

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62107P, TD62107BP, TD62107F

4CH HIGH-CURRENT DARLINGTON SINK DRIVER

The TD62107P / BP / F are high-voltage, high-current darlington drivers and enable inputs which can gate the outputs. All units feature integral clamp diodes for switching inductive loads.

The TD62107P / BP / F have a wide supply voltage range and all input are compatible with TTL and 5-V CMOS.

Application include relay, hammer, lamp and stepping moter drivers.

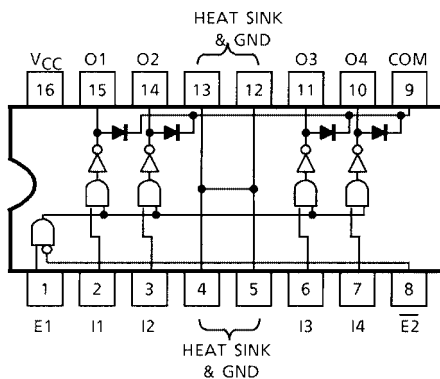
Please observe the thermal condition for using.

FEATURES

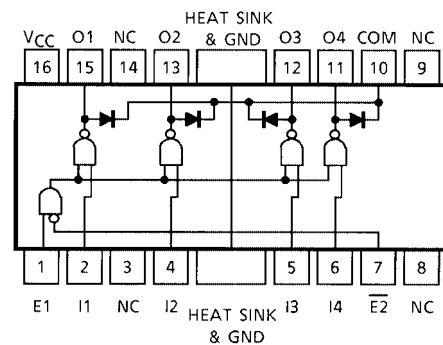
- Output current (single output) 750mA (MAX)
- High sustaining voltage output
 - 80 V MIN. (TD62107BP)
 - 45 V MIN. (TD62107P)
 - 35 V MIN. (TD62107F)
- Output clamp diodes
- Enable inputs E1, E2
- Wide supply voltage range $V_{CC} = 4.75\sim 17$ V
- Input compatible with TTL and 5-V CMOS
- GND terminal = heat sink
- Package type-P, BP : DIP-16pin
- Package type-F : HSOP-16pin

PIN CONNECTION (TOP VIEW)

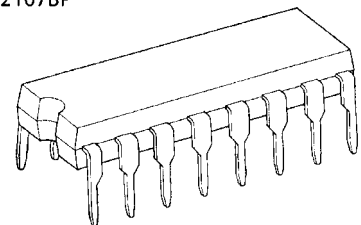
TD62107P / TD62107BP



TD62107F

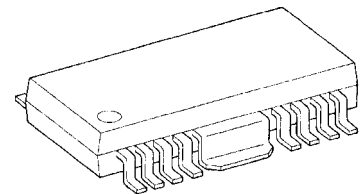


TD62107P
TD62107BP



DIP16-P-300-2.54A

TD62107F



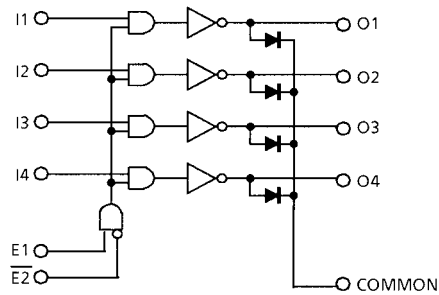
HSOP16-P-300-1.00

Weight

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

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

SCHEMATICS (EACH DRIVER)

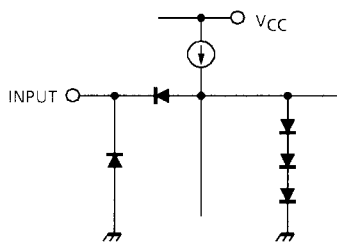


TRUTH TABLE

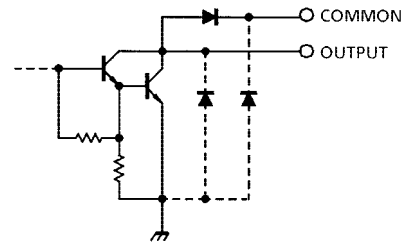
E1	$\overline{E2}$	I1 ~ I4	O1~O4
L	L	L or H	Disable OFF
L	H	L or H	Disable OFF
H	L	L or H	Enable In
H	H	L or H	Disable OFF

In = I1 ~ I4

INPUT EQUIVALENT CIRCUIT



OUTPUT EQUIVALENT CIRCUIT



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	-0.5~17	V
Output Sustaining Voltage	P	-0.5~45	V
	BP	-0.5~80	
	F	-0.5~35	
Output Current	I_{OUT}	750	mA
Input Voltage	V_{IN}	-0.5~ $V_{CC} + 0.5$	V
Clamp Diode Reverse Voltage	P	45	V
	BP	80	
	F	35	
Clamp Diode Forward Current	P, F	500	mA
	BP	750	
Power Dissipation	P, BP	2.7 (Note 1)	W
	F	1.4 (Note 2)	
Operating Temperature	T_{opr}	-40~85	°C
Storage Temperature	T_{stg}	-55~150	°C

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%)

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT	
Supply Voltage		V _{CC}		4.75	—	15	V	
Output Sustaining Voltage	P	V _{CE (SUS)}		0	—	45	V	
	BP			0	—	80		
	F			0	—	35		
Output Current	P, F	I _{OUT}	T _{pw} = 25ms, Duty = 75%, 1 Circuit	0	—	500	mA	
	BP		T _{pw} = 25ms, Duty = 10%, 4 Circuits	0	—	750		
	P, BP		T _{pw} = 25ms, 4 Circuits	Duty = 30%	0	—		400
				Duty = 40%	—	—		300
Input Voltage		V _{IN}		0	—	V _{CC}	V	
Clamp Diode Reverse Voltage	P	V _R		—	—	45	V	
	BP			—	—	80		
	F			—	—	35		
Clamp Diode Forward Current	P, F	I _F		—	—	500	mA	
	BP			—	—	750		
Power Dissipation	B, BP	P _D		—	—	1.0	W	
	F			Ta = 85°C (Note)	—	—		0.7

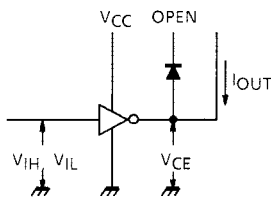
Note: On Glass Epoxy PCB (60 × 30 × 1.6 mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

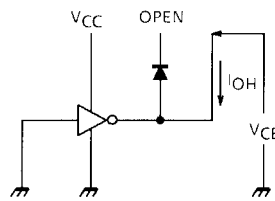
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Input Voltage	"H" Level	V_{IH}	1		2.0	—	V_{CC}	V	
	"L" Level	V_{IL}			—	—	0.8		
Output Current	"H" Level	P	I_{OH}	2	$V_{CE} = 45\text{ V}$, $T_a = 75^\circ\text{C}$	—	—	100	μA
		BP			$V_{CE} = 80\text{ V}$, $T_a = 85^\circ\text{C}$	—	—	100	
		F			$V_{CE} = 35\text{ V}$, $T_a = 85^\circ\text{C}$	—	—	100	
Output Voltage	"L" Level	P, F	V_{OL}	3	$I_{OUT} = 50\text{ mA}$	—	—	1.3	V
		BP			$I_{OUT} = 750\text{ mA}$	—	—	1.6	
Input Current	"H" Level	I_{IH}	4	$V_{IN} = 13\text{ V}$	—	—	100	μA	
	"L" Level	I_{IL}	5	$V_{IN} = 0.4\text{ V}$	—	—	-0.3	mA	
Clamp Diode Reverse Current	P	I_R	6		$V_R = 45\text{ V}$	—	—	100	μA
					$V_R = 80\text{ V}$	—	—	100	
					$V_R = 35\text{ V}$	—	—	100	
Clamp Diode Forward Voltage	P, F	V_F	7		$I_F = 500\text{ mA}$	—	—	2.0	V
					$I_F = 750\text{ mA}$	—	—	2.0	
Supply Current	Output "H"	I_{CC}	I_{CCH}	4	$V_{CC} = 13\text{ V}$, $V_{IN} = 0\text{ V}$, OUTPUT OPEN	—	—	13	mA
	Output "L"		I_{CCL}	5	$V_{CC} = 13\text{ V}$, $V_{IN} = 5\text{ V}$, OUTPUT OPEN	—	—	17	
Turn-On Delay	P	t_{ON}	8		$V_{CC} = 5\text{ V}$, $R_L = 90\ \Omega$ $C_L = 15\text{ pF}$, $V_{OUT} = 45\text{ V}$	—	5	—	μs
					$V_{CC} = 5\text{ V}$, $V_{OUT} = 80\text{ V}$ $R_L = 160\ \Omega$	—	0.4	—	
					$V_{CC} = 5\text{ V}$, $R_L = 70\ \Omega$ $C_L = 15\text{ pF}$, $V_{OUT} = 35\text{ V}$	—	5	—	
Turn-Off Delay	P	t_{OFF}	8		$V_{CC} = 5\text{ V}$, $R_L = 90\ \Omega$ $C_L = 15\text{ pF}$, $V_{OUT} = 45\text{ V}$	—	5	—	μs
					$V_{CC} = 5\text{ V}$, $V_{OUT} = 80\text{ V}$ $R_L = 160\ \Omega$	—	1.7	—	
					$V_{CC} = 5\text{ V}$, $R_L = 70\ \Omega$ $C_L = 15\text{ pF}$, $V_{OUT} = 35\text{ V}$	—	5	—	

TEST CIRCUIT

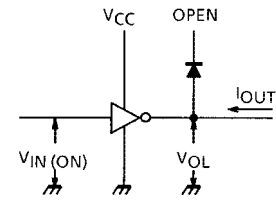
1. V_{IH} , V_{IL}



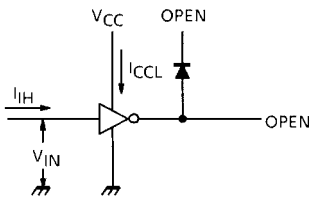
2. I_{OH}



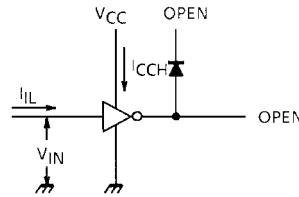
3. V_{OL}



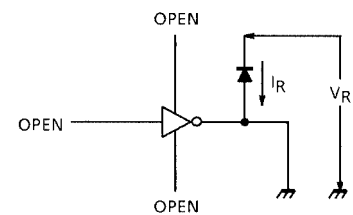
4. I_{IH} , I_{CCL}



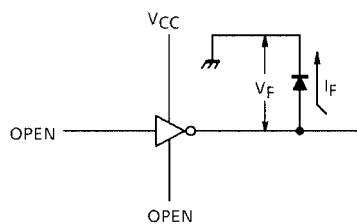
5. I_{IL} , I_{CCH}



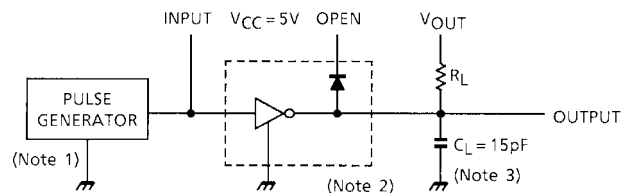
6. I_R



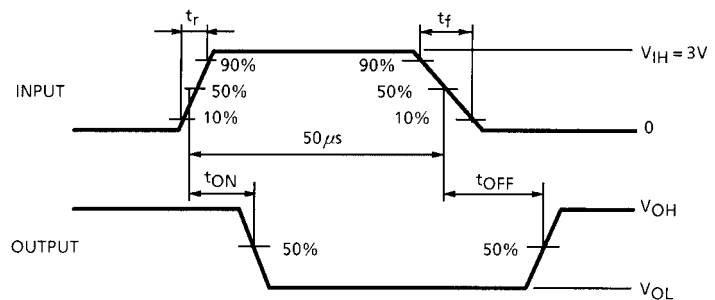
7. V_F



8. t_{ON} , t_{OFF}



Input condition



- 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: $V_{IH} = 3$ V, $E1 = V_{IH}$, $\overline{E2} = \text{GND}$,
 $V_{CC} = 5$ V
- Note 3: C_L includes probe and jig capacitance

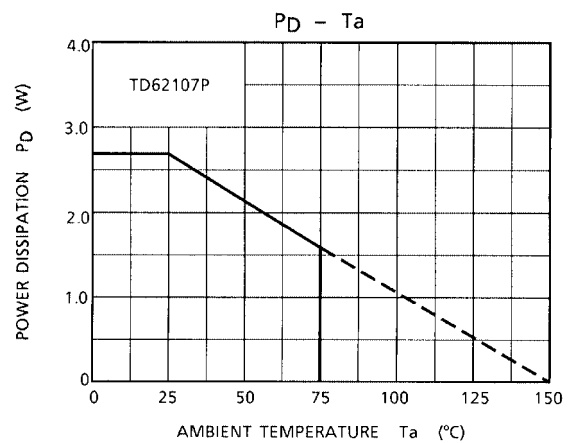
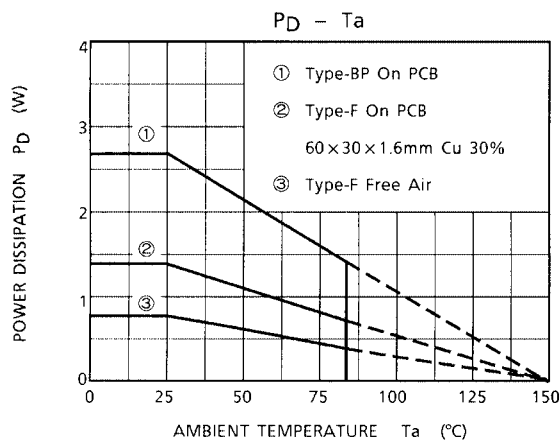
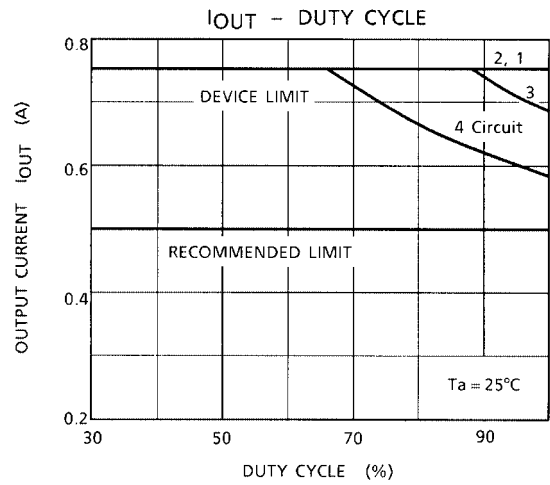
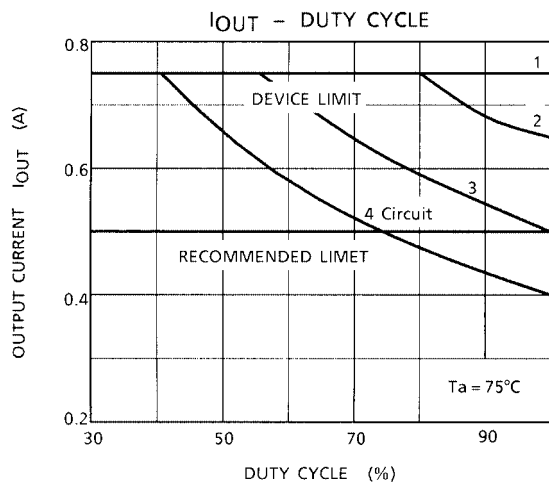
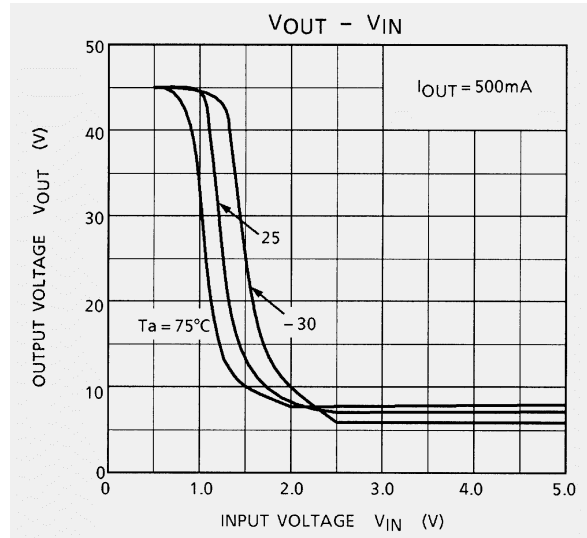
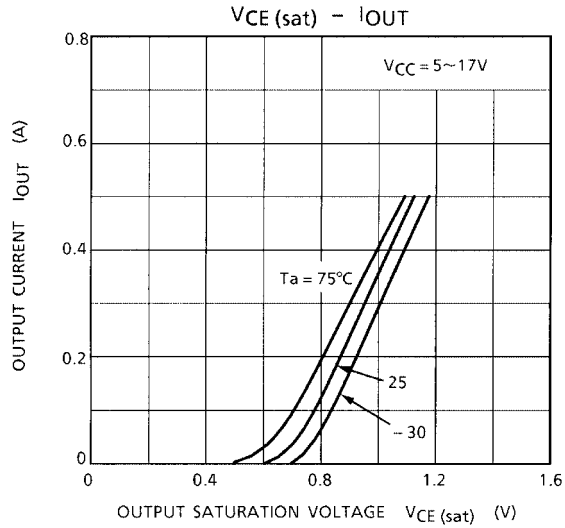
PRECAUTIONS for USING

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.

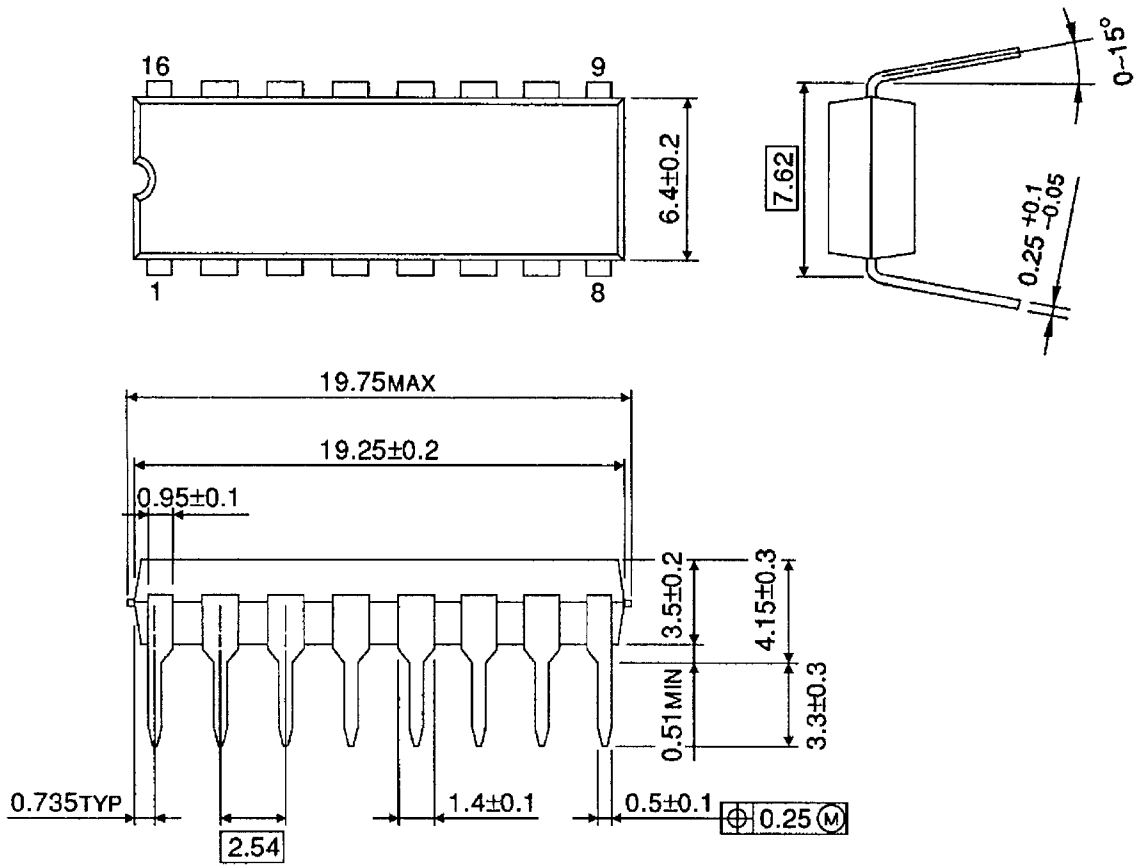
Utmost care is necessary in the design of the output line, V_{CC} , COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit : mm

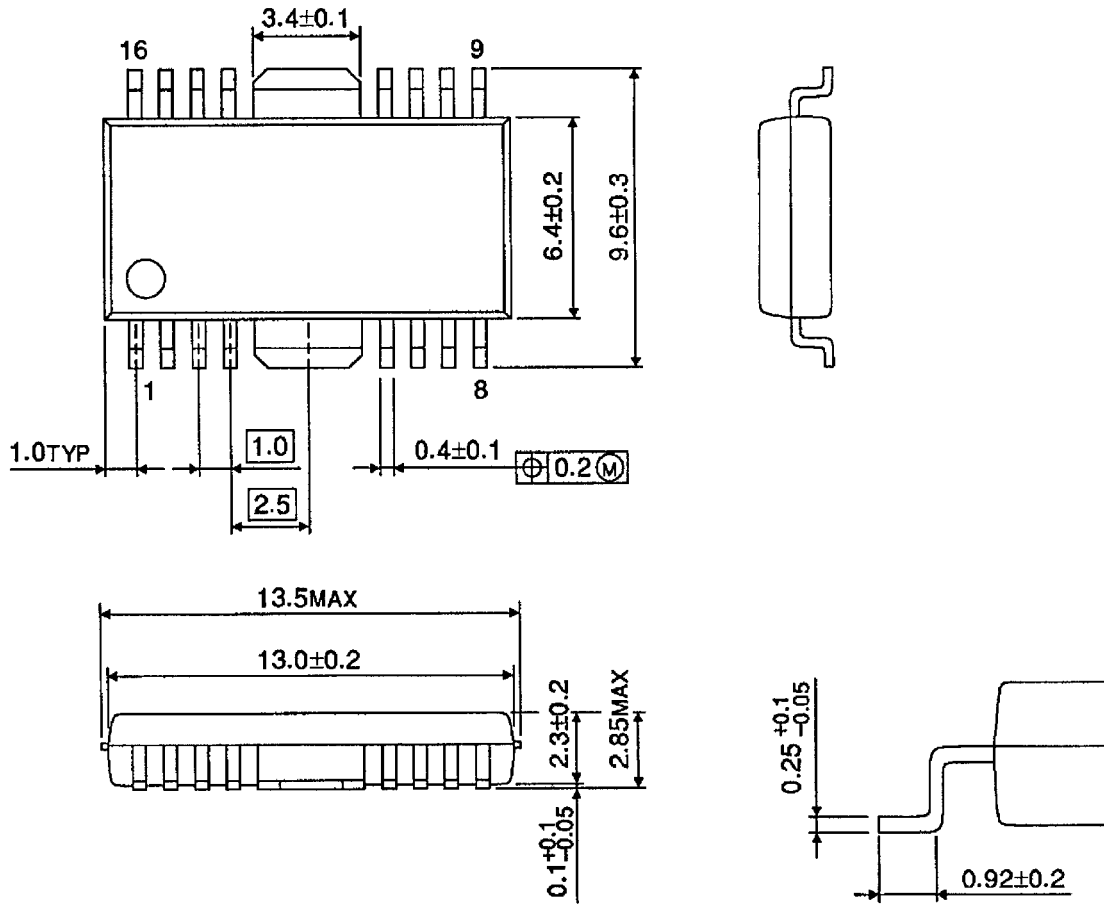


Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

HSOP16-P-300-1.00

Unit : mm



Weight: 0.50 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- The products described in this document are subject to the foreign exchange and foreign trade laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.