8CH Darlington Sink Driver

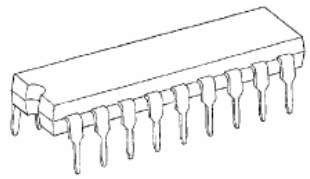
IK62083 ~ IK62084

The IL62083~IL62084 are high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.

All units feature integral clamp diodes for switching indicative loads.

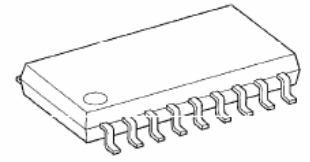
Application include relay, hammer, lamp and display (LED) drivers.

IK62083N
IK62084N



DIP-18

IK62083DW
IK62084DW



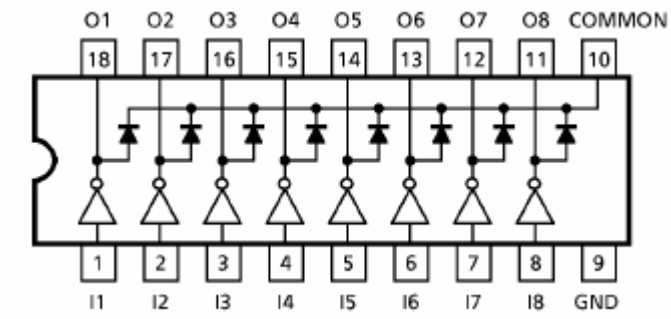
SOP-18
T_A = -40° ~ +85° C
for all packages.

Features

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

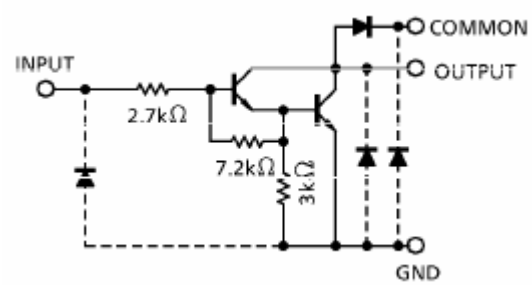
TYPE	INPUT BASE RESISTOR	DESIGNATION
IK62083N/DW	2.7kΩ	TTL, 5V CMOS
IK62084N/DW	10.5kΩ	6~15V PMOS, CMOS

Pin Configuration (top view)

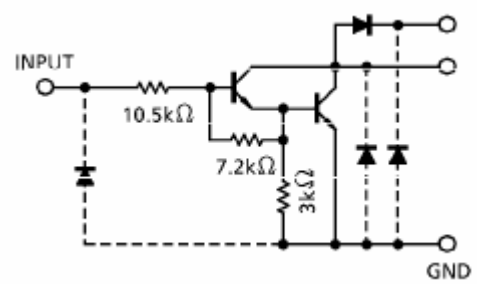


Block Schematics

IK62083



IK62084



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

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

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

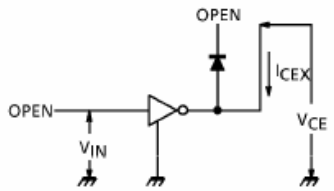
Ta = 25°C

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}=500um		-	1.3	1.6	V
				I_{OUT}=200mA,I_{IN}=350um		-	1.1	1.3	
				I_{OUT}=100mA,I_{IN}=250um		-	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

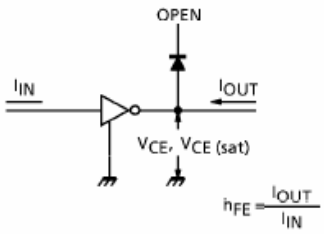
Note : V_R=V_RMAX

Test Circuit

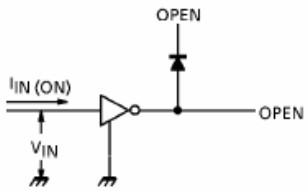
1. I_{CEX}



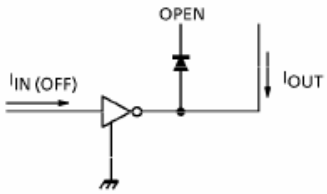
2. $V_{CE\ (sat)}$, h_{FE}



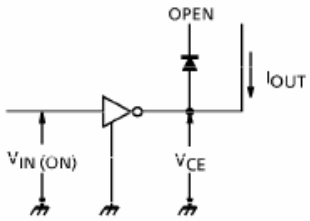
3. $I_{IN\ (ON)}$



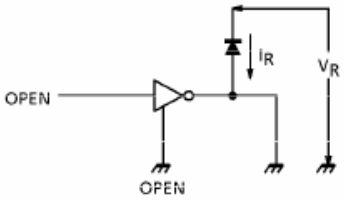
4. $I_{IN\ (OFF)}$



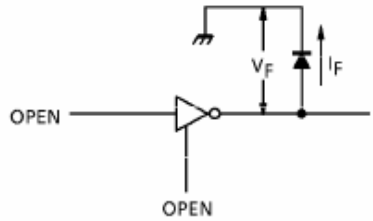
5. $V_{IN\ (ON)}$



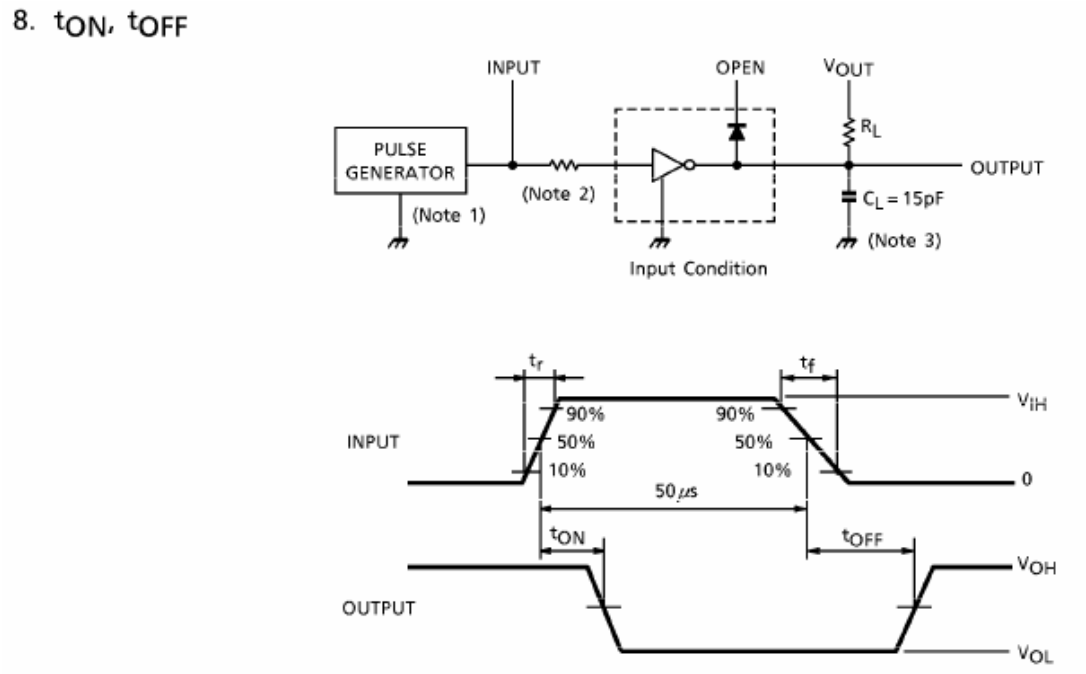
6. I_R



7. V_F



8. t_{ON}, t_{OFF}



Note 1 : Pulse Width 50us, Duty Cycle 10%
Output Impedance 50Ω, $t_r \leq 5ns$, $t_f \leq 10ns$
Note 2 : See below.

Input Condition

Type number	R1	V_{IH}
IK62083	0Ω	3V
IK62084	0Ω	8V

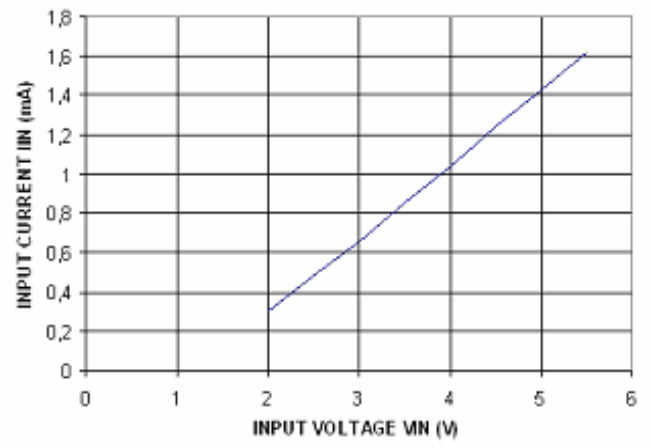
Note 3 : C_L includes probe and jig capacitance

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.

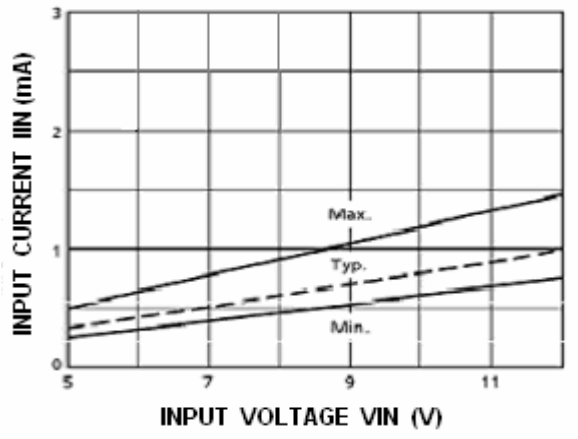
IK62083N

IIN vs VIN

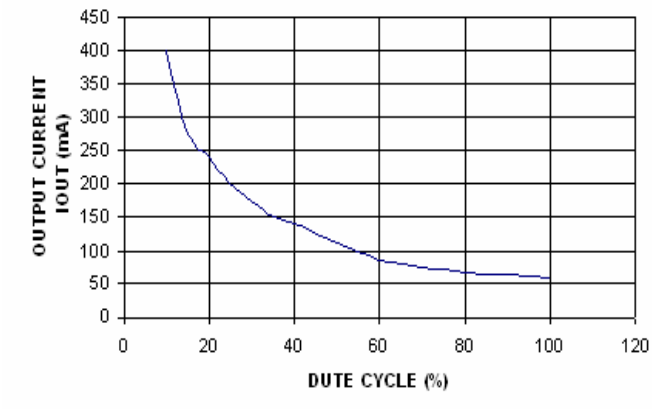


IK62084N

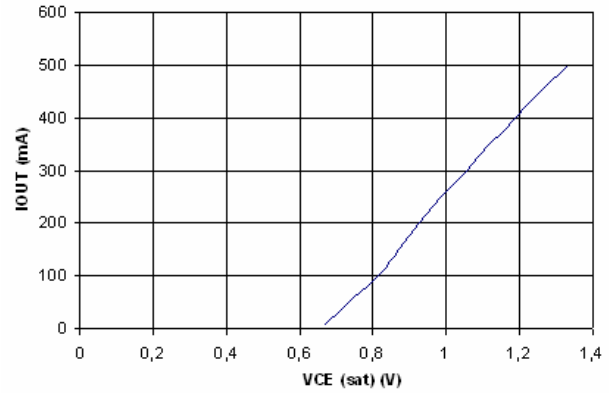
IIN vs VIN

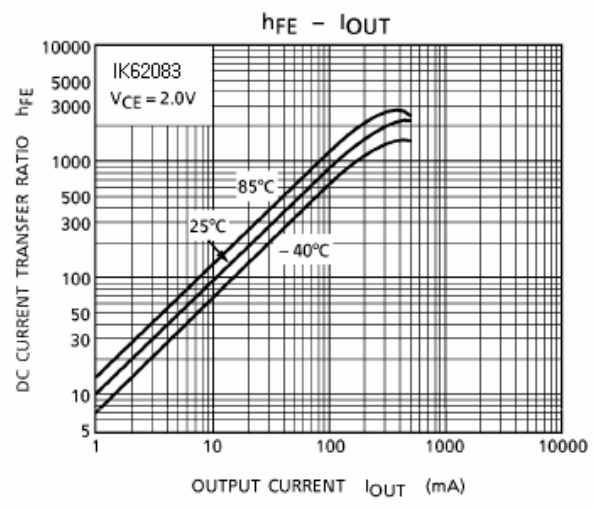


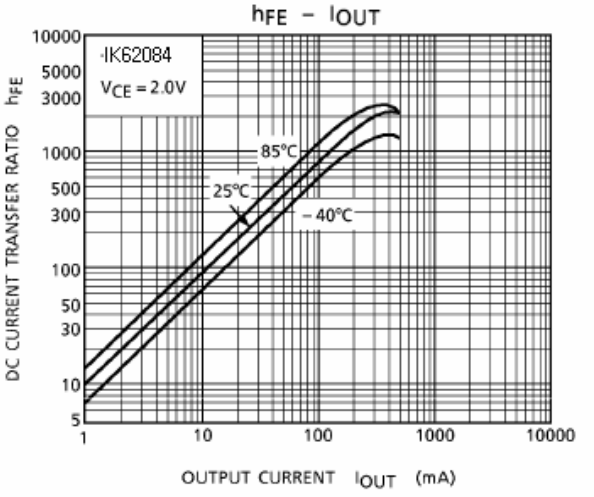
IOUT vs DUTY CYCLE

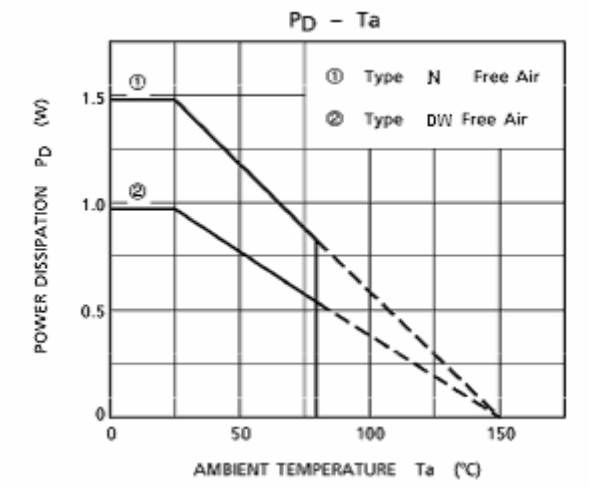


IOUT vs VCE (sat)




hFE – IOUT
IK62083
VCE = 2.0V
85°C
25°C
– 40°C
DC CURRENT TRANSFER RATIO hFE
OUTPUT CURRENT IOUT (mA)
10000
5000
3000
1000
500
300
100
50
30
10
5
1
10
100
1000
10000

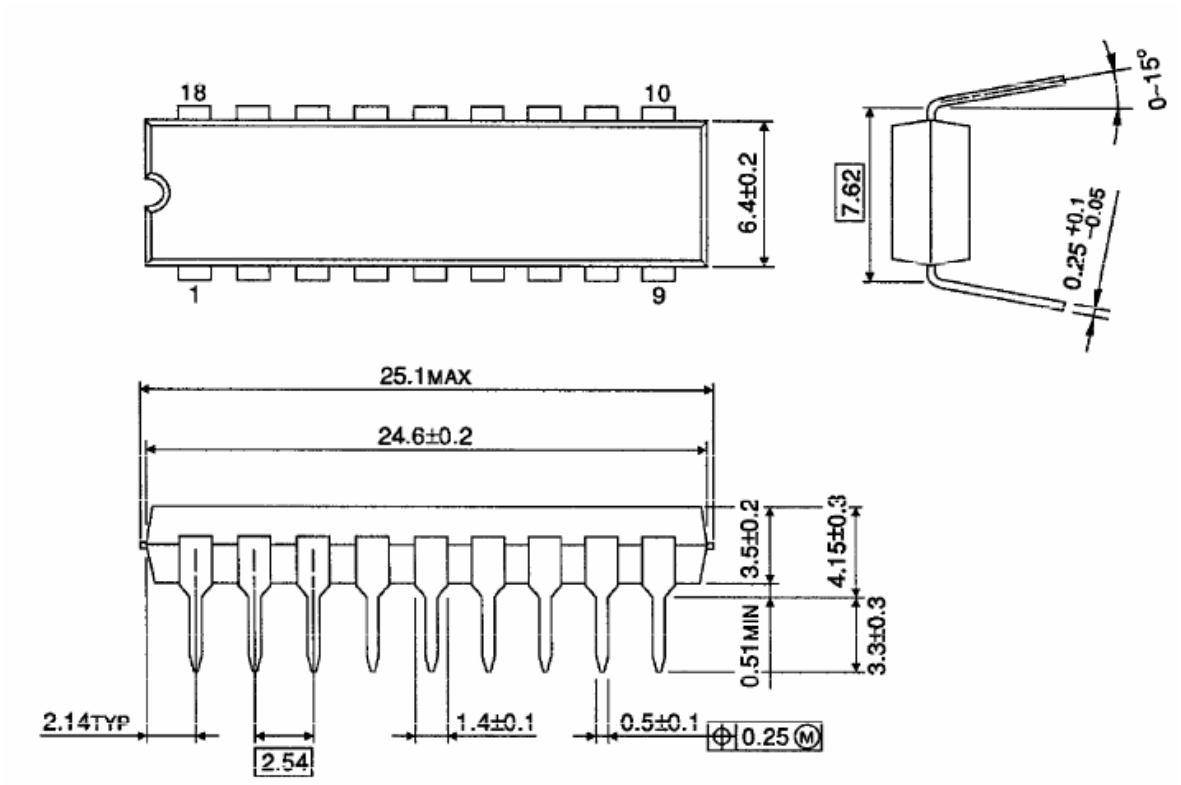

hFE – IOUT
IK62084
VCE = 2.0V
85°C
25°C
– 40°C
DC CURRENT TRANSFER RATIO hFE
OUTPUT CURRENT IOUT (mA)
10000
5000
3000
1000
500
300
100
50
30
10
5
1
10
100
1000
10000


PD – Ta
① Type N Free Air
② Type DW Free Air
POWER DISSIPATION PD (W)
AMBIENT TEMPERATURE Ta (°C)
1.5
1.0
0.5
0
50
100
150

Package Dimensions

DIP-18

Unit: mm



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