

8CH Darlington Sink Driver

IK62083/4

The IK62083~IK62084 are high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.

All units feature integral clamp diodes for switching inductive loads.

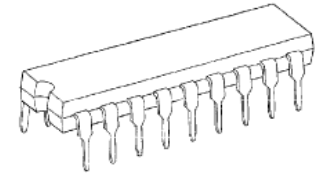
Application include relay, hammer, lamp and display (LED) drivers.

Features

- Output current (single output) 500mA (Max)
- Output clamp diodes
- Inputs compatible with various types of logic

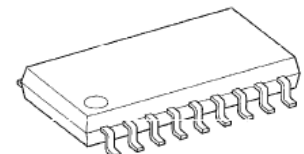
TYPE	INPUT BASE RESISTOR	DESIGNATION
IK62083N/DW	2.7k Ω	TTL, 5V CMOS
IK62084N/DW	10.5k Ω	6~15V PMOS, CMOS

**IK62083N
IK62084N**



DIP-18

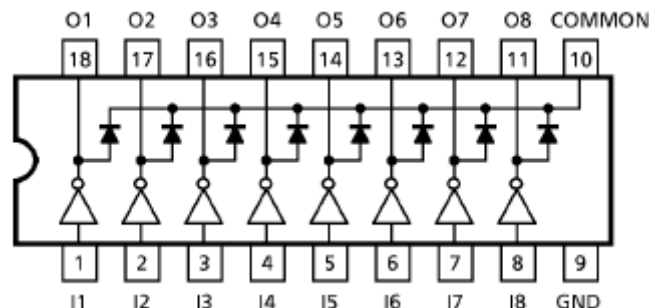
**IK62083DW
IK62084DW**



SOP-18

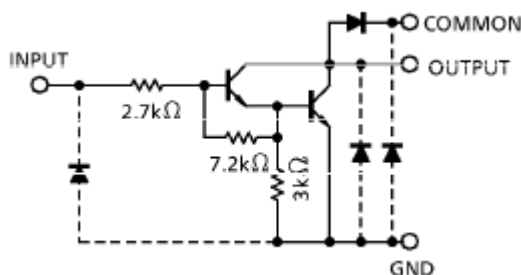
$T_A = -40^{\circ} \sim +85^{\circ} \text{ C}$
for all packages.

Pin Configuration (top view)

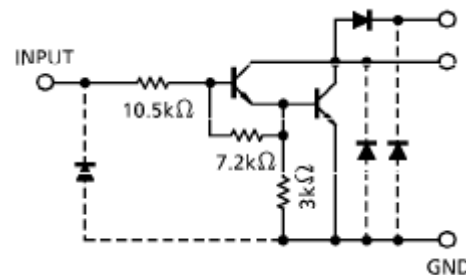


Block Schematics

IK62083



IK62084



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

Absolute Maximum Ratings

Ta =25°C

Parameter		Symbol	Limit Values		Unit
			min.	max.	
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	IK62083N	P_D	1.47		W
	IK62083DW		0.96		
Operating Temperature		T_{opr}	-40	85	°C
Storage Temperature		T_{stg}	-55	150	°C

* Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Recommended Operating Conditions

(Ta=-40~85°C)

Parameter		Symbol	Test Condition	Limit Value			Unit
				Min	Typ	Max	
Output Sustaining Voltage		V _{CE(SUS)}		0	-	50	V
Output Current	N	I _{OUT}	T _{pw} =25ms,Duty=10%, 8 Circuits	0	-	347	mA/ch
			T _{pw} =25ms,Duty=50%, 8 Circuits	0	-	123	
	DW		T _{pw} =25ms,Duty=10%, 8 Circuits	0	-	268	
			T _{pw} =25ms,Duty=50%, 8 Circuits	0	-	90	
Input Voltage		V _{IN}		0	-	30	V
Input Voltage (Output On)	IK62083N/DW	V _{IN(ON)}		3.5	-	30	V
	IK62084N/DW			8	-	30	
Clamp Diode Reverse Voltage		V _R		-	-	50	V
Clamp Diode Forward Current		I _F		-	-	400	mA
Power Dissipation	N	P _D		-	-	0.52	W
	DW			-	-	0.4	

Electrical Characteristics

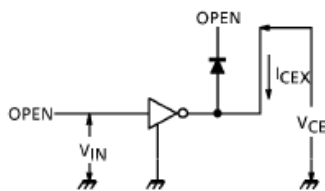
Ta = 25°C

Parameter		Symbol	Test Circuit	Test Condition		Limit Values			Unit
						Min	Typ	Max	
Output Leakage Current	IK62083	I _{CEX}	1	V _{CE} =50V	Ta=25°C	-	-	50	uA
	V _{CE} =50V			Ta=85°C	-	-	100		
	IK62084			V _{CE} =50V	V _{IN} =1V	-	-	500	
Collector-Emitter Saturation Voltage		V _{CE(sat)}	2	I _{OUT} =350mA, I _{IN} =500uA		-	1.3	1.6	V
				I _{OUT} =200mA, I _{IN} =350uA		-	1.1	1.3	
				I _{OUT} =100mA, I _{IN} =250uA		-	0.9	1.1	
Input Current	IK62083	I _{IN(ON)}	2	V _{IN} =3.85V		-	0.93	1.35	mA
	IK62084			V _{IN} =5V		-	0.35	0.5	
				V _{IN} =12V		-	1.0	1.45	
Input Voltage (Output On)	IK62083	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	
	IK62084			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 (Note)		-	-	50	uA
				Ta=85°C (Note)		-	-	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	-	us
Turn-Off Delay		t _{OFF}	8	R _L =125Ω, V _{OUT} =50V		-	0.21	-	us

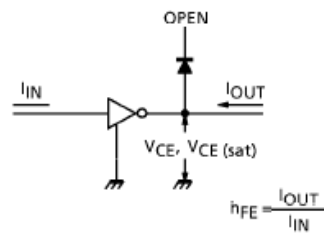
Note : V_R=V_RMAX

Test Circuit

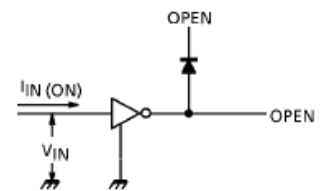
1. I_{CEX}



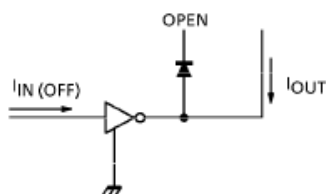
2. $V_{CE(sat)}$, h_{FE}



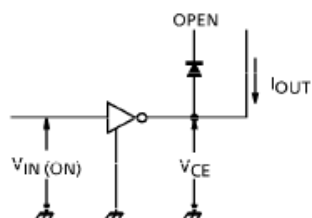
3. $I_{IN(ON)}$



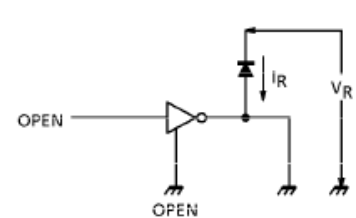
4. $I_{IN(OFF)}$



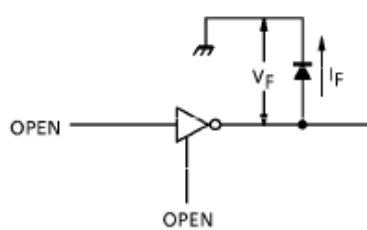
5. $V_{IN(ON)}$

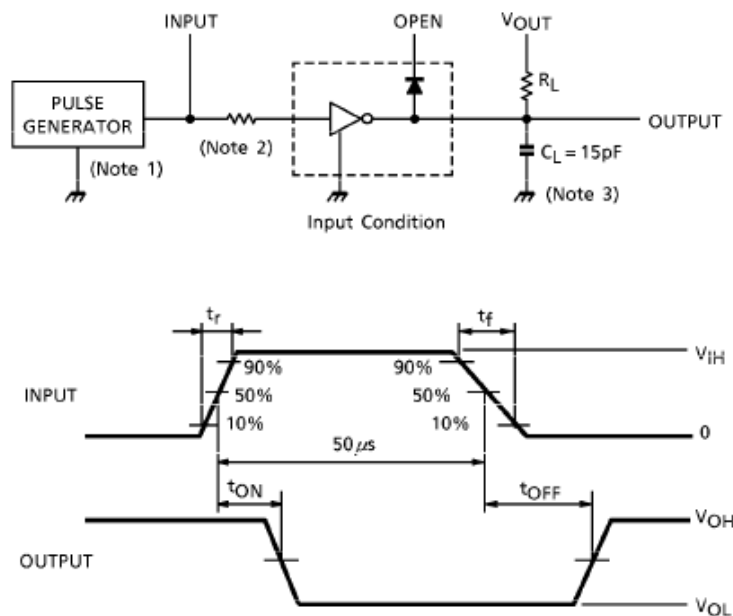


6. I_R



7. V_F



8. t_{ON} , t_{OFF} 

Note 1 : Pulse Width 50us, 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}
IK62083	0Ω	3V
IK62084	0Ω	8V

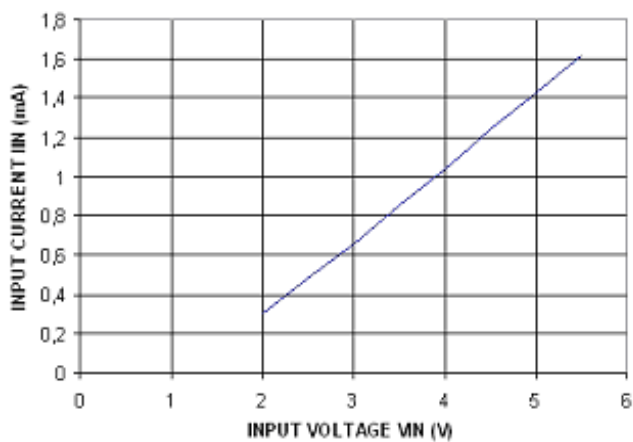
Note 3 : C_L includes probe and jig capacitance

Precautions for Using

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

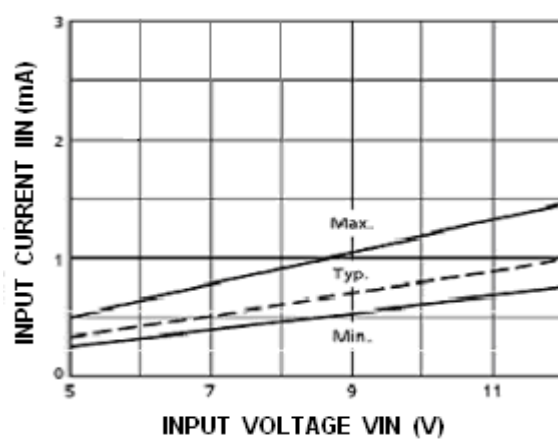
IK62083N

IIN vs VIN

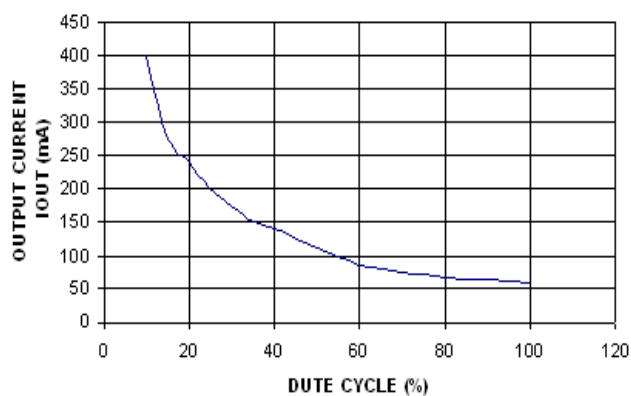


IK62084

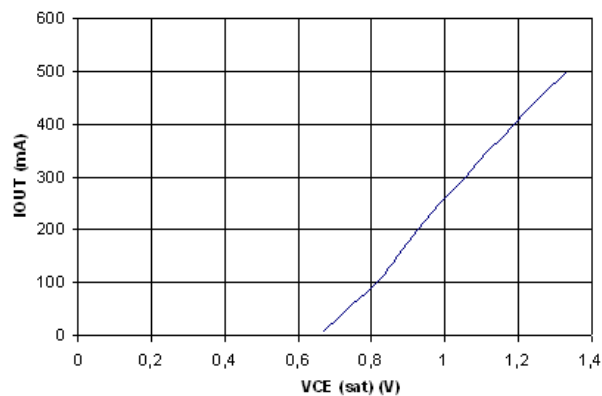
IIN vs VIN

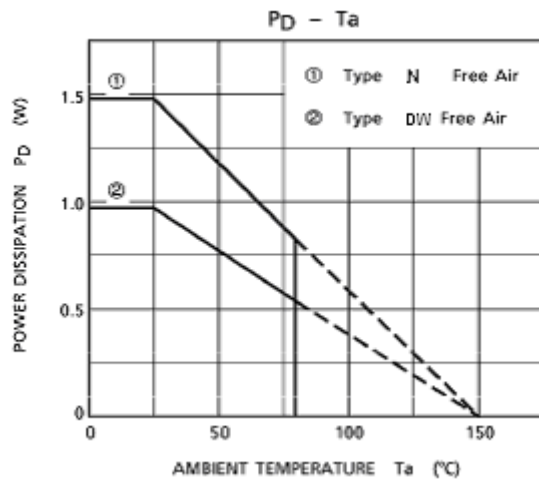
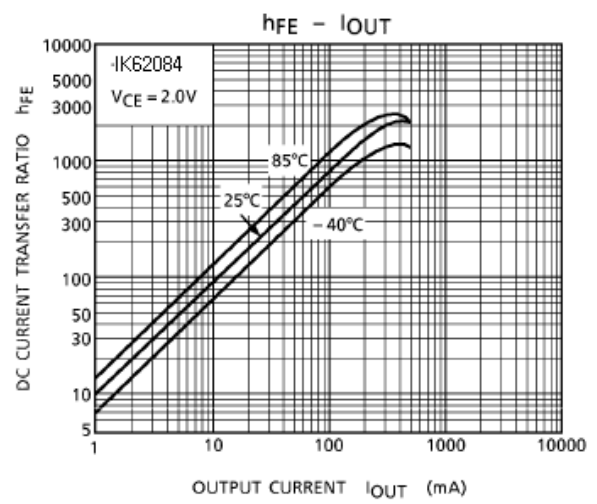
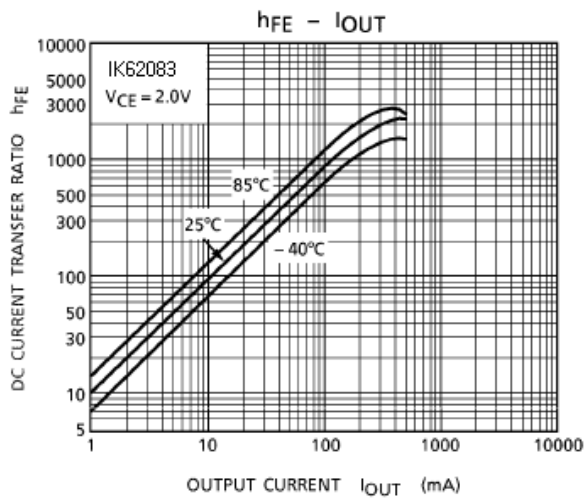


IOUT vs DUTY CYCLE



IOUT vs VCE (sat)

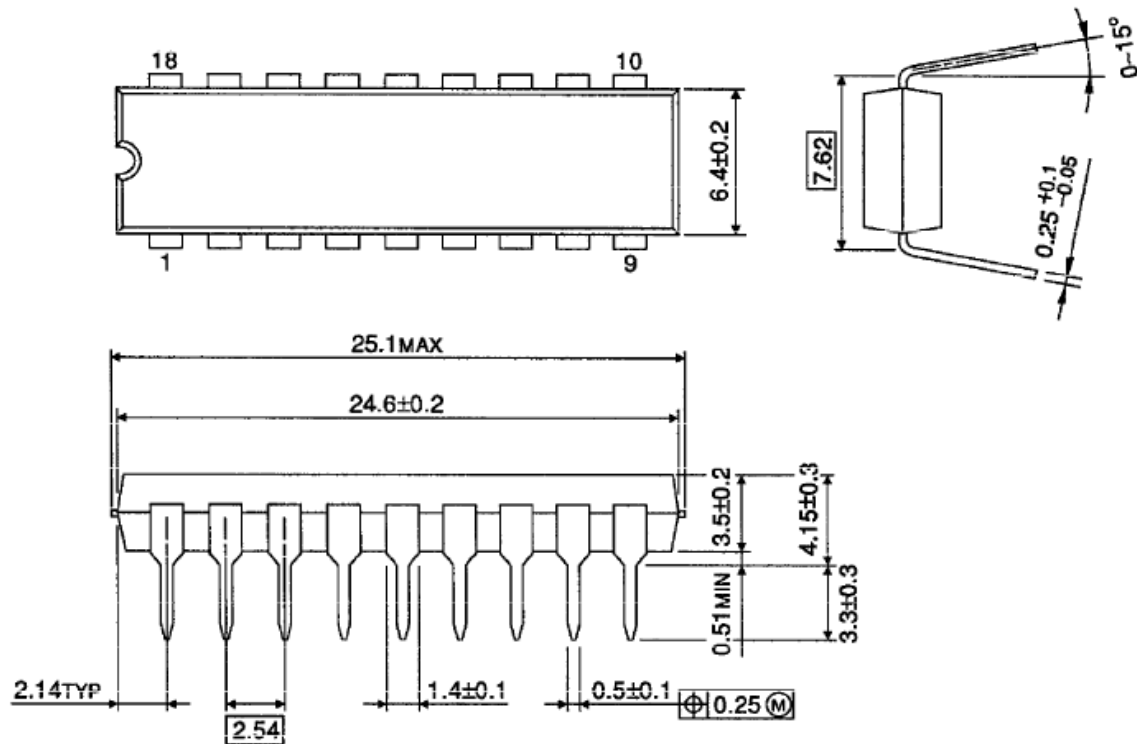




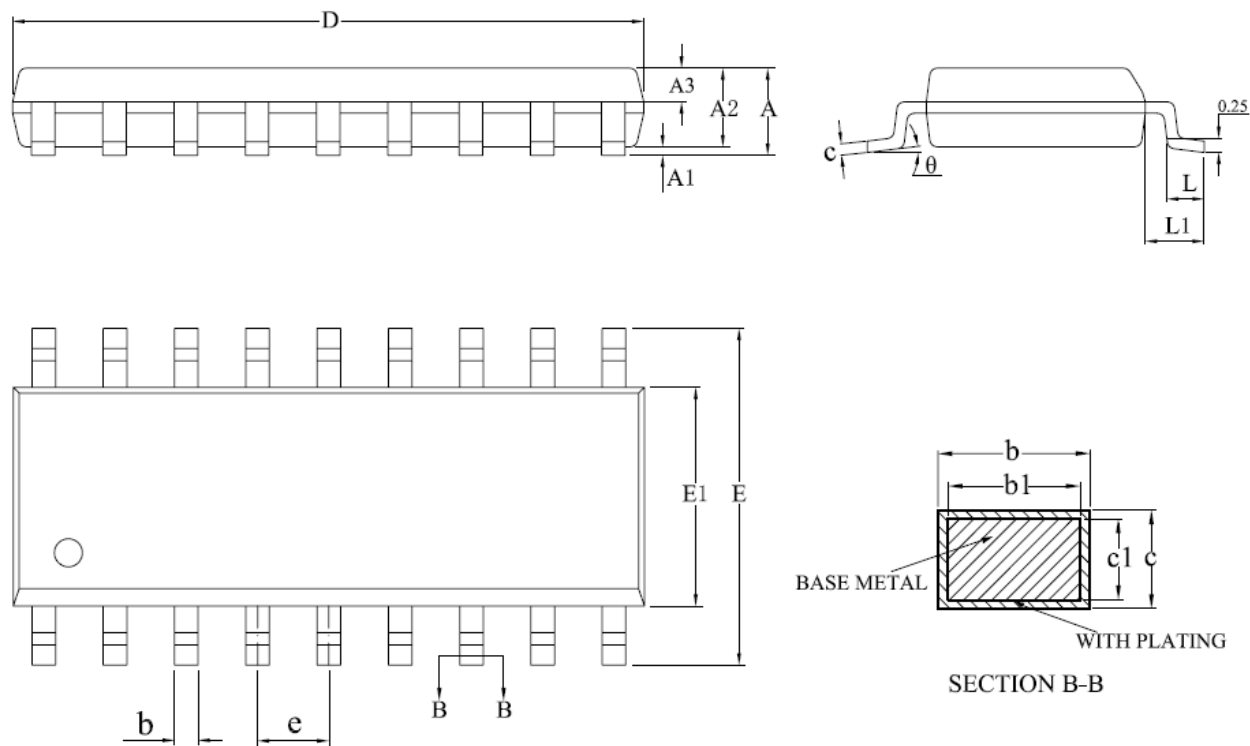
Package Dimensions

DIP-18

Unit: mm



SOP-18



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	2.70
A1	0.10	—	0.28
A2	2.25	2.30	2.35
A3	0.97	1.02	1.07
b	0.35	—	0.44
b1	0.34	0.37	0.39
c	0.26	—	0.31
c1	0.24	0.25	0.26
D	11.25	11.45	11.65
E	10.10	10.30	10.50
E1	7.30	7.50	7.70
e	1.27BSC		
L	0.70	—	1.00
L1	1.40BSC		
θ	0	—	8°
L/P载体尺寸 (mil)	140*160		