

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62064BP-1, TD62064BF

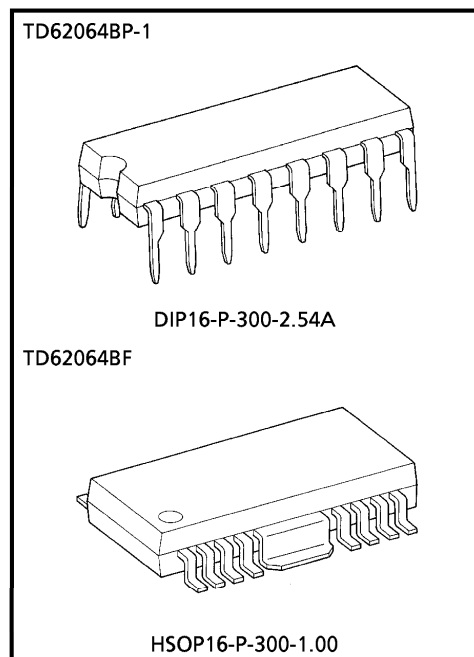
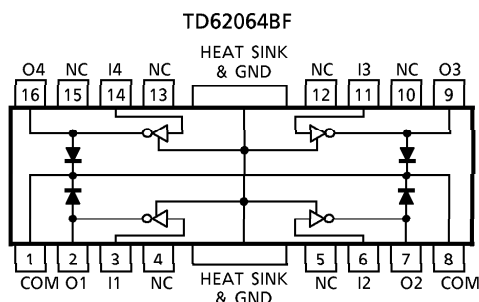
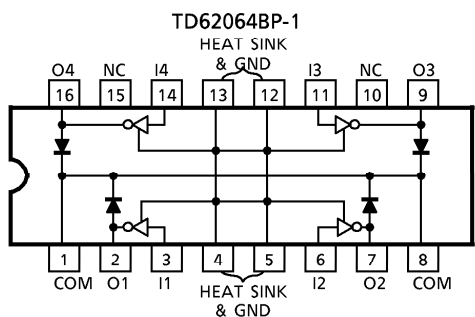
4ch HIGH-CURRENT DARLINGTON SINK DRIVER

The TD62064BP-1 and TD62064BF are high-voltage, high-current darlington drivers comprised of four NPN darlington pairs. All units feature integral clamp diodes for switching inductive loads. Applications include relay, hammer, lamp and stepping motor drivers.

FEATURES

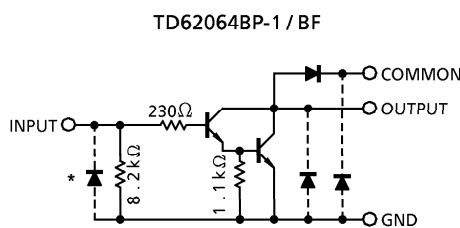
- Package Type BP-1 : DIP16 pin
BF : PFP16 pin
- High Output Sustaining Voltage : $V_{CE(SUS)} = 80V$ (Min.)
- Output Current (Single Output) : $I_{OUT} = 1.5A$ / ch (Max.)
- Output Clamp Diodes
- Input Compatible with TTL and 5V CMOS
- GND and SUB Terminal = Heat Sink

PIN CONNECTION (TOP VIEW)



Weight
 DIP16-P-300-2.54A : 1.11g (Typ.)
 HSOP16-P-300-1.00 : 0.50g (Typ.)

SCHEMATICS (EACH DRIVER)



* : Parasitic

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

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Output Sustaining Voltage	V _{CE(SUS)}	-0.5 ~ 80	V
Parasitic Transistor Output Voltage	V _{CEF} *1	80	V
Output Current	I _{OUT}	1.5	A / ch
Input Current	I _{IN}	50	mA
Input Voltage	V _{IN}	7	V
Clamp Diode Reverse Voltage	V _R	80	V
Clamp Diode Forward Current	I _F	1.5	A
Power Dissipation	BP-1	1.47 / 2.7 *2	W
	BF	0.9 / 1.4 *3	
Operating Temperature	T _{opr}	-40 ~ 85	°C
Storage Temperature	T _{stg}	-55 ~ 150	°C

- *1 Parasitic Transistor (COMMON - GND - OUTPUT) Output Voltage
- *2 On Glass Epoxy PCB (50 × 50 × 1.6mm Cu 50%)
- *3 On Glass Epoxy PCB (60 × 30 × 1.6mm Cu 30%)

RECOMMENDED OPERATING CONDITIONS (Ta = -40~85°C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Sustaining Voltage	V _{CE(SUS)}		0	—	80	V	
Output Current	I _{OUT}	DC 1 Circuit, Ta = 25°C	0	—	1250	mA / ch	
		T _{pw} = 25ms 4 Circuits	Duty = 10%	0	—		1250
			Duty = 50%	0	—		380
		T _j = 120°C Ta = 85°C	Duty = 10%	0	—		900
			Duty = 50%	0	—		170
Input Voltage	V _{IN}		0	—	5.5	V	
	(Output On) V _{IN(ON)}	I _{OUT} = 1.25A	2.5	—	8	V	
	(Output Off) V _{IN(OFF)}		0	—	0.4	V	
Input Current	I _{IN}		0	—	20	mA	
Clamp Diode Reverse Voltage	V _R		0	—	80	V	
Clamp Diode Forward Current	I _F		—	—	1.25	A	
Power Dissipation	BP-1	Ta = 85°C *1	—	—	1.4	W	
	BF	Ta = 85°C *2	—	—	0.7		

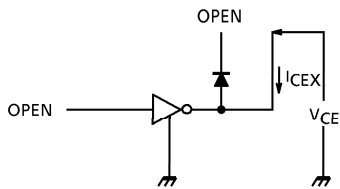
- *1 On Glass Epoxy PCB (50 × 50 × 1.6mm Cu 50%)
- *2 On Glass Epoxy PCB (60 × 30 × 1.6mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C unless otherwise noted)

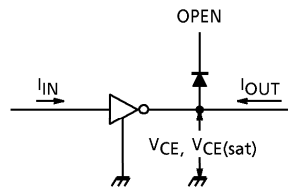
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current	I _{CEX}	1	V _{CE} = 80V, Ta = 25°C	—	—	50	μA
			V _{CE} = 80V, Ta = 85°C	—	—	100	
Output Saturation Voltage	V _{CE(sat)}	2	I _{OUT} = 1.25A, V _{IN} = 2.4V	—	—	1.6	V
			I _{OUT} = 0.75A, V _{IN} = 2.4V	—	—	1.25	
DC Current Transfer Ratio	h _{FE}	2	V _{CE} = 2V, I _{OUT} = 1.25A	—	1500	—	
Input Voltage (Output On)	V _{IN(ON)}	3	I _{OUT} = 1.25A, I _{IN} = 2mA	—	—	2.4	V
Clamp Diode Leakage Current	I _R	4	V _R = 80V, Ta = 25°C	—	—	50	μA
			V _R = 80V, Ta = 85°C	—	—	100	
Clamp Diode Forward Voltage	V _F	5	I _F = 1.25A	—	1.5	2.0	V
Input Capacitance	C _{IN}	6	V _{IN} = 0, f = 1MHz	—	15	—	pF
Turn-On Delay	t _{ON}	7	V _{OUT} = 80V, R _L = 68Ω	—	0.1	—	μs
Turn-Off Delay	t _{OFF}			—	1.0	—	
Parasitic Transistor Output Voltage	V _{CEF}	8	I _{CEF} = 150mA	80	—	—	V

TEST CIRCUIT

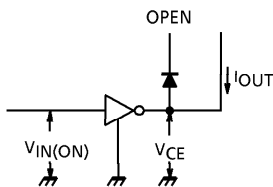
1. I_{CEX}



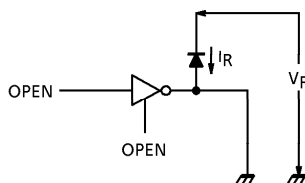
2. V_{CE(sat)}, h_{FE}



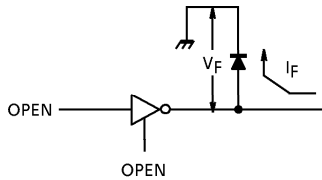
3. V_{IN(ON)}



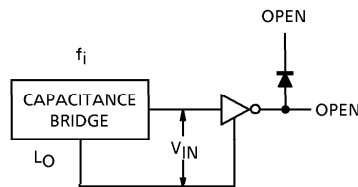
4. I_R



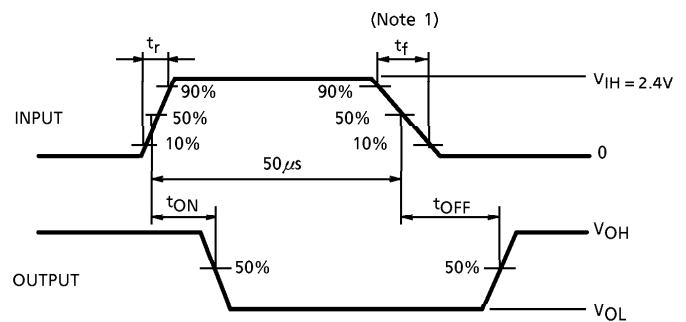
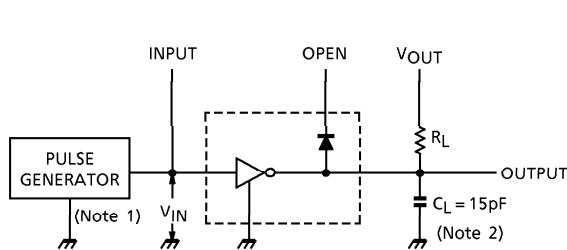
5. V_F



6. C_{IN}

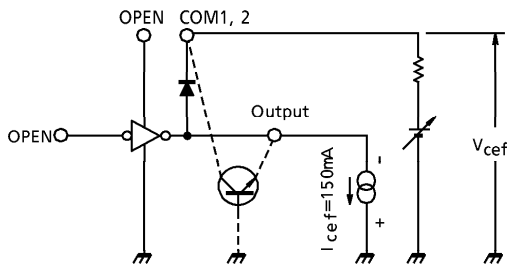


7. t_{ON} , t_{OFF}



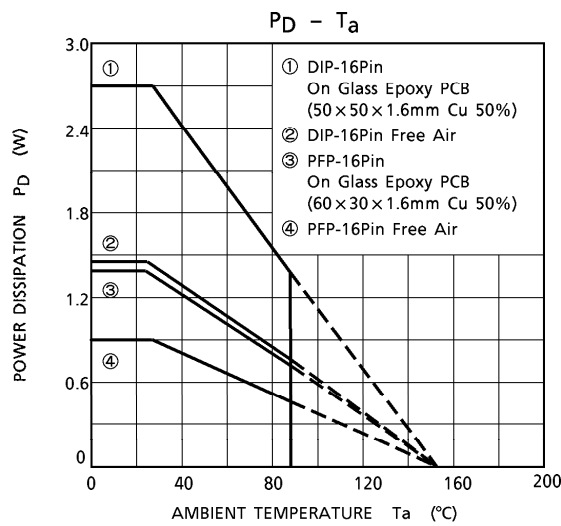
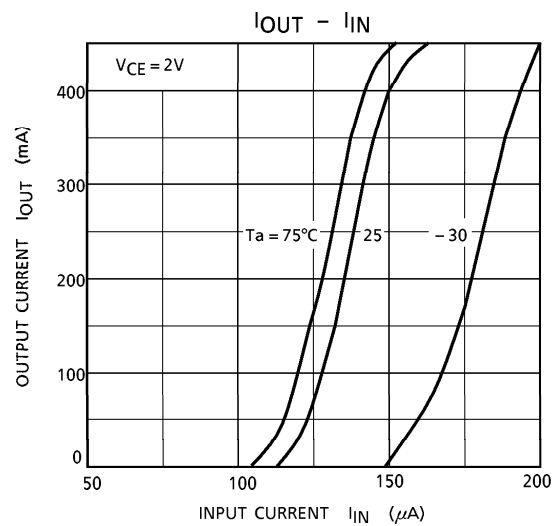
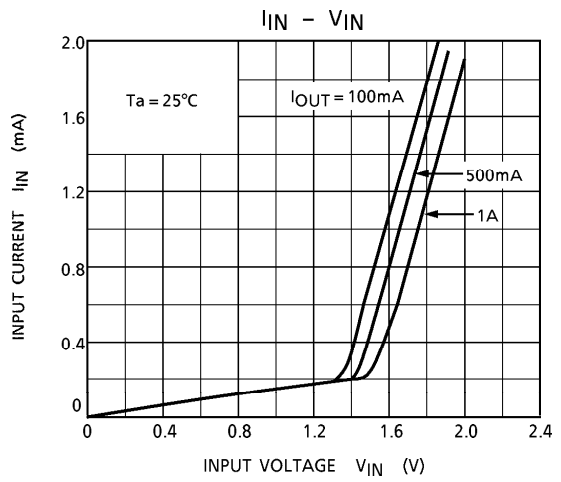
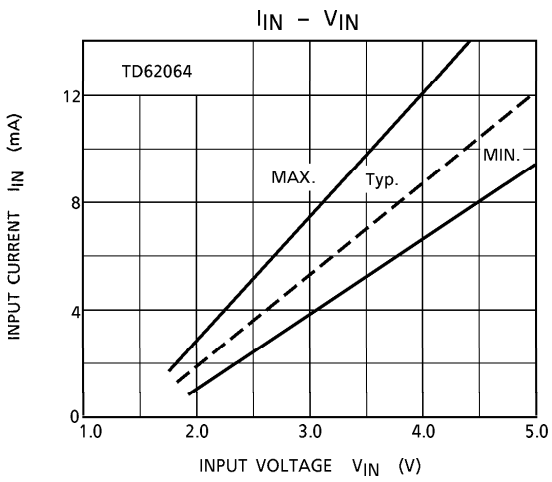
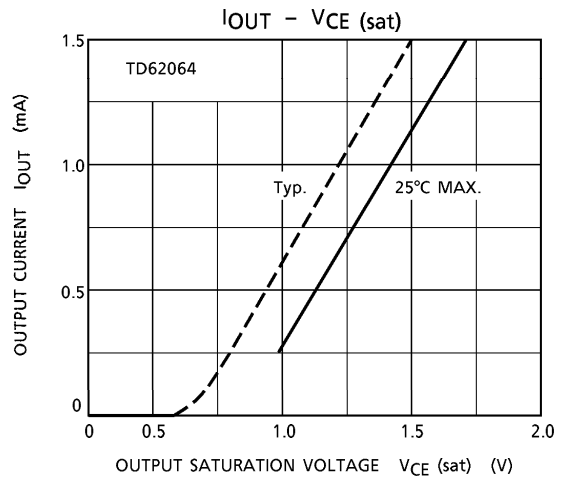
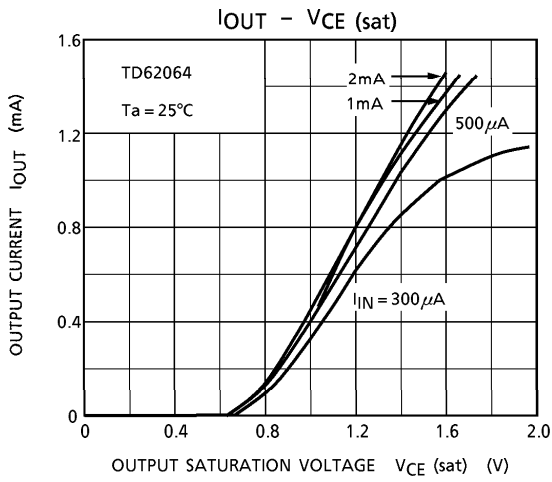
- (Note 1) Pulse Width $50\mu s$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5ns$, $t_f \leq 10ns$
- (Note 2) C_L includes probe and jig capacitance

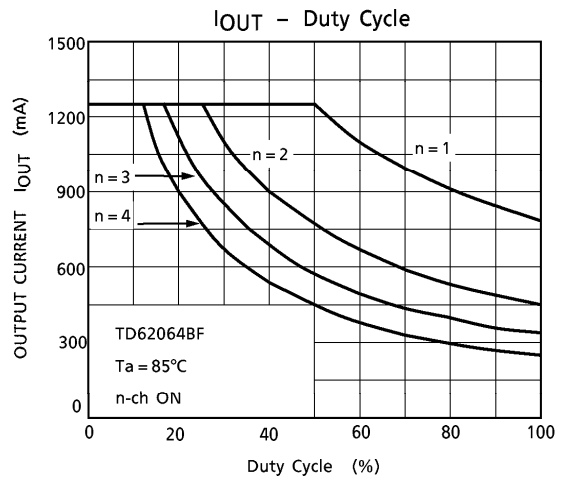
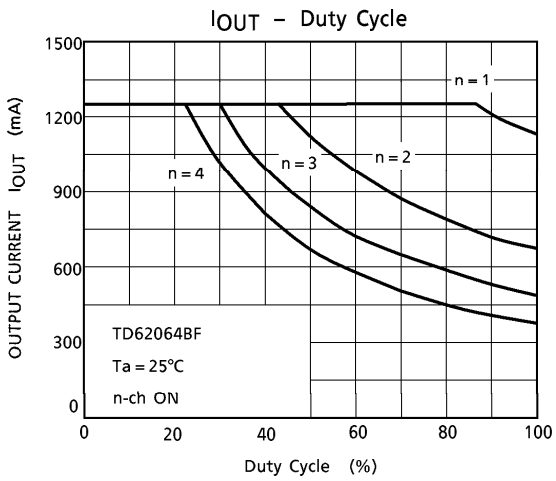
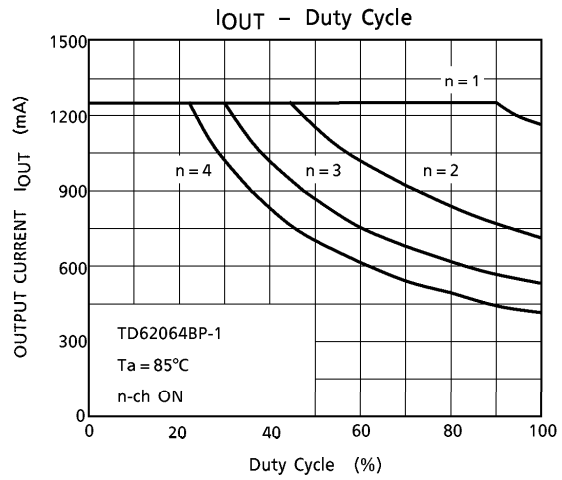
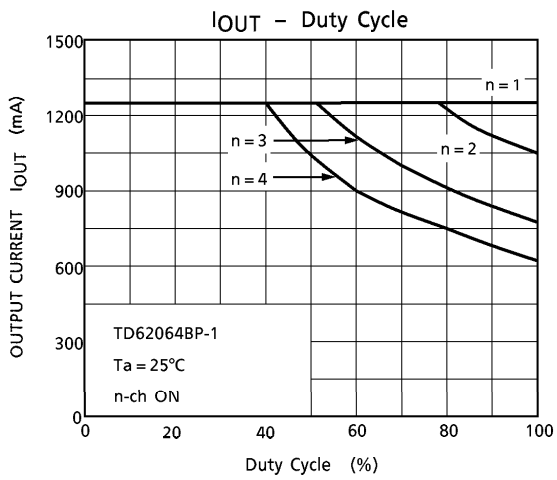
8. V_{cef}



PRECAUTIONS for USING

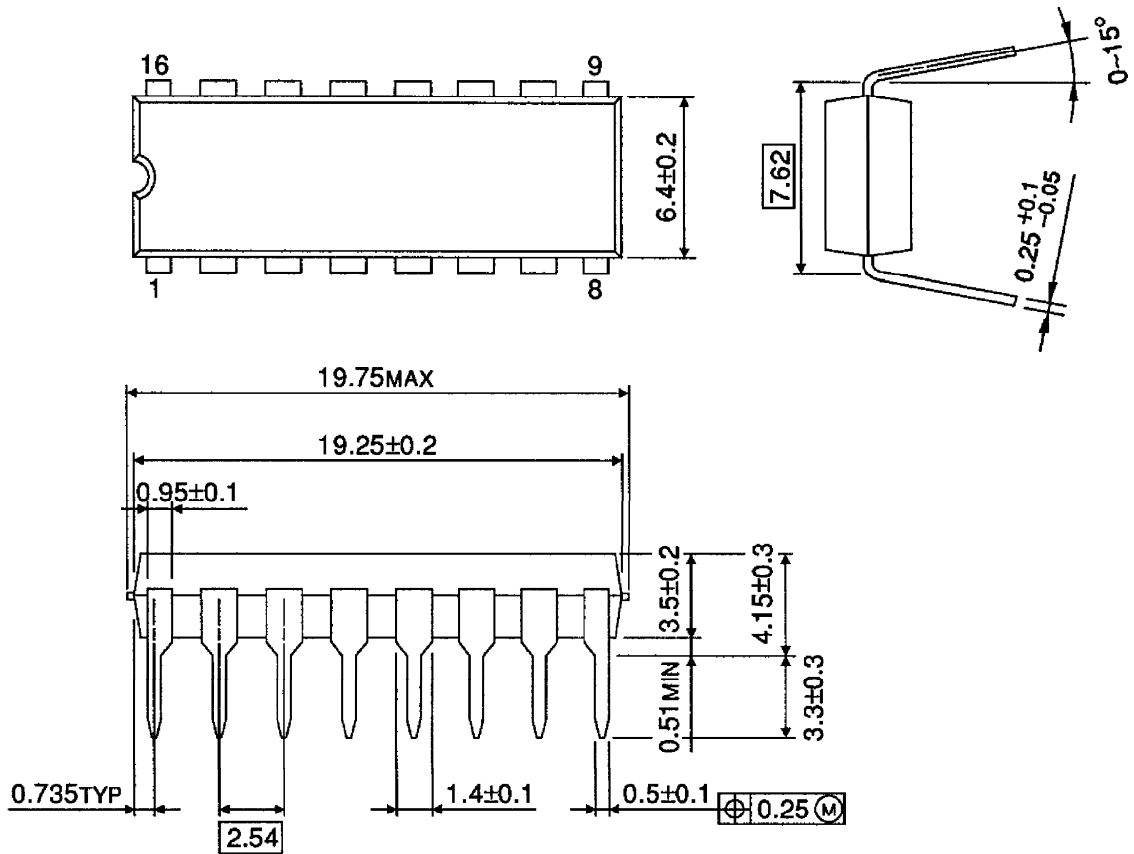
Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.





OUTLINE DRAWING
DIP16-P-300-2.54A

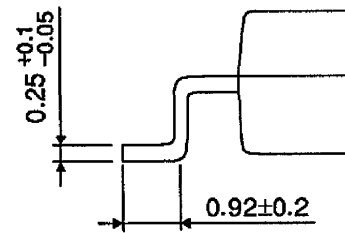
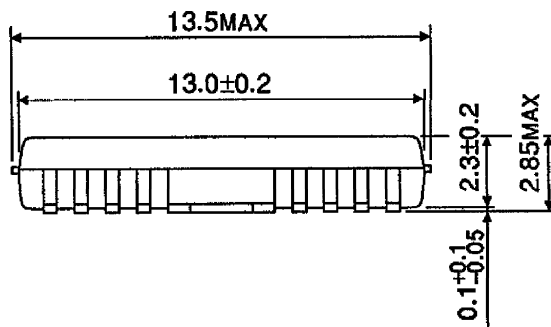
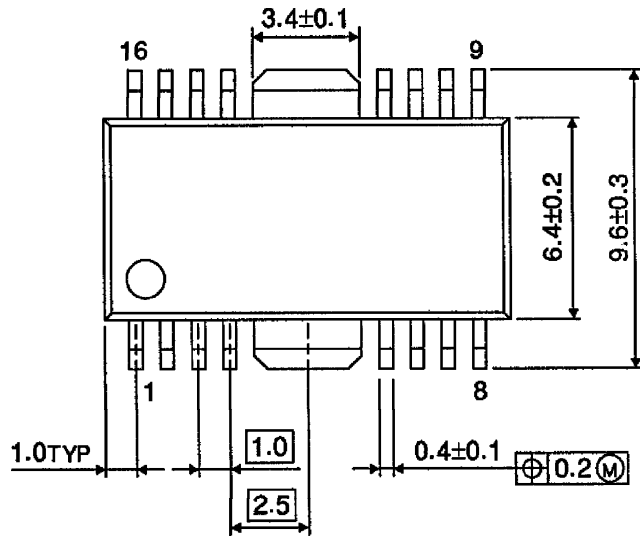
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING
HSOP16-P-300-1.00

Unit : mm



Weight : 0.50g (Typ.)