

TOSHIBA Bipolar Digital Integrated Circuit Silicon Monolithic

TD62164BPG, TD62164BFG

4ch High-Current Darlington Sink Driver

The TD62164BPG and TD62164BFG are high-voltage, high-current darlington drivers comprised of four NPN darlington pairs.

All units feature integral clamp diodes for switching inductive loads.

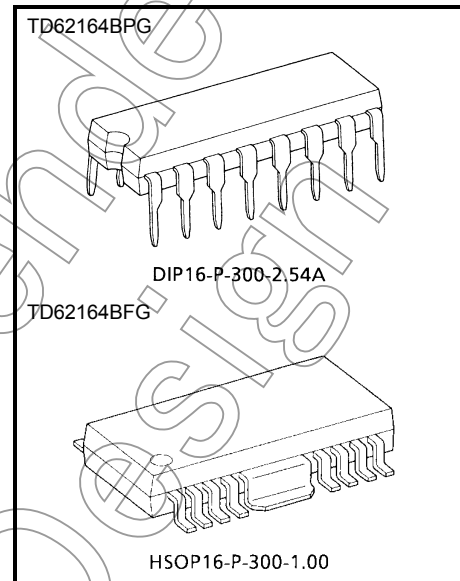
Applications include relay, hammer, lamp and stepping motor drivers.

Please observe the thermal condition for using.

The suffix (G) appended to the part number represents a Lead (Pb)-Free product.

Features

- Two VCC terminals (Separated)
- Package type BPG : DIP16 pin
BFG : HSOP16 pin
- High sustaining voltage output: VCE (SUS) = 80 V (min)
- Output current (single output): IOUT = 700 mA/ch (max)
- Output clamp diodes
- Input compatible with TTL and 5-V CMOS
- GND and SUB terminal heat sink

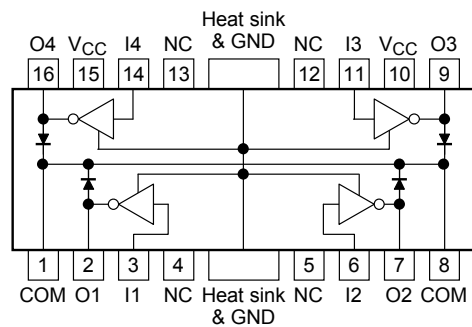
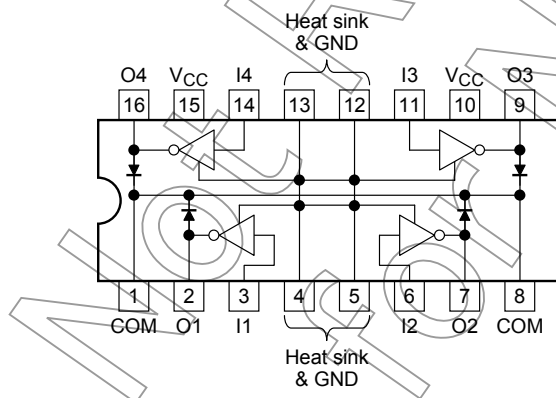


Weight
 DIP16-P-300-2.54A: 1.11 g (typ.)
 HSOP16-P-300-1.00: 0.50 g (typ.)

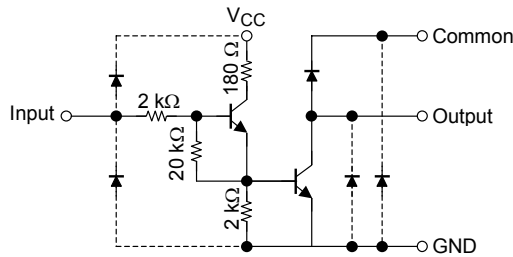
Pin Connection (top view)

TD62164BPG

TD62164BFG



Schematics (each driver)



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

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	VCC	-0.5 to 17	V
Output sustaining voltage	VCE (SUS)	-0.5 to 80	V
Output current	IOUT	700	mA/ch
Input current	IIN	50	mA
Input voltage	VIN	17	V
Clamp diode reverse voltage	VR	80	V
Clamp diode forward current	IF	700	mA
Power dissipation	BPG	1.47/2.7 (Note 1)	W
	BFG		
Operating temperature	Topr	-40 to 85	°C
Storage temperature	Tstg	-55 to 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 to 85°C)

Characteristics	Symbol	Condition	Min	Typ.	Max	Unit	
Supply voltage	VCC		4.5	—	5.5	V	
Output sustaining voltage	VCE (SUS)		0	—	80	V	
Output current	IOUT	DC 1 circuit, Ta = 25°C	0	—	570	mA/ch	
		Tpwr = 25 ms	Duty = 10%	0	—		570
			Duty = 50%	0	—		520
		4 circuits	Duty = 10%	0	—		570
Duty = 50%	0		—	270			
Input voltage	VIN		0	—	15	V	
	Output on	VIN (ON)	IOUT = 500 mA	hFE = 150	10.0	—	15
				hFE = 2000	2.4	—	15
Output off	VIN (OFF)		0	—	0.4	V	
Input current	IIN		0	—	20	mA	
Clamp diode reverse voltage	VR		—	—	80	V	
Clamp diode forward voltage	IF		—	—	700	mA	
Power dissipation	BPG	PD	Ta = 85°C (Note 1)	—	—	1.4	
	BFG						Ta = 85°C (Note 2)

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

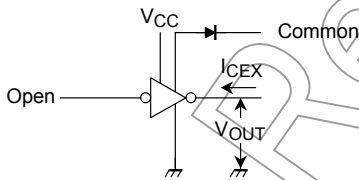
Note 2: On glass epoxy PCB (60 × 30 × 1.6 mm Cu 30%)

Electrical Characteristics (Ta = 25°C)

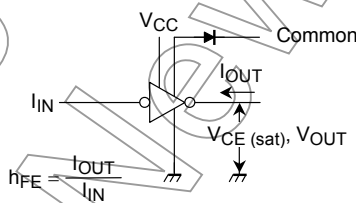
Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit						
Output leakage current	ICEX	1	1	VCE = 80 V, Ta = 25°C	—	—	50	μA						
				VCE = 80 V, Ta = 85°C	—	—	100							
Output saturation voltage	VCE (sat)	2	2	IOUT = 500 mA, VCC = 5 V	—	—	0.8	V						
				IOUT = 200 mA, VCC = 5 V	—	—	0.45							
DC current transfer ratio	hFE	2	2	VCE = 2 V, IOUT = 500 mA	2000	—	—							
Input voltage (Output on)	VIN (ON)	3	3	IOUT = 500 mA, hFE = 150	7.0	—	10.0	V						
				IOUT = 500 mA, hFE = 2000	1.8	—	2.4							
Clamp diode leakage current	IR	4	4	VR = 80 V, Ta = 25°C	—	—	50	μA						
				VR = 80 V, Ta = 85°C	—	—	100							
Clamp diode forward voltage	VF	5	5	IF = 500 mA	—	—	2.0	V						
Supply current	Output on	ICC (ON)	3	3	3	3	3	3	3	VCC = 5.5 V, VIN = 2.4 V	35	40	mA/ch	
	Output off	ICC (OFF)								VCC = 5.5 V, VIN = 0.4 V	—	10	μA	
Input capacitance	CIN	6	6	VIN = 0 V, f = 1 MHz	—	15	—	pF						
Turn-on delay	tON	7	7	7	7	7	7	7	7	VOUT = 80 V, RL = 125 Ω	—	0.2	0.4	μs
Turn-off delay	tOFF									Ta = 60°C, VCC = 5.0 V, CL = 15 pF	—	4.0	8.0	

Test Circuit

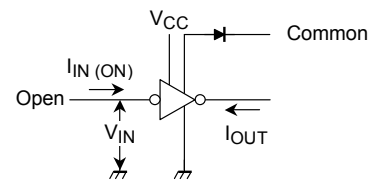
1. ICEX



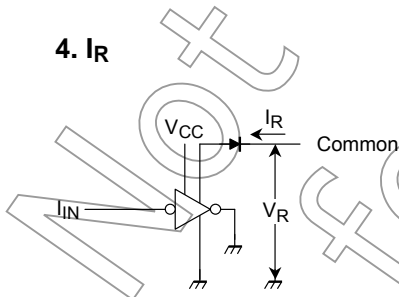
2. hFE, VCE (sat)



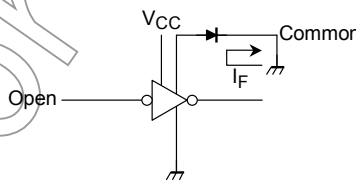
3. VIN (ON)



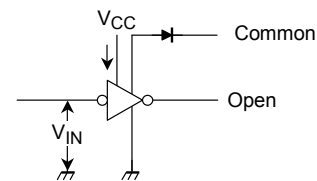
4. IR



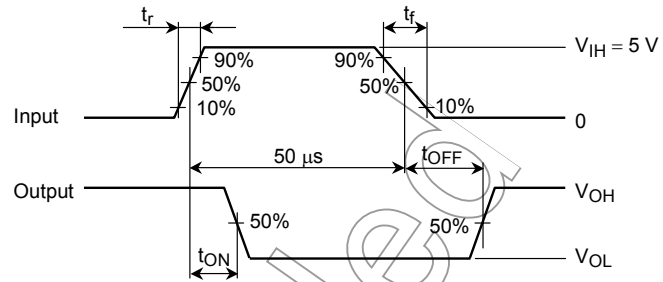
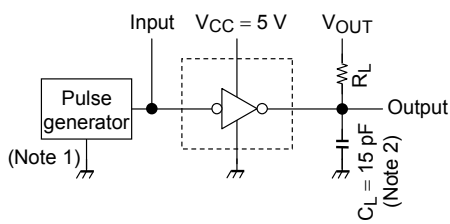
5. VF



6. ICC (ON), ICC (OFF)



7. t_{ON}, t_{OFF}



Note 1: Pulse width 50 μs, 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

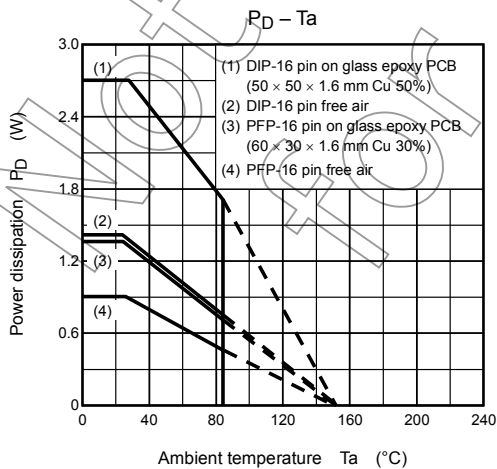
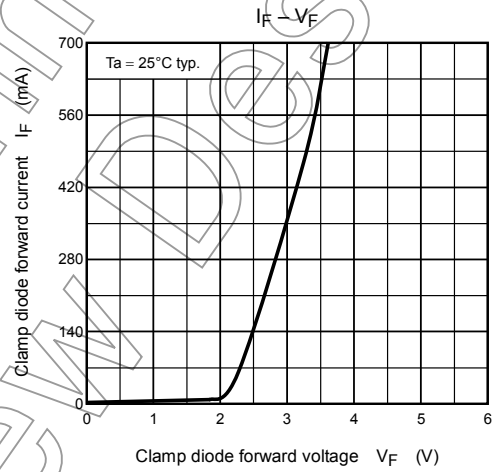
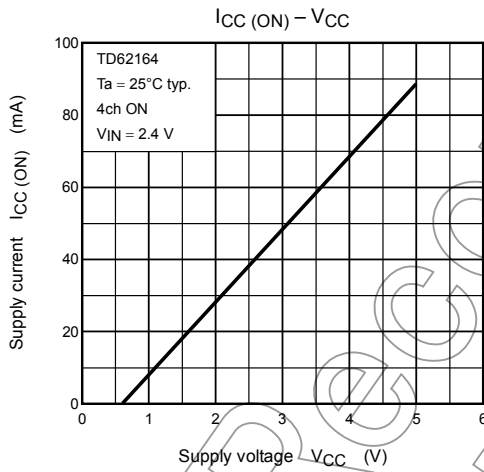
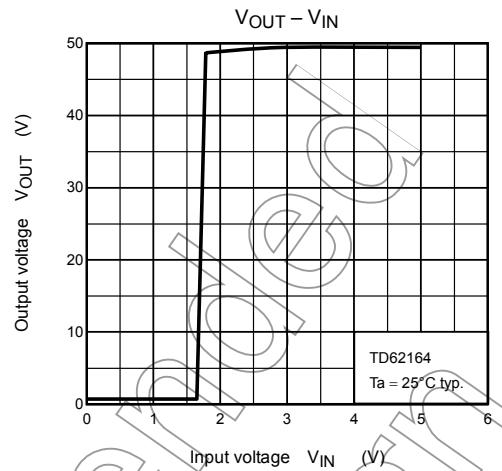
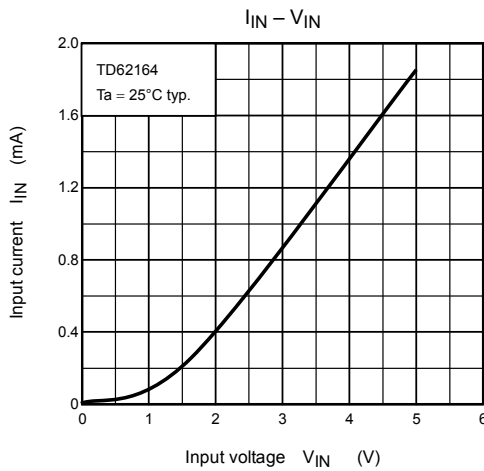
This IC does not include built-in protection circuits for excess current or overvoltage.

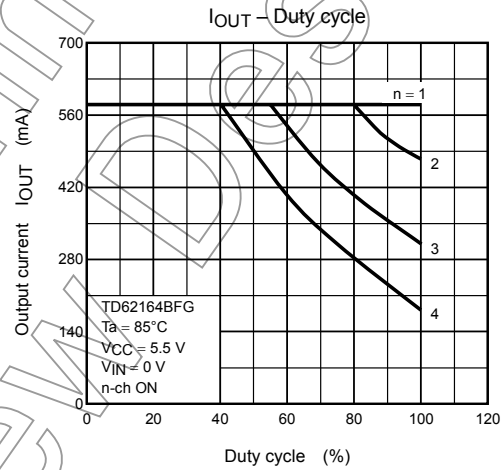
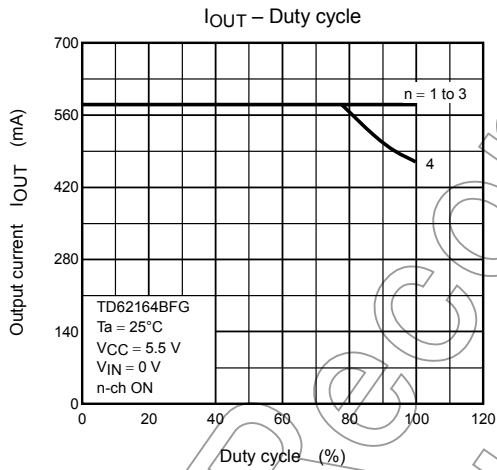
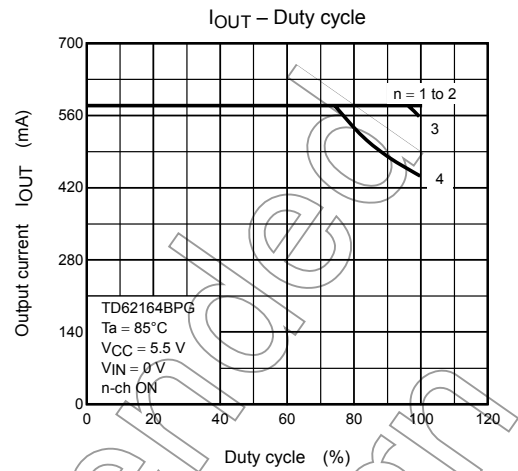
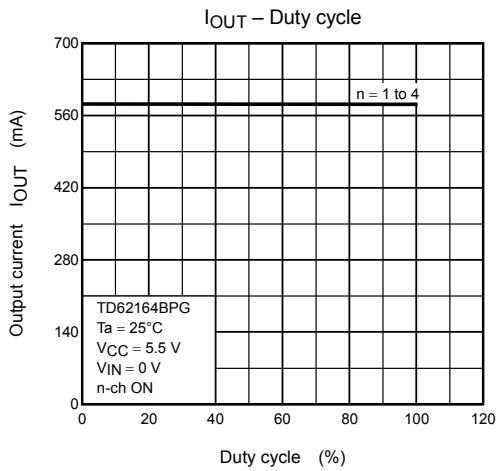
If this IC is subjected to excess current or overvoltage, it may be destroyed.

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.

Not Recommended for New Design



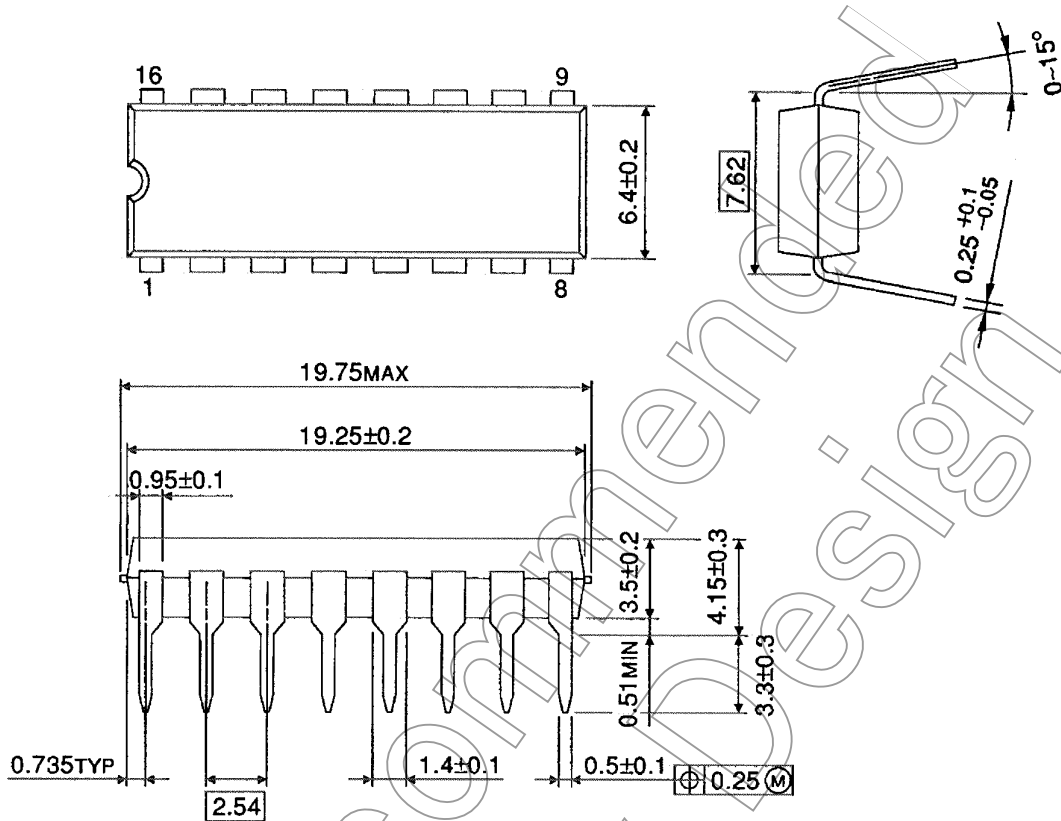


Not for New

Package Dimensions

DIP16-P-300-2.54A

Unit : mm



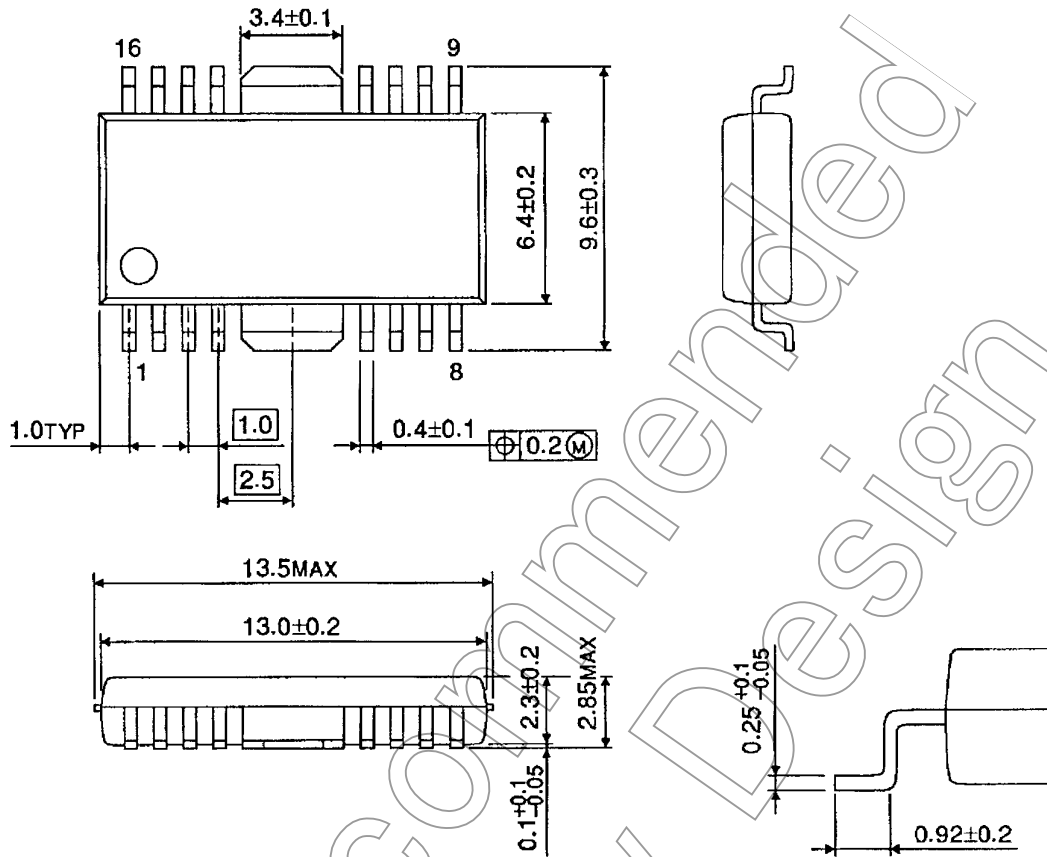
Weight: 1.11 g (typ.)

Not Recommended for New Design

Package Dimensions

HSOP16-P-300-1.00

Unit : mm



Weight: 0.50 g (typ.)

Not Recommended for New Design

About solderability, following conditions were confirmed

- Solderability
 - (1) Use of Sn-37Pb 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

RESTRICTIONS ON PRODUCT USE

060116EBA

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