

TOSHIBA Bipolar Digital Integrated Circuit Silicon Monolithic

TD62318BPG, TD62318BFG

4ch Low Input Active High-Current Darlington Sink Driver

The TD62318BPG and TD62318BFG are non-inverting transistor array which are comprised of four NPN darlington output stages and PNP input stages.

This device is low level input active driver and are suitable for operation with TTL, 5 V CMOS and 5 V Microprocessor which have sink current output drivers.

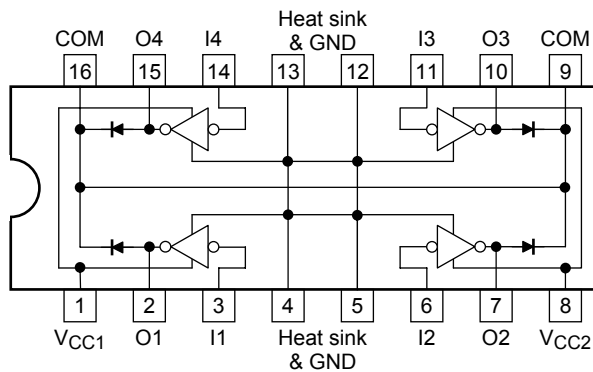
Applications include relay, hammer, lamp and stepping motor drivers.

Features

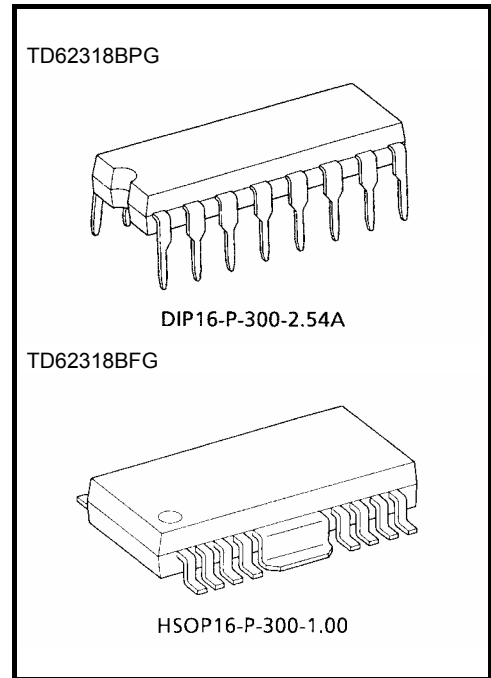
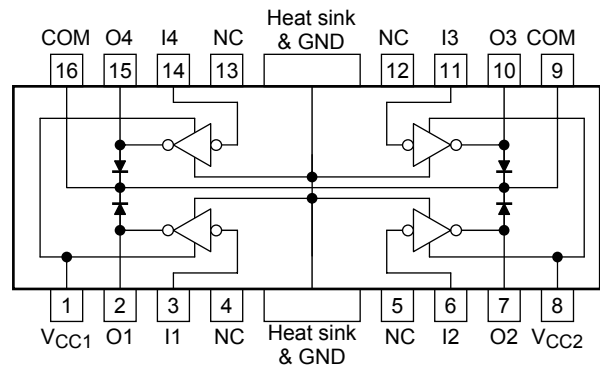
- Two VCC terminals VCC1, VCC2 (Separated)
- Package type BPG : DIP-16 pin
BFG : HSOP-16 pin
- High sustaining voltage output : $V_{CE(SUS)} = 80\text{ V (min)}$
- Output current (Single output) : $I_{OUT} = 700\text{ mA/ch (max)}$
- Output clamp diodes
- Input compatible with TTL and 5 V CMOS
- GND and SUB terminal = Heat sink
- Low level active input
- Standard supply voltage

Pin Connection (top view)

TD62318BPG



AD62318BFG

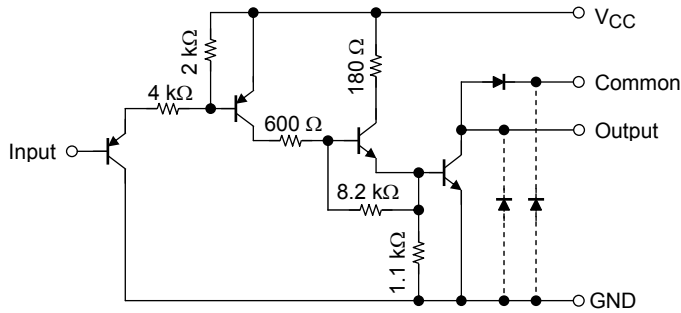


Weight

DIP16-P-300-2.54A : 1.11 g (typ.)

HSOP16-P-300-1.00 : 0.50 g (typ.)

Schematics (each driver)



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

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit	
Supply voltage	V _{CC}	-0.5 to 17	V	
Output sustaining voltage	V _{CE (SUS)}	-0.5 to 80	V	
Output current	I _{OUT}	700	mA/ch	
Input current	I _{IN}	-10	mA	
Input voltage	V _{IN}	-0.5 to 17	V	
Clamp diode reverse voltage	V _R	80	V	
Clamp diode forward current	I _F	700	mA	
Power dissipation	BPG	P _D	1.47/2.7 (Note 1)	W
	BFG		0.9/1.4 (Note 2)	
Operating temperature	T _{opr}	-40 to 85	°C	
Storage temperature	T _{stg}	-55 to 150	°C	

Note 1: On glass epoxy PCB (50 × 50 × 1.6 mm Cu 50%)

Note 2: On glass epoxy PCB (60 × 60 × 1.6 mm Cu 30%)

Recommended Operating Conditions (Ta = -40 to 85°C)

Characteristics	Symbol	Condition	Min	Typ.	Max	Unit	
Supply voltage	V _{CC}	—	4.5	—	5.5	V	
Output Sustaining voltage	V _{CE (SUS)}	—	0	—	80	V	
Output current	I _{OUT}	DC 1 circuit, Ta = 25°C	0	—	570	mA/ch	
		T _{pw} = 25 ms 4 circuits	Duty = 10%	0	—		570
			Duty = 50%	0	—		330
		Ta = 85°C T _j = 120°C	Duty = 10%	0	—		570
Duty = 50%	0		—	100			
Input voltage	V _{IN}	—	0	—	15	V	
	Output on	V _{IN (ON)}	0	—	V _{CC} - 3.6	V	
	Output off	V _{IN (OFF)}	V _{CC} - 1.6	—	15.0		
Clamp diode reverse voltage	V _R	—	—	—	80	V	
Clamp diode forward current	I _F	—	—	—	570	mA	
Power dissipation	BPG	P _D	Ta = 85°C (Note 1)	—	—	1.4	W
	BFG		Ta = 85°C (Note 2)	—	—	0.7	

Note 1: On glass epoxy PCB (50 × 50 × 1.6 mm Cu 50%)

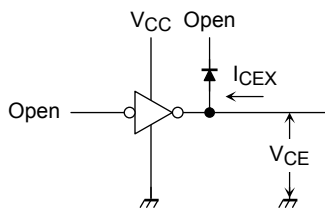
Note 2: On glass epoxy PCB (60 × 30 × 1.6 mm Cu 30%)

Electrical Characteristics (Ta = 25°C)

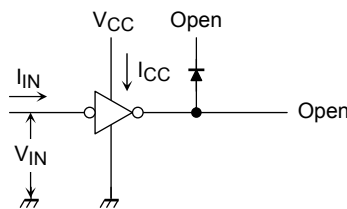
Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input voltage	"H" level	V_{IH}	—	—	$V_{CC} - 1.6$	—	15	V
	"L" level	V_{IL}		—	0	—	$V_{CC} - 3.6$	
Input current	"H" level	I_{IH}	2	—	—	—	10	μA
	"L" level	I_{IL}		—	—	-0.05	-0.36	mA
Output leakage current		I_{CEX}	1	$V_{CE} = 80 V, Ta = 25^\circ C$	—	—	50	μA
				$V_{CE} = 80 V, Ta = 85^\circ C$	—	—	100	
Output saturation voltage		$V_{CE(sat)}$	3	$I_{OUT} = 0.5 A, V_{CC} = 4.5 V$	—	—	0.8	V
				$I_{OUT} = 0.2 A, V_{CC} = 4.5 V$	—	—	0.45	
Clamp diode reverse current		I_R	4	$V_R = 80 V, Ta = 25^\circ C$	—	—	50	μA
				$V_R = 80 V, Ta = 85^\circ C$	—	—	100	
Clamp diode forward voltage		V_F	5	$I_F = 500 mA$	—	—	2.0	V
Supply current	Output on	$I_{CC(ON)}$	2	$V_{CC} = 5.5 V, V_{IN} = 0 V$	—	35	40	mA/ch
	Output off	$I_{CC(OFF)}$	2	$V_{CC} = 5.5 V, V_{IN} = V_{CC}$	—	—	10	μA
Turn-on delay		t_{ON}	6	$V_{OUT} = 80 V, R_L = 142 \Omega$ $V_{CC} = 5.0 V, C_L = 15 pF$	—	0.4	0.8	μs
Turn-off delay		t_{OFF}			—	8.0	16.0	

Test Circuit

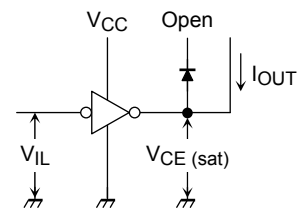
1. I_{CEX}



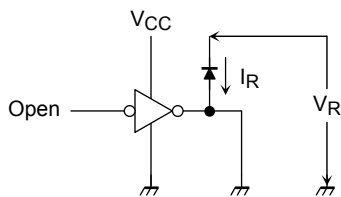
2. I_{IH}, I_{IL}



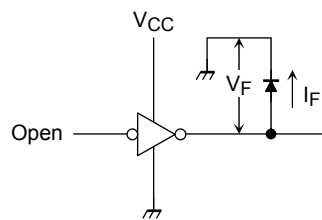
3. $V_{CE(sat)}$



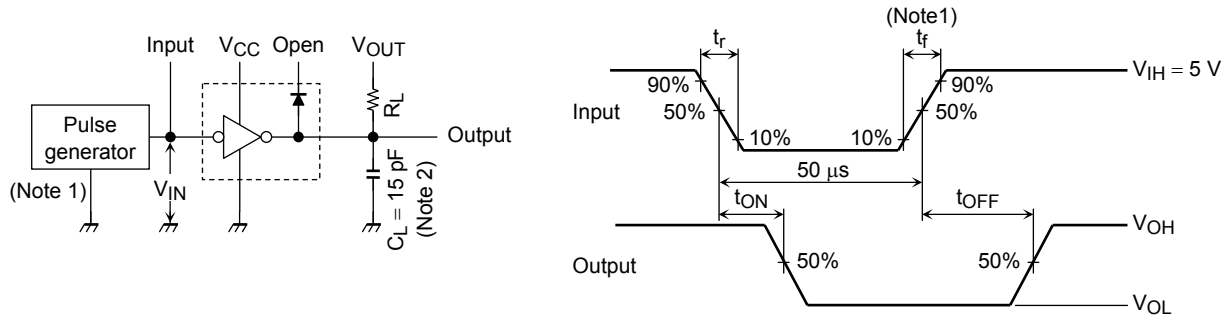
4. I_R



5. V_F



6. t_{ON} , t_{OFF}



Note 1: Pulse width 50 μ s, duty cycle 10%, output impedance 50 Ω , $t_r \leq 5$ ns, $t_f \leq 10$ ns

Note 2: C_L includes probe and jig capacitance.

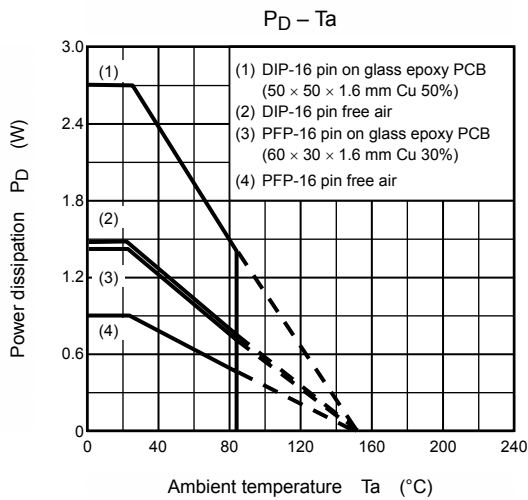
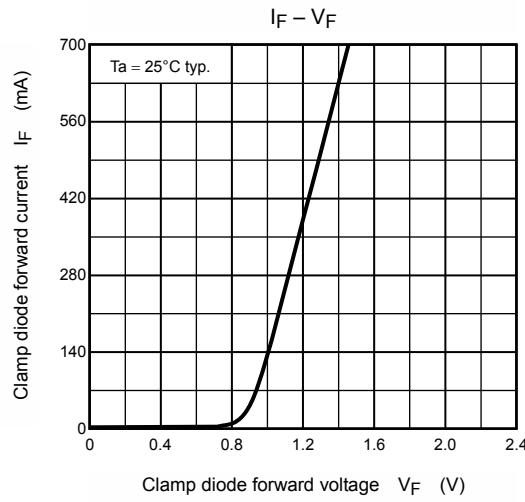
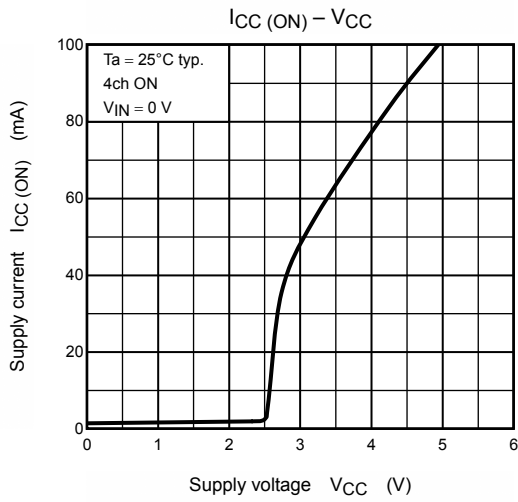
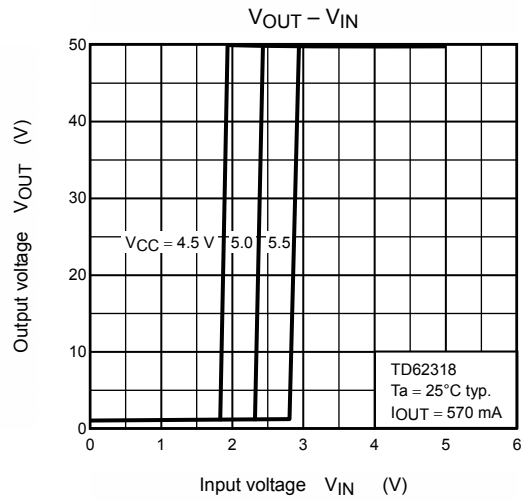
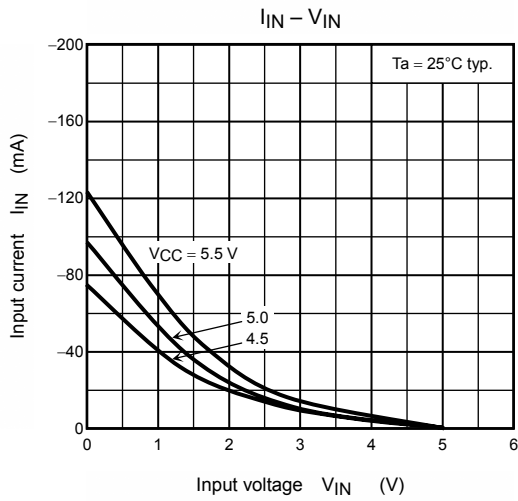
Precautions for Using

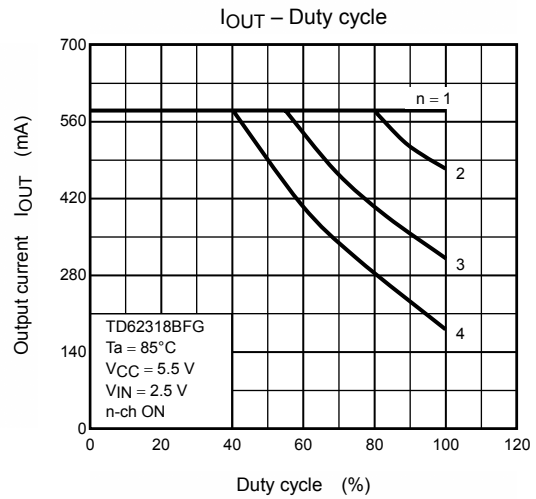
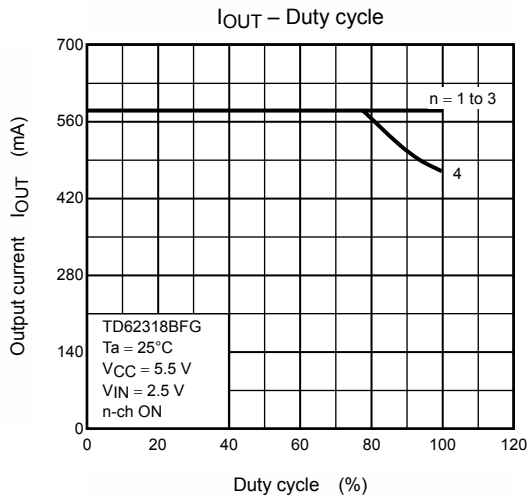
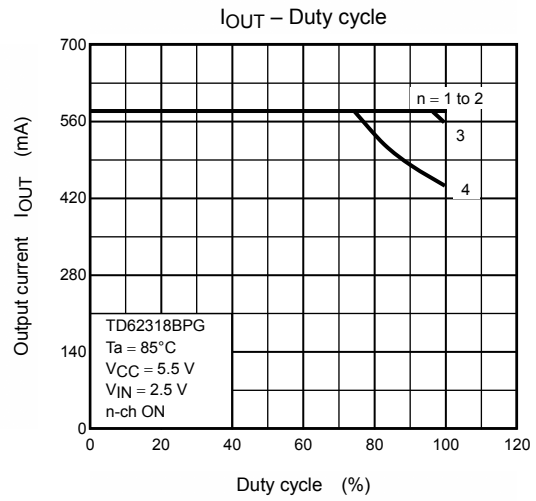
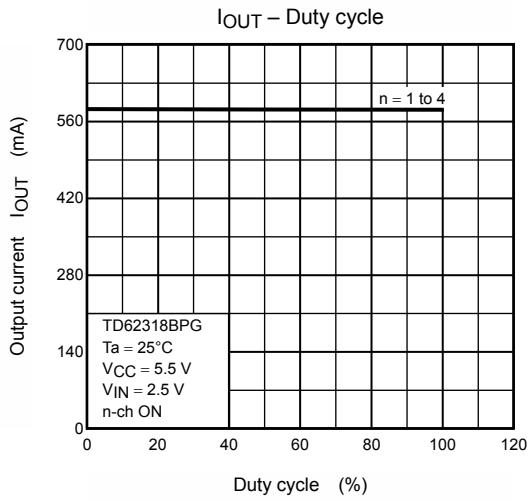
This IC does not include built-in protection circuits for excess current or overvoltage.

If this IC is subjected to excess current or overvoltage, it may be destroyed.

Hence, the utmost care must be taken when systems which incorporate this IC are designed.

Utmost care is necessary in the design of the output line, VCC, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

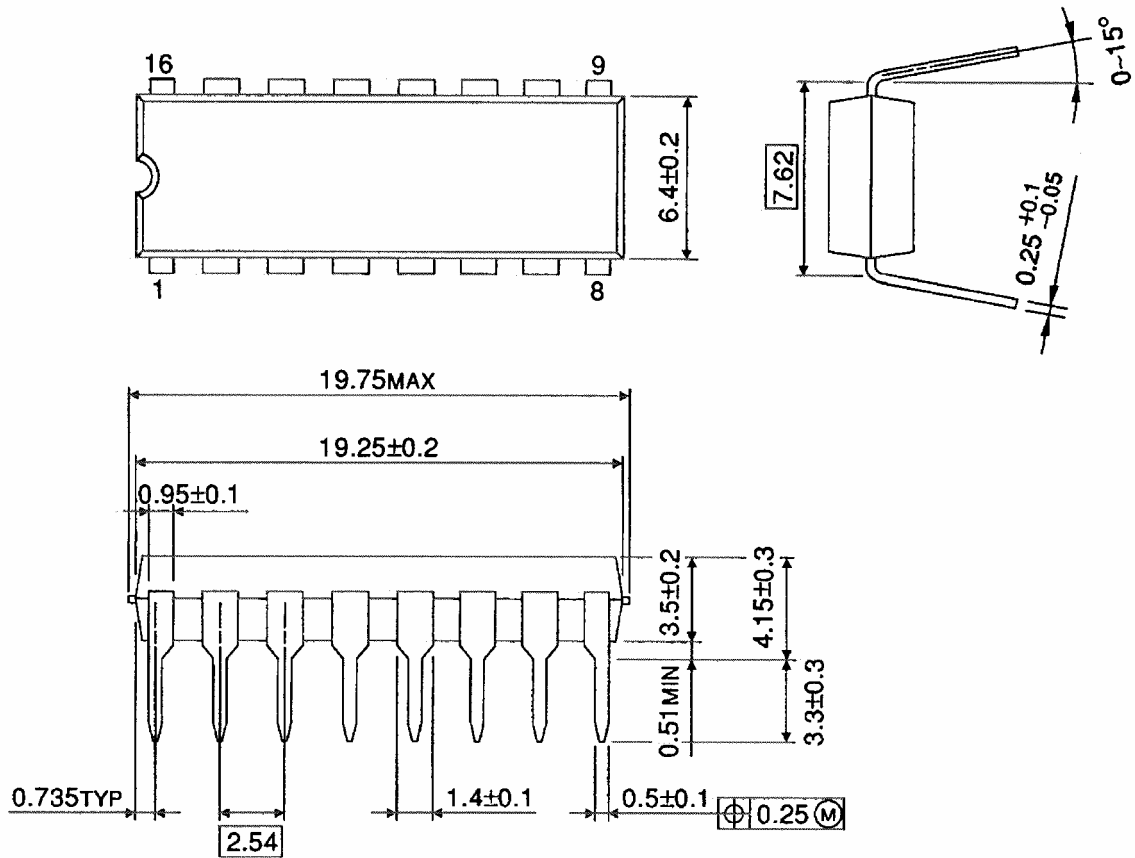




Package Dimensions

DIP16-P-300-2.54A

Unit : mm

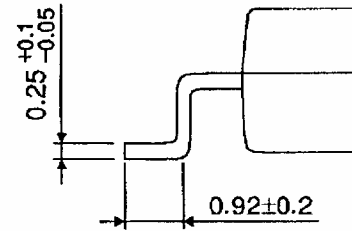
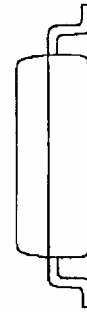
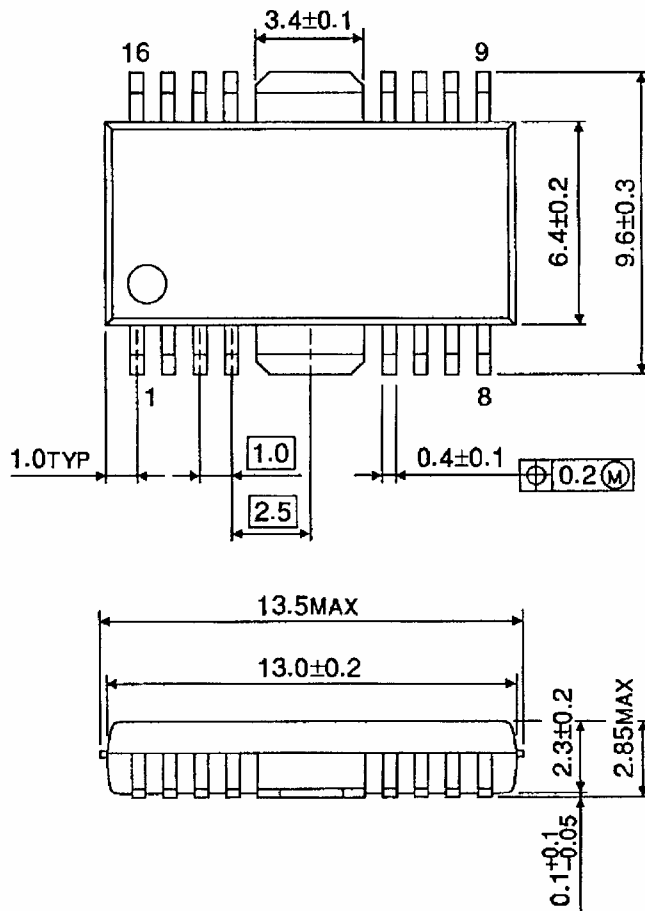


Weight: 1.11 g (typ.)

Package Dimensions

HSOP16-P-300-1.00

Unit : mm



Weight: 0.50 g (typ.)

About solderability, following conditions were confirmed

- Solderability

- (1) Use of Sn-63Pb solder Bath

- solder bath temperature = 230°C
 - dipping time = 5 seconds
 - the number of times = once
 - use of R-type flux

- (2) Use of Sn-3.0Ag-0.5Cu solder Bath

- solder bath temperature = 245°C
 - dipping time = 5 seconds
 - the number of times = once
 - use of R-type flux

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030619EBA

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