

8ch DARLINGTON SINK DRIVER

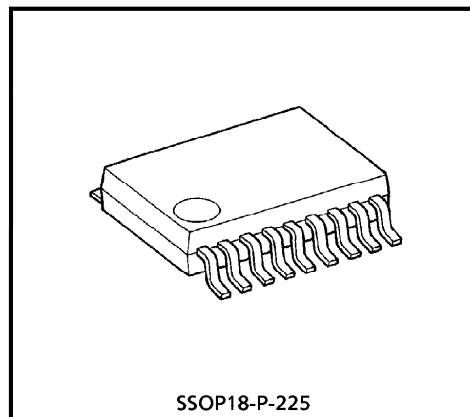
The TD62083AFN and TD62084AFN are high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.

All units feature integral clamp diodes for switching inductive loads.

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

FEATURES

- Package Type : SSOP18 pin
- High Sustaining Voltage Output : 50V (Min.)
- Output Current (Single Output) : 500mA / ch (Max.)
- Output Clamp Diodes
- Inputs compatible with Various Types of Logic.

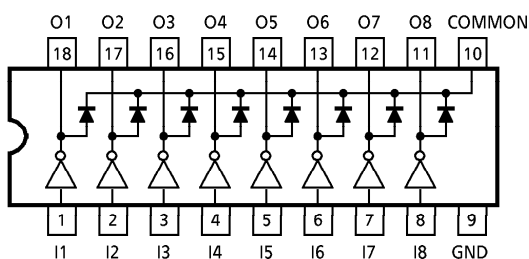


SSOP18-P-225

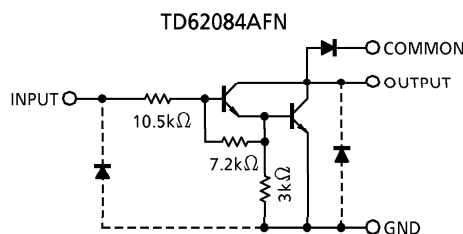
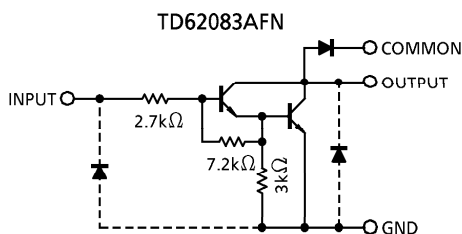
Weight : 0.09g (Typ.)

| TYPE | INPUT BASE RESISTOR | DESIGNATION |
|------------|---------------------|--------------------|
| TD62083AFN | 2.7k Ω | TTL, 5V C-MOS |
| TD62084AFN | 10.5k Ω | 6~15V P-MOS, C-MOS |

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

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TD62083AFN - 1

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TOSHIBA CORPORATION

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|-----------------------------|----------------------|---------|---------|
| Output Sustaining Voltage | V _{CE(SUS)} | -0.5~50 | V |
| Output Current | I _{OUT} | 500 | mA / ch |
| Input Voltage | V _{IN} | -0.5~30 | V |
| Clamp Diode Reverse Voltage | V _R | 50 | V |
| Clamp Diode Forward Current | I _F | 500 | mA |
| Power Dissipation | P _D * | 0.96 | W |
| Operating Temperature | T _{opr} | -40~85 | °C |
| Storage Temperature | T _{stg} | -55~150 | °C |

*On Glass Epoxy PCB (50×50×1.6mm Cu 40%)

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 | — | — | 350 | mA / ch | |
| | | | T _{pw} = 25ms, 8 Circuits Ta = 85°C, T _j = 120°C | Duty = 10% | 0 | — | | 260 |
| | | | | Duty = 50% | 0 | — | | 90 |
| Input Voltage | | V _{IN} | | 0 | — | 30 | V | |
| Input Voltage (Output ON) | TD62083 | V _{IN(ON)} | | 3.5 | — | 30 | V | |
| | TD62084 | | | 8 | — | 30 | | |
| Clamp Diode Reverse Voltage | | V _R | | — | — | 50 | V | |
| Clamp Diode Forward Current | | I _F | | — | — | 400 | mA | |
| Power Dissipation | | P _D * | | — | — | 0.4 | W | |

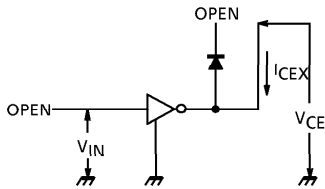
*On Glass Epoxy PCB (50×50×1.6mm Cu 40%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

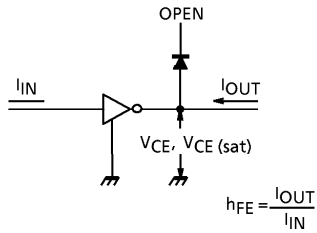
| CHARACTERISTIC | | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-----------------------------|---------|---------------------------------|-----------------------|---|-------------------------------------|------|------|------|
| Output Leakage Current | TD62083 | I _{CEX} | 1 | V _{CE} = 50V, Ta = 25°C | — | — | 50 | μA |
| | | | | V _{CE} = 50V, Ta = 85°C | — | — | 100 | |
| | TD62084 | | | V _{CE} = 50V, V _{IN} = 1V | — | — | 500 | |
| Output Saturation Voltage | | V _{CE (sat)} | 2 | I _{OUT} = 350mA, I _{IN} = 500μA | — | 1.3 | 1.6 | V |
| | | | | I _{OUT} = 200mA, I _{IN} = 350μA | — | 1.1 | 1.3 | |
| | | | | I _{OUT} = 100mA, I _{IN} = 250μA | — | 0.9 | 1.1 | |
| Input Current | TD62083 | I _{IN (ON)} | 3 | V _{IN} = 3.85V | — | 0.93 | 1.35 | mA |
| | | | | V _{IN} = 5V | — | 0.35 | 0.5 | |
| | TD62084 | | | V _{IN} = 12V | — | 1.0 | 1.45 | |
| | | | I _{IN (OFF)} | 4 | I _{OUT} = 500μA, Ta = 85°C | 50 | 65 | — |
| Input Voltage | TD62083 | V _{IN (ON)} | 5 | V _{CE} = 2V, I _{OUT} = 200mA | — | — | 2.4 | V |
| | | | | V _{CE} = 2V, I _{OUT} = 250mA | — | — | 2.7 | |
| | | | | V _{CE} = 2V, I _{OUT} = 300mA | — | — | 3.0 | |
| | TD62084 | | | V _{CE} = 2V, I _{OUT} = 125mA | — | — | 5.0 | |
| | | | | V _{CE} = 2V, I _{OUT} = 200mA | — | — | 6.0 | |
| | | | | V _{CE} = 2V, I _{OUT} = 275mA | — | — | 7.0 | |
| | | | | V _{CE} = 2V, I _{OUT} = 350mA | — | — | 8.0 | |
| DC Current Transfer Ratio | | h _{FE} | 2 | V _{CE} = 2V, I _{OUT} = 350mA | 1000 | — | — | |
| Clamp Diode Reverse Current | | I _R | 6 | Ta = 25°C, V _R = 50V | — | — | 50 | μA |
| | | Ta = 85°C, V _R = 50V | | — | — | 100 | | |
| Clamp Diode Forward Voltage | | V _F | 7 | I _F = 350mA | — | — | 2.0 | V |
| Input Capacitance | | C _{IN} | — | | — | 15 | — | pF |
| Turn-On Delay | | t _{ON} | 8 | R _L = 125Ω, V _{OUT} = 50V | — | 0.1 | — | μs |
| Turn-Off Delay | | t _{OFF} | | R _L = 125Ω, V _{OUT} = 50V | — | 0.2 | — | |

TEST CIRCUIT

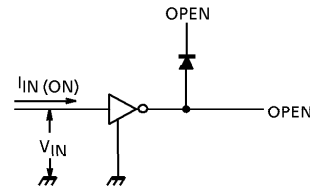
1. I_{CEX}



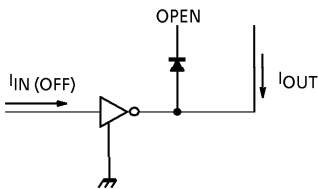
2. $V_{CE(sat)}$, h_{FE}



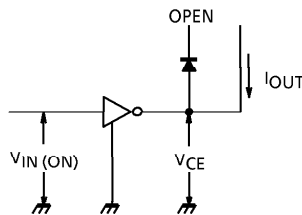
3. $I_{IN(ON)}$



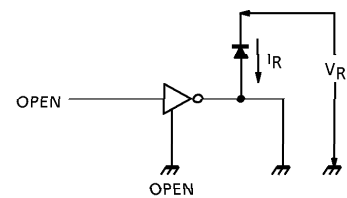
4. $I_{IN(OFF)}$



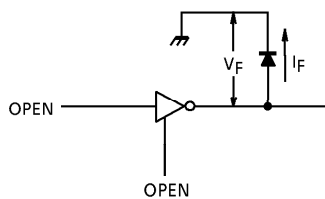
5. $V_{IN(ON)}$



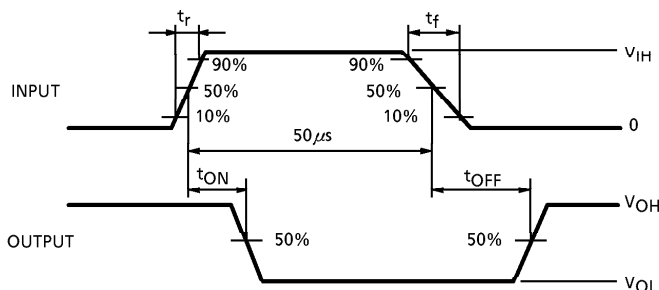
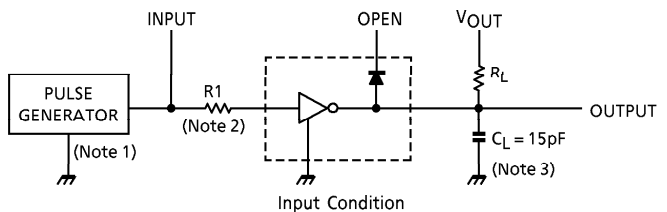
6. I_R



7. V_F



8. t_{ON} , t_{OFF}



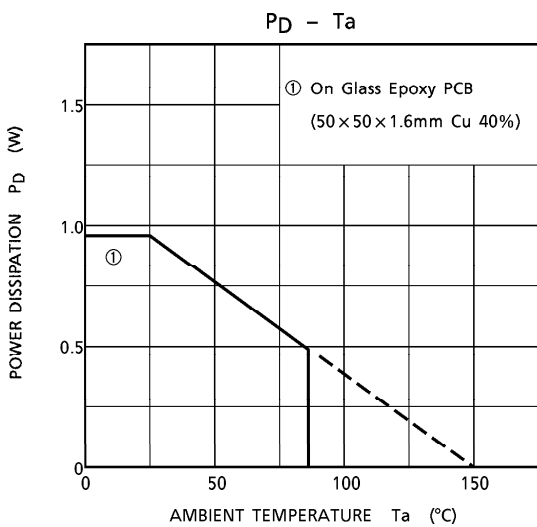
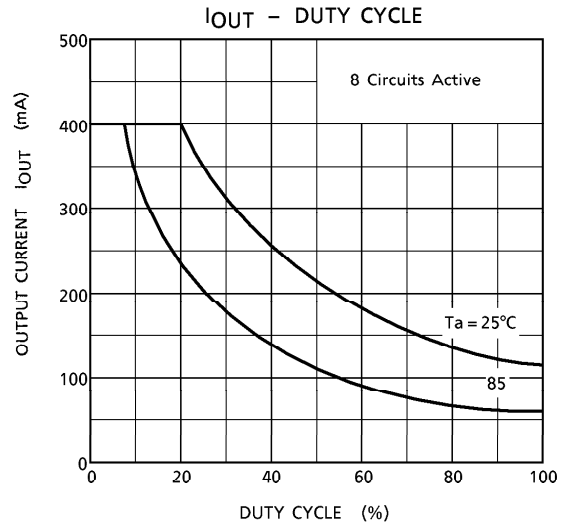
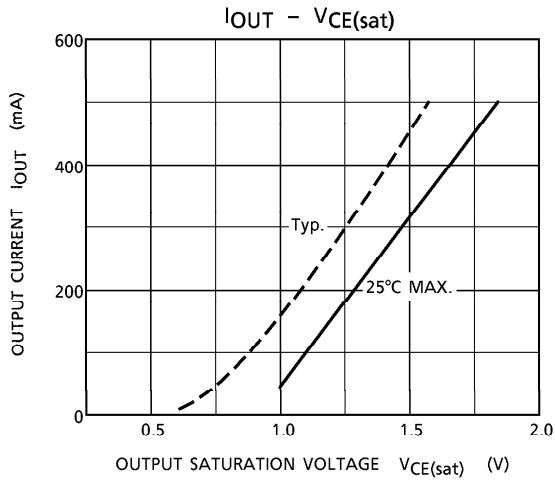
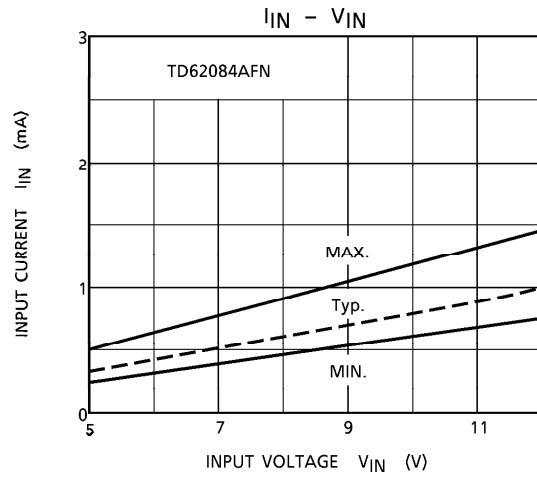
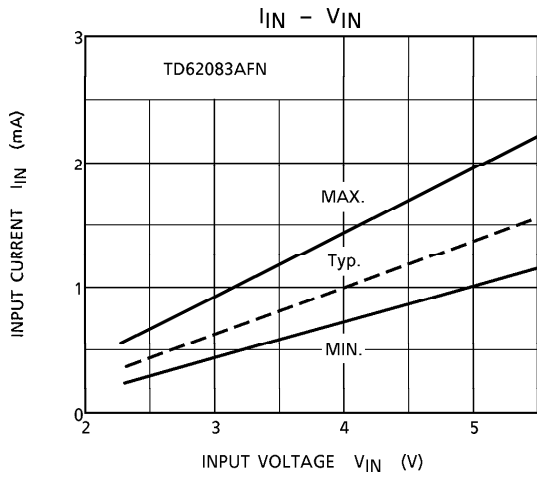
Note 1 : Pulse Width 50µs, Duty Cycle 10%
Output Impedance 50Ω, $t_r \leq 5\text{ns}$, $t_f \leq 10\text{ns}$

Note 2 : See below

Input Condition

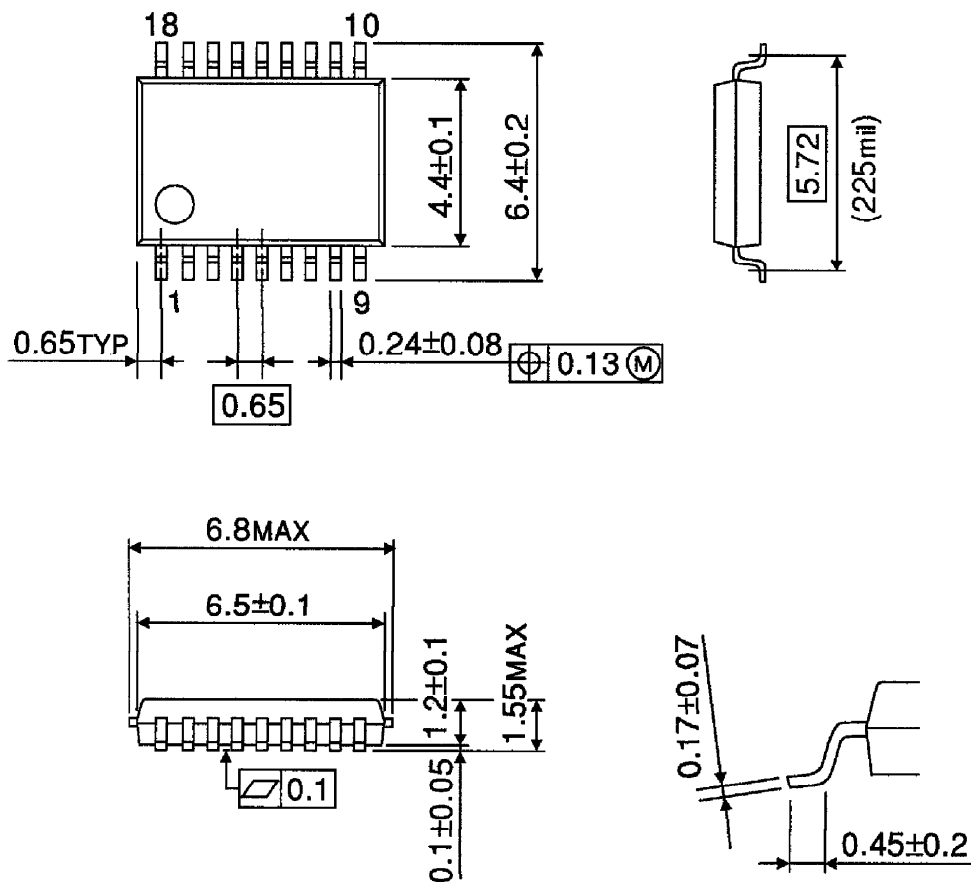
| TYPE NUMBER | R1 | V_{IH} |
|-------------|----|----------|
| TD62083AFN | 0 | 3V |
| TD62084AFN | 0 | 8V |

Note 3 : CL includes probe and jig capacitance.



OUTLINE DRAWING
SSOP18-P-225

Unit : mm



Weight : 0.09g (Typ.)