

TD62008APG,TD62008AFG

7CH DARLINGTON SINK DRIVER

The TD62008APG / AFG are high-voltage, high-current darlington drivers comprised of seven NPN darlington pairs. All units feature integral clamp diodes for switching inductive loads and protective diodes against a negative input voltage. The TD62008APG / AFG are suitable for interfaces from minus and plus dual supply voltage system to plus single supply voltage system.

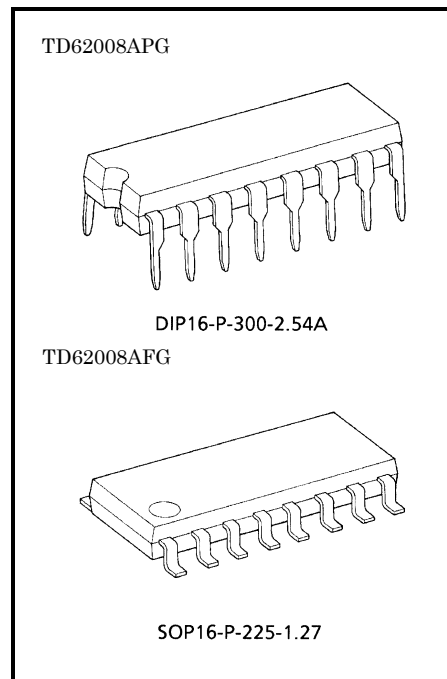
Applications include relay, hammer, lamp and display (LED) drivers.

Please observe the thermal condition for using.

This devices are a product for the Pb free(Sn-Ag).

FEATURES

- Output current (single output) 400 mA (Max)
- High sustaining voltage output 50 V (Min)
- Output clamp diodes
- Protective diodes against a negative input voltage
- Inputs base resistor $R_{IN} = 20\text{ k}\Omega$
- Inputs compatible with 9~15 V PMOS, CMOS.
- Package type-AP : DIP-16 pin
- Package type-F, AF: SOP-16 pin

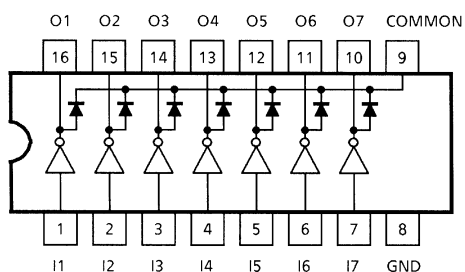


Weight

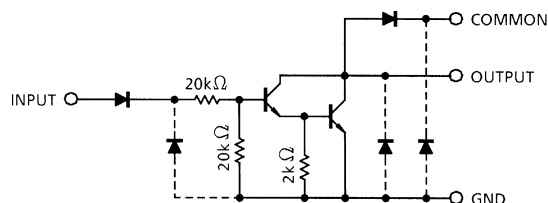
DIP16-P-300-2.54A : 1.11 g (Typ.)

SOP16-P-225-1.27 : 0.16 g (Typ.)

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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		V _{CE (SUS)}	-0.5 ~ 50	V
Output Current		I _{OUT}	400	mA / ch
Input Voltage		V _{IN}	-40 ~ 40	V
Clamp Diode Reverse Voltage		V _R	50	V
Clamp Diode Forward Current		I _F	400	mA
Power Dissipation	AP	P _D	1.47	W
	F / AF		0.625 (Note)	
Operating Temperature		T _{opr}	-40 ~ 85	°C
Storage Temperature		T _{stg}	-55 ~ 150	°C

Note: On Glass Epoxy PCB (30 × 30 × 1.6 mm Cu 50%)

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Output Sustaining Voltage		V _{CE (SUS)}		0	—	50	V
Output Current		I _{OUT}	DC 1 Circuit, T _{pw} = 25%, Duty = 40%	0	—	400	mA
			T _{pw} = 25 ms, Duty = 10%, 7 Circuits	0	—	200	
Input Voltage		V _{IN}		−35	—	35	V
Clamp Diode Reverse Voltage		V _R		—	—	50	V
Clamp Diode Forward Current		I _F		—	—	400	mA
Power Dissipation	AP	P _D		—	—	0.52	W
	AF		Ta = 85°C (Note)	—	—	0.325	

Note: On Glass Epoxy PCB (30 × 30 × 1.6 mm Cu 50%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	$V_{OUT} = 50\text{ V}$	—	—	100	μA
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	2	$I_{OUT} = 400\text{ mA}$	—	1.3	2.4	V
				$I_{OUT} = 200\text{ mA}$	—	1.0	1.6	
Input Current	"H" Level	$I_{IN(ON)}$	4	$V_{IN} = 18\text{ V}$	—	0.85	1.8	mA
				$V_{IN} = 35\text{ V}$	—	—	3.8	
	"L" Level	$I_{IN(OFF)}$	4	$V_{IN} = -35\text{ V}$	—	—	-20	μA
DC Current Transfer Ratio		h_{FE}	3	$V_{CE} = 4\text{ V}, I_{OUT} = 350\text{ mA}$	1000	3000	—	
Clamp Diode Reverse Current		I_R	5	$V_R = 50\text{ V}, V_R = 35\text{ V (Type-F)}$	—	—	100	μA
Clamp Diode Forward Voltage		V_F	6	$I_F = 400\text{ mA}$	—	1.5	2.4	V
Turn-On Delay		t_{ON}	7	$C_L = 15\text{ pF}$ $V_{OUT} = 50\text{ V}, R_L = 156\ \Omega$	—	0.1	—	μs
Turn-Off Delay		t_{OFF}			—	0.2	—	μs

1. ITEX

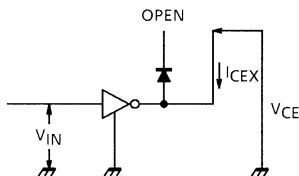
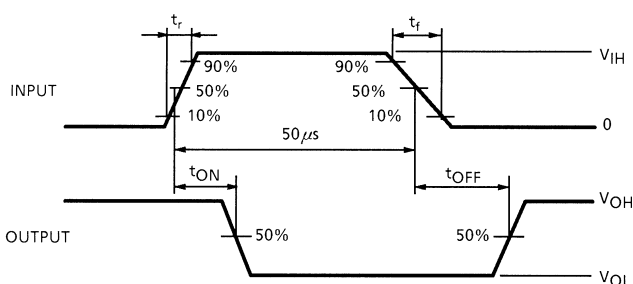


Diagram illustrating a common-emitter amplifier configuration. The input current I_{IN} flows into the base of the transistor. The emitter is grounded. The collector is connected to a load resistor (labeled OPEN) and the collector current I_C flows out of the collector. The collector-emitter voltage is V_{CE} . The current gain is given by $h_{FE} = \frac{I_C}{I_{IN}}$.

The diagram shows an input signal labeled 'OPEN' connected to the input of an inverter. The output of the inverter is also labeled 'OPEN'. A pull-up resistor is connected between the output of the inverter and a supply voltage V_P . A diode is connected in parallel with the resistor, with its cathode to the output and its anode to V_P . The current through the resistor is labeled I_R .



Note 1: Pulse Width 50 μ s
Duty Cycle 10%
Output Impedance 50 Ω
 $t_r \leq 5$ ns, $t_f \leq 10$ ns

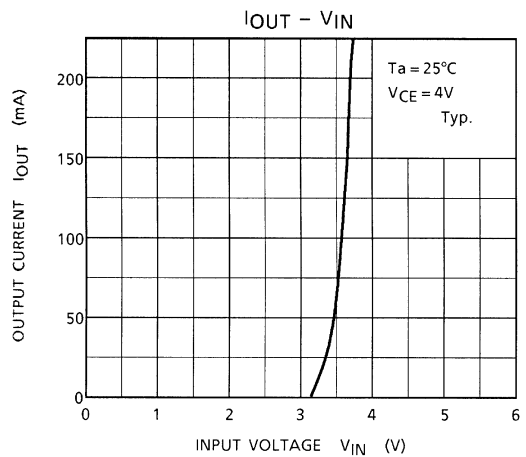
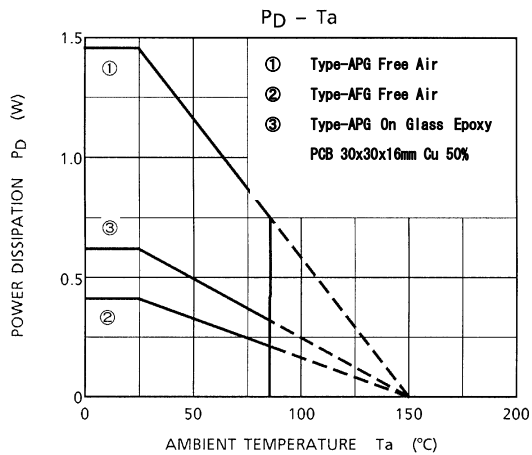
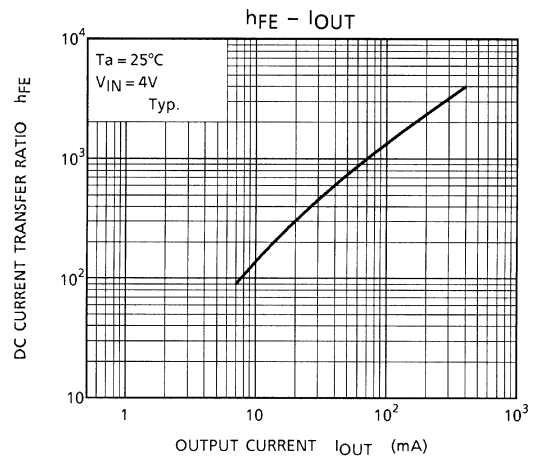
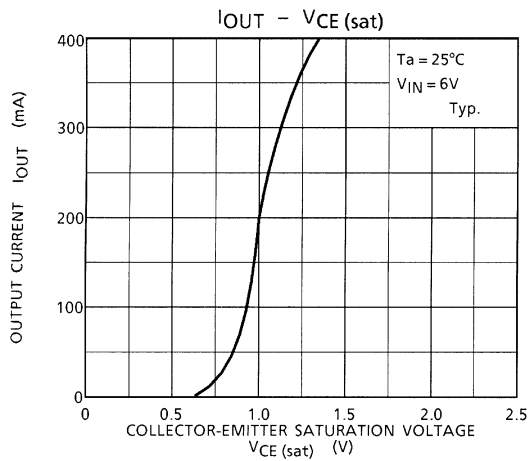
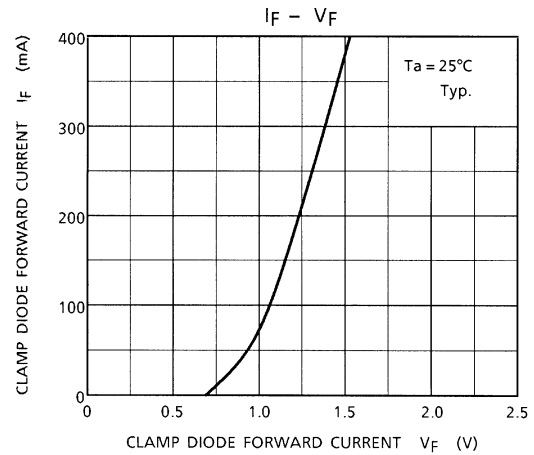
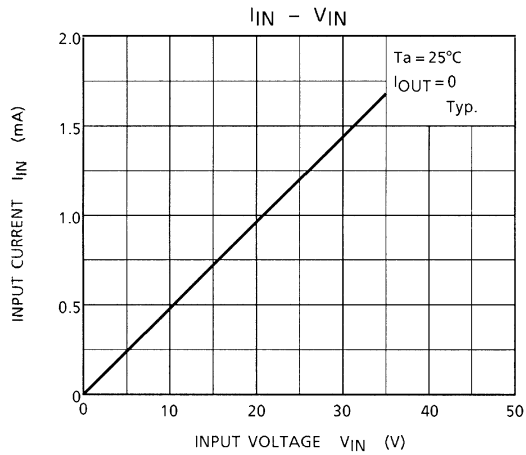
Note 2: CL includes probe and jig capacitance

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.

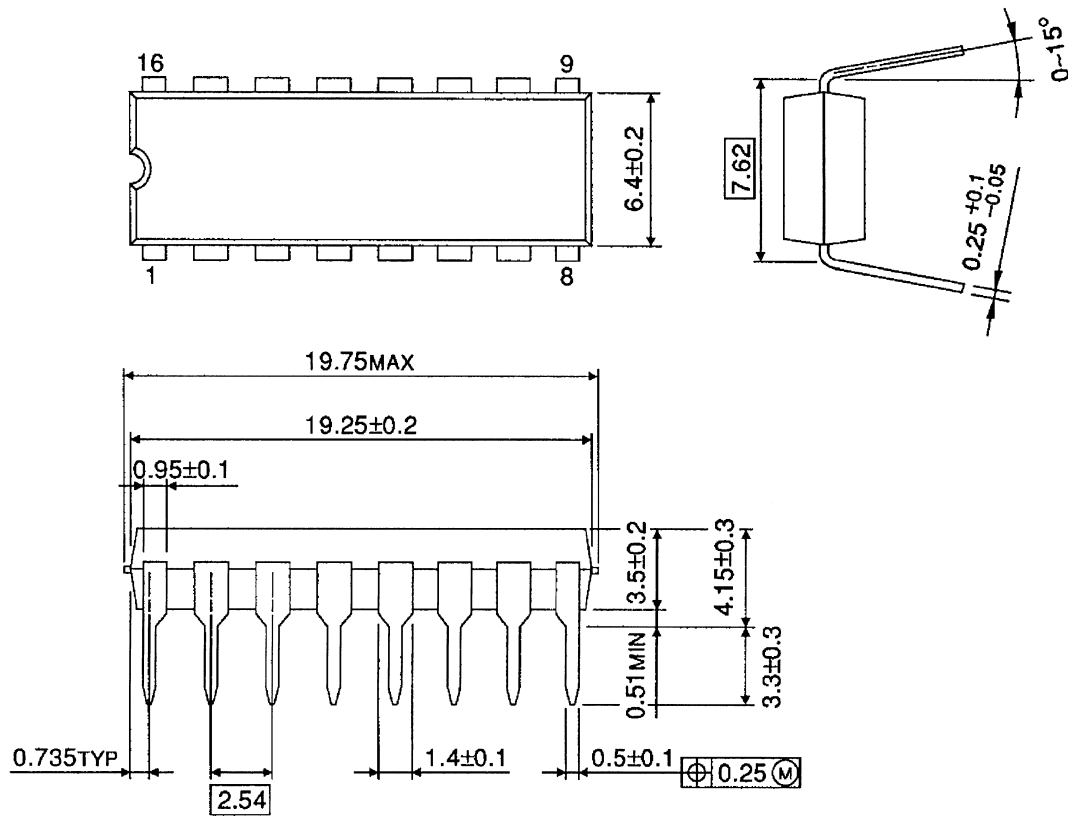
Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit : mm

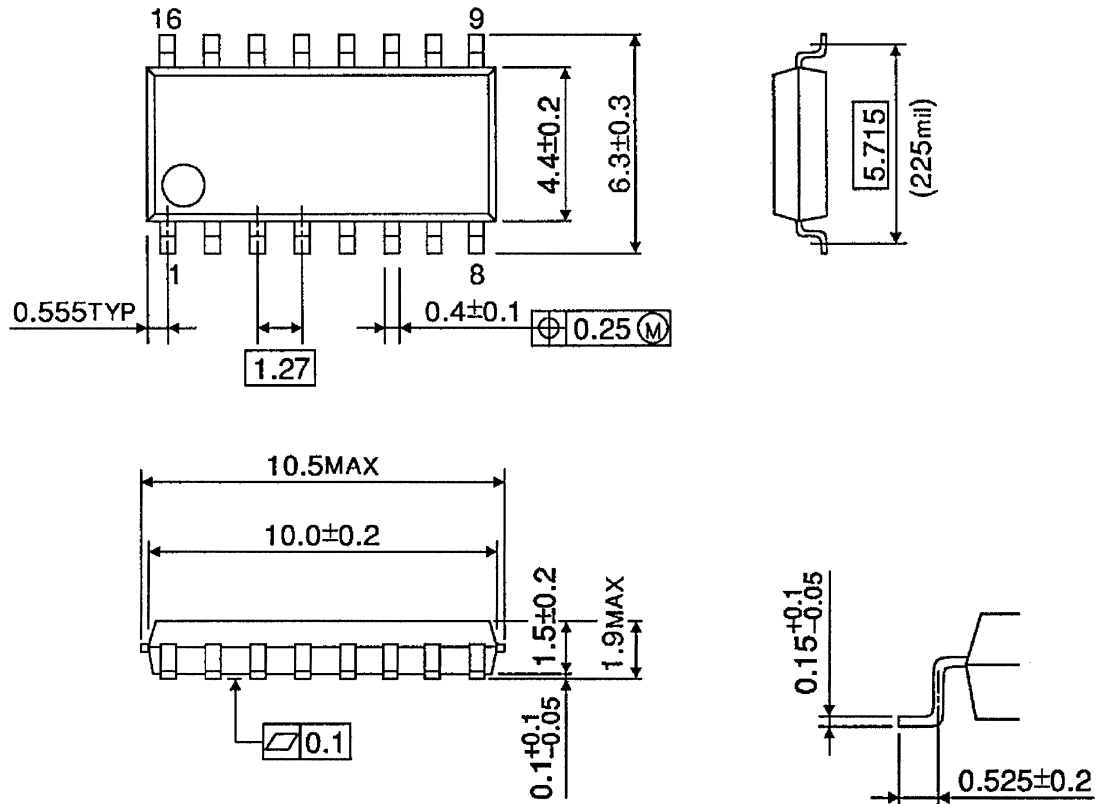


Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

SOP16-P-225-1.27

Unit : mm



Weight: 0.16 gTyp.)

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

RESTRICTIONS ON PRODUCT USE

030619EBA

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