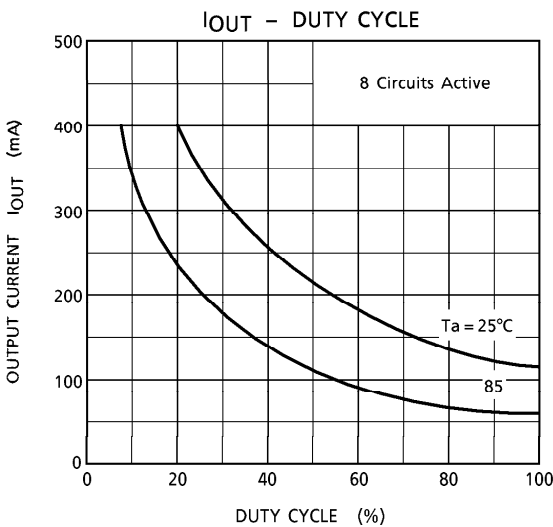
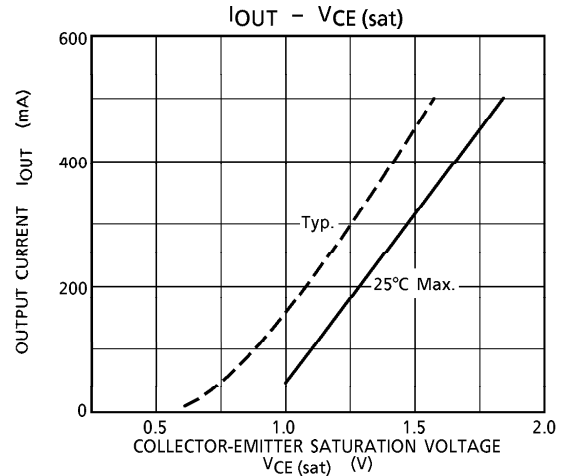
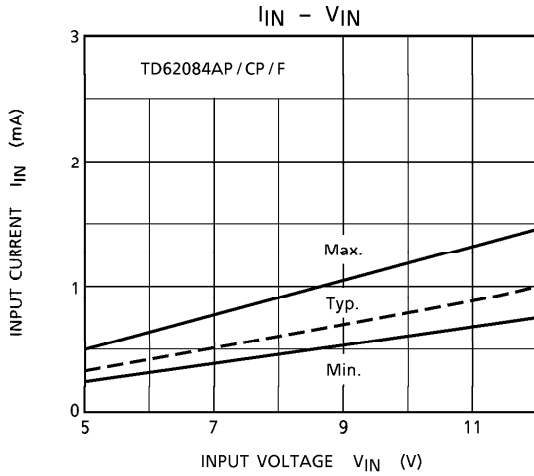
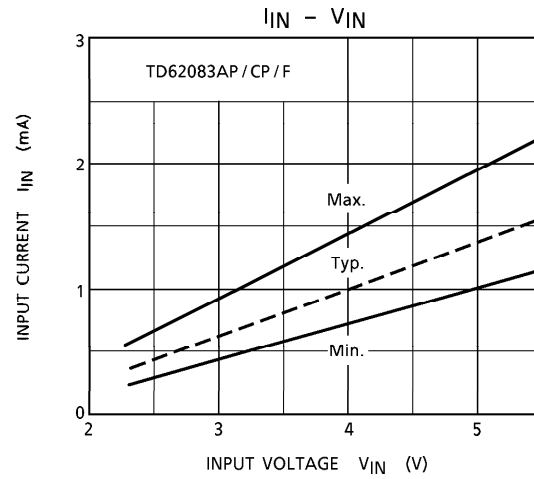
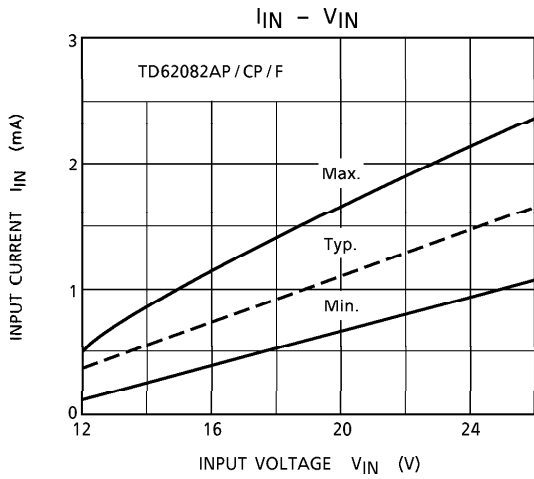


- (Note 1) Pulse Width $50\mu s$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5ns$, $t_f \leq 10ns$
(Note 2) See below.

INPUT CONDITION

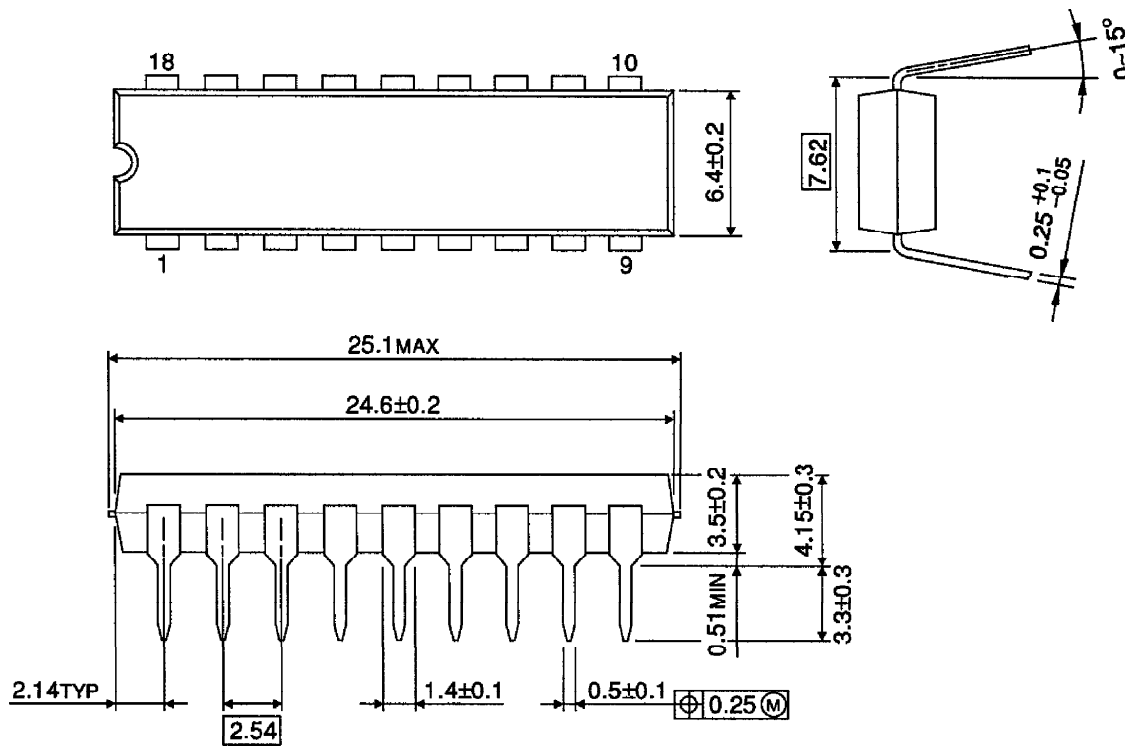
TYPE NUMBER	R1	V_{IH}
TD62081AP/CP/F/AF	$2.7k\Omega$	3V
TD62082AP/CP/F/AF	0Ω	13V
TD62083AP/CP/F/AF	0Ω	3V
TD62084AP/CP/F/AF	0Ω	8V

- (Note 3) C_L includes probe and jig capacitance



OUTLINE DRAWING
DIP18-P-300D

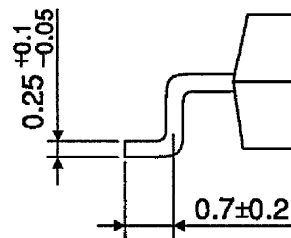
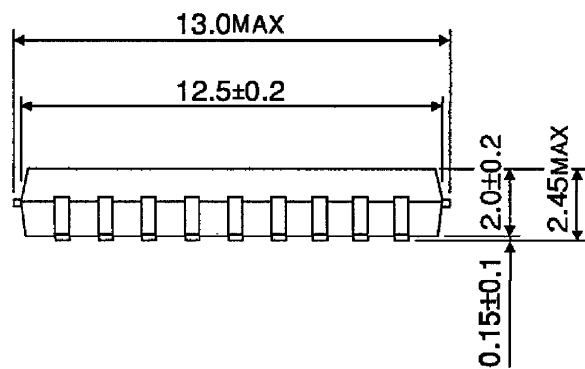
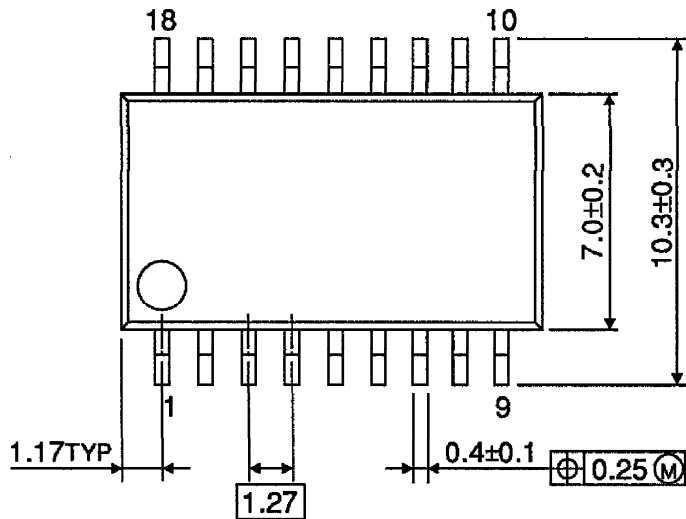
Unit : mm



Weight : 1.478g (Typ.)

OUTLINE DRAWING
SOP18-P-375

Unit : mm



Weight : 0.41g (Typ.)