8CH Darlington Sink Driver

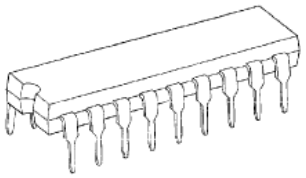
IK62083/4

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

All units feature integral clamp diodes for switching indicative loads.

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

IK62083N
IK62084N



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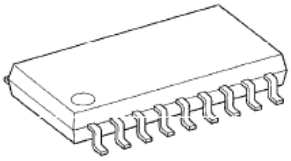
IK62083DW
IK62084DW



SOP-18

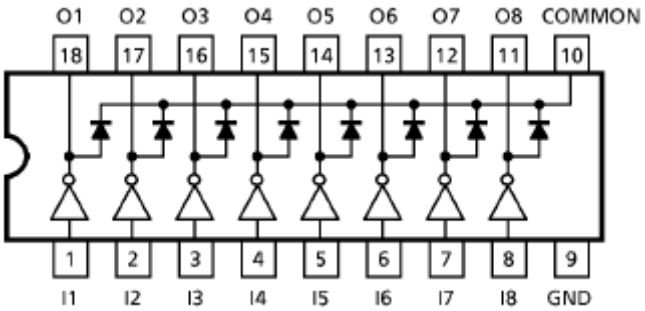
T_A = -40° ~ +85° C
for all packages.

Features

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

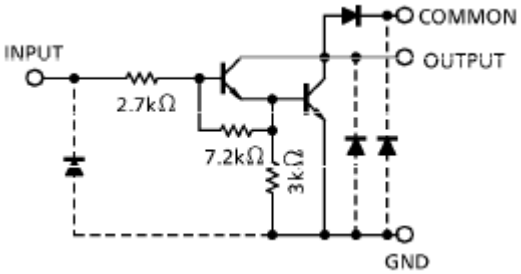
TYPE	INPUT BASE RESISTOR	DESIGNATION
IK62083N/DW	2.7kΩ	TTL, 5V CMOS
IK62084N/DW	10.5kΩ	6~15V PMOS, CMOS

Pin Configuration
(top view)

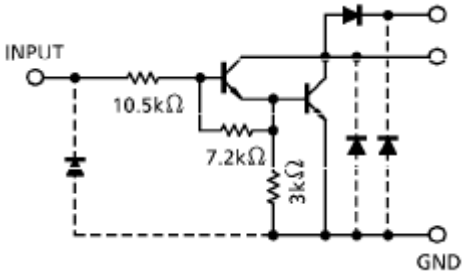


Block Schematics

IK62083



IK62084



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

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

Electrical Characteristics

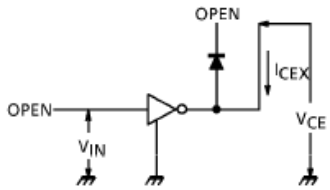
Ta = 25°C

Parameter	Symbol	Test Circuit	Test Condition	Limit Values			Unit
				Min	Typ	Max	
Turn-On Delay	t_{ON}	8	R_L=125Ω, V_{OUT}=50V	-	0.1	0.2	us
Turn-Off Delay	t_{OFF}	8	R_L=125Ω, V_{OUT}=50V	-	0.21	0.42	us

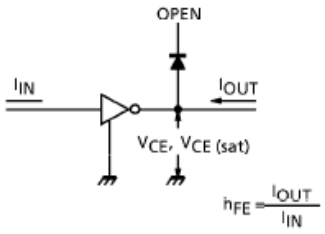
Note : V_R=V_RMAX

Test Circuit

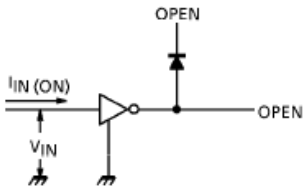
1. I_{CEX}



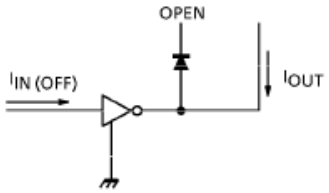
2. $V_{CE\ (sat)}$, h_{FE}



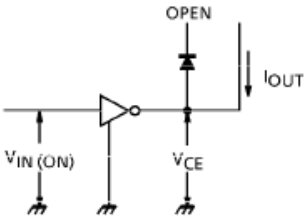
3. $I_{IN\ (ON)}$



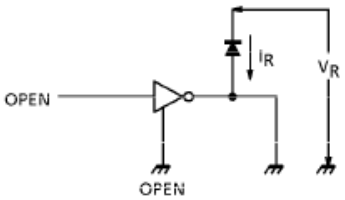
4. $I_{IN\ (OFF)}$



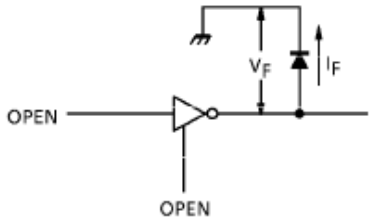
5. $V_{IN\ (ON)}$



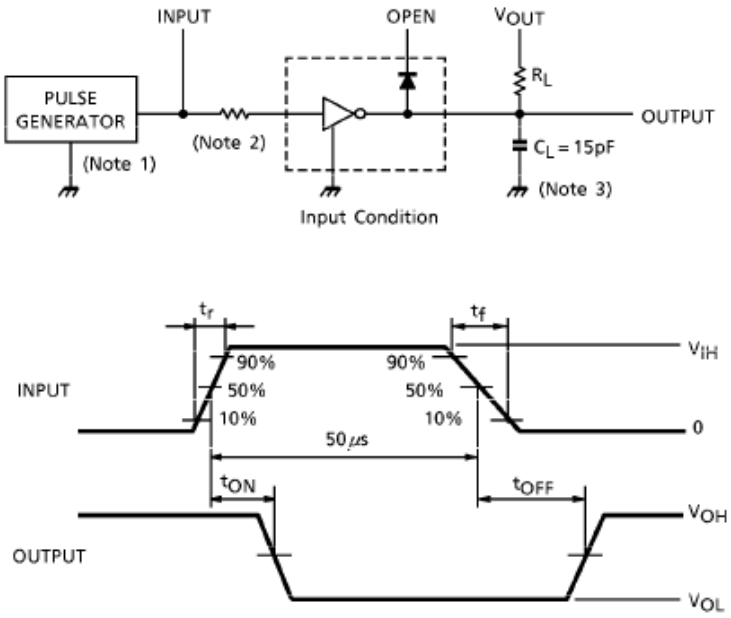
6. I_R



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

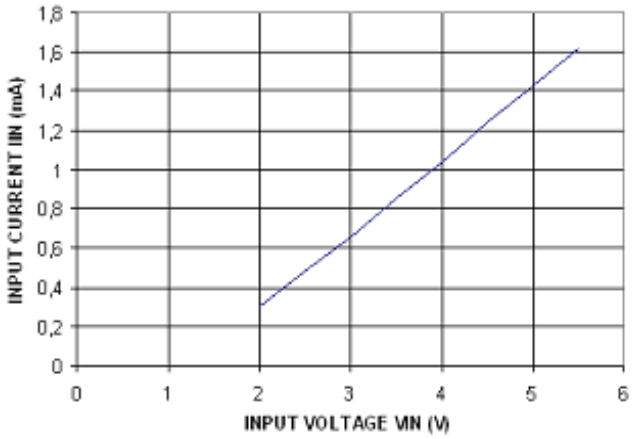
Note 3 : C_L includes probe and jig capacitance

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.

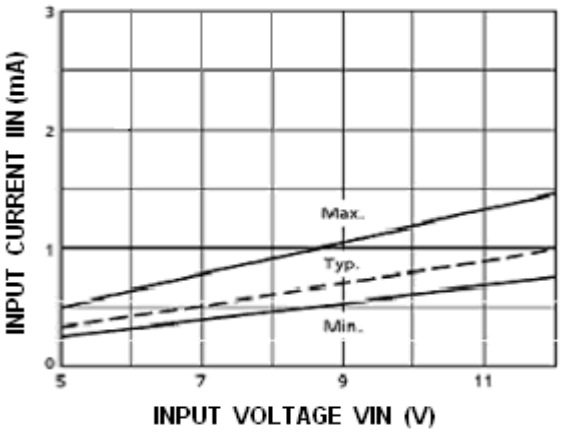
IK62083N

IIN vs VIN

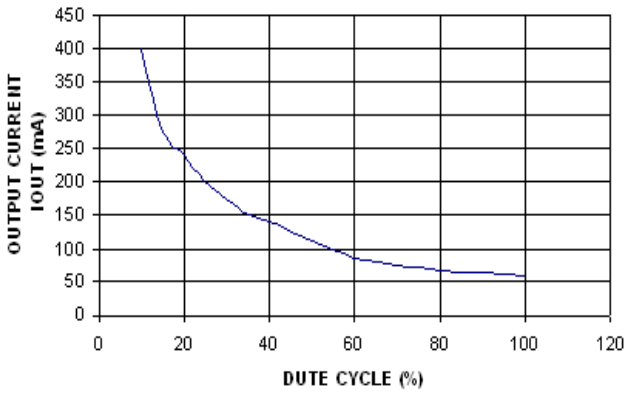


IK62084

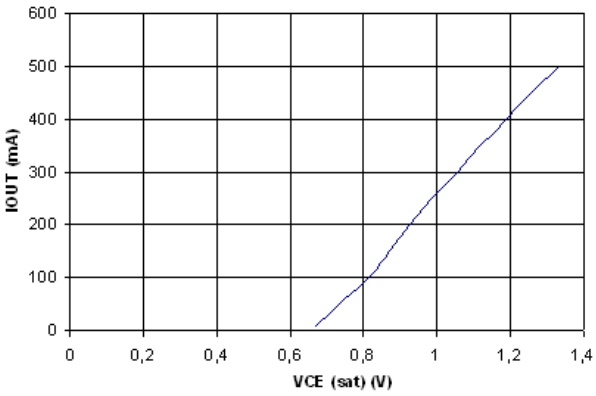
IIN vs VIN

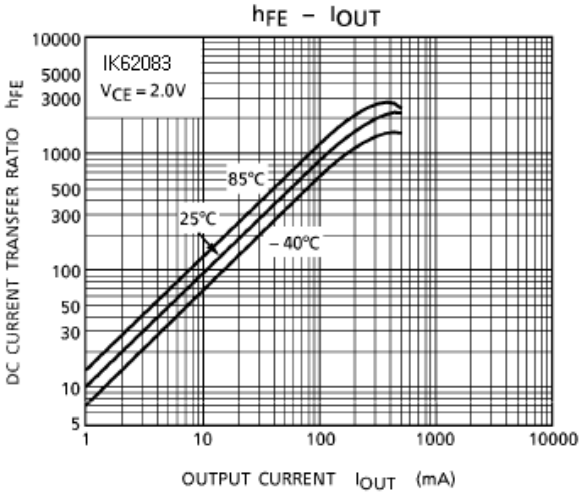


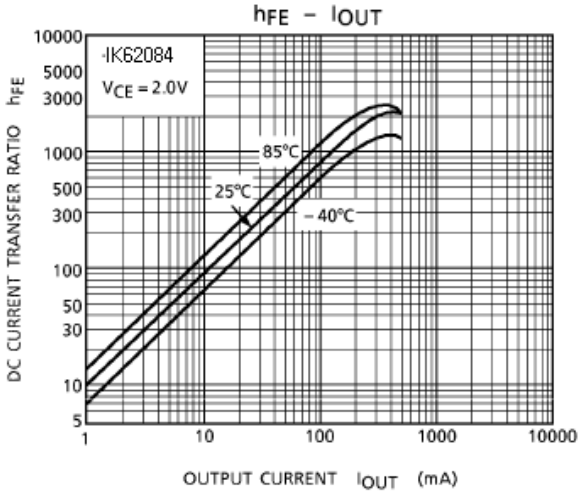
IOUT vs DUTY CYCLE

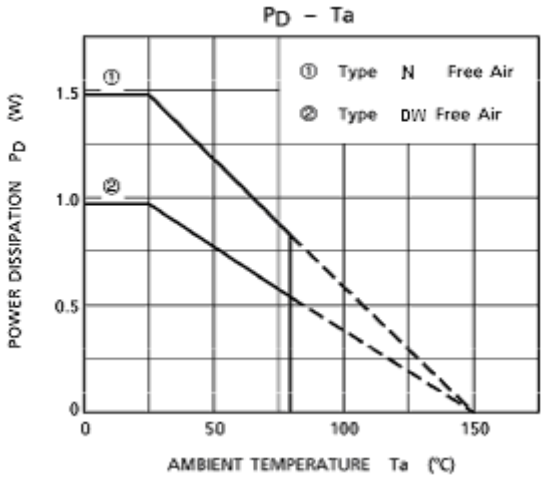


IOUT vs VCE (sat)




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

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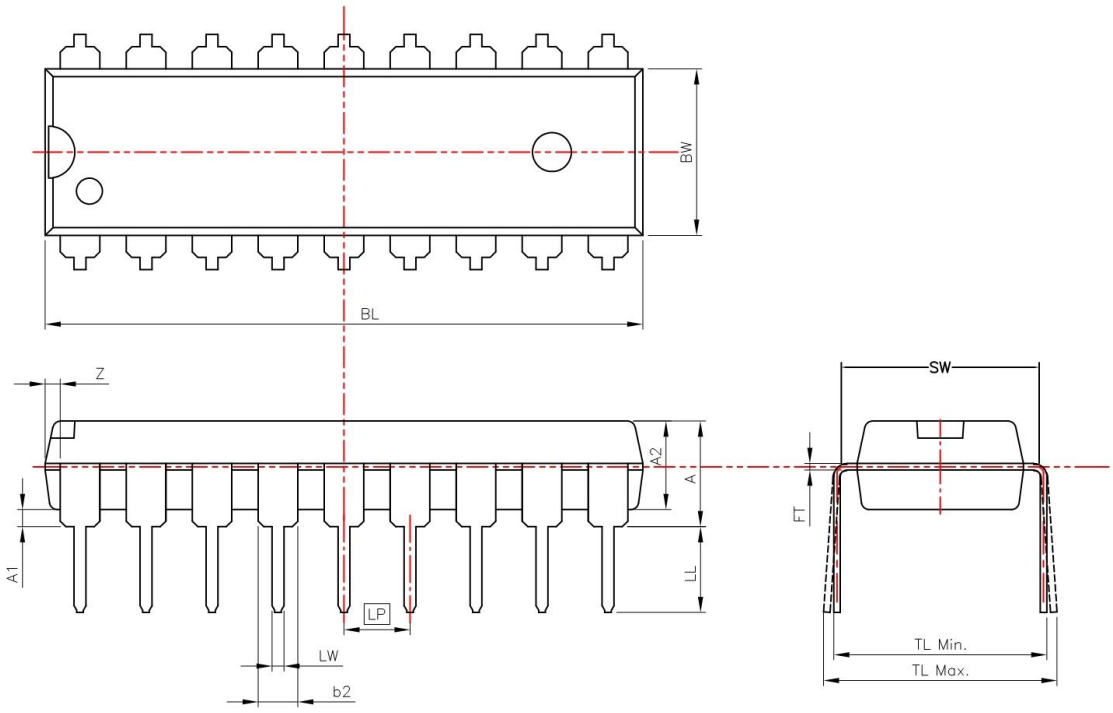
Unit: mm



SYMBOL	Dimension (mm)		
	Min	Typ	Max
BL	22.800		23.200
BW	6.200		6.600
FT	0.246		0.262
TL	7.900		8.800
LP	2.515		2.565
LW	0.432		0.482
A			4.310
A1	0.550		0.750
A2	3.300		3.500
b2		1.524	
LL	3.200		3.500
SW		7.620	
Z		0.570	

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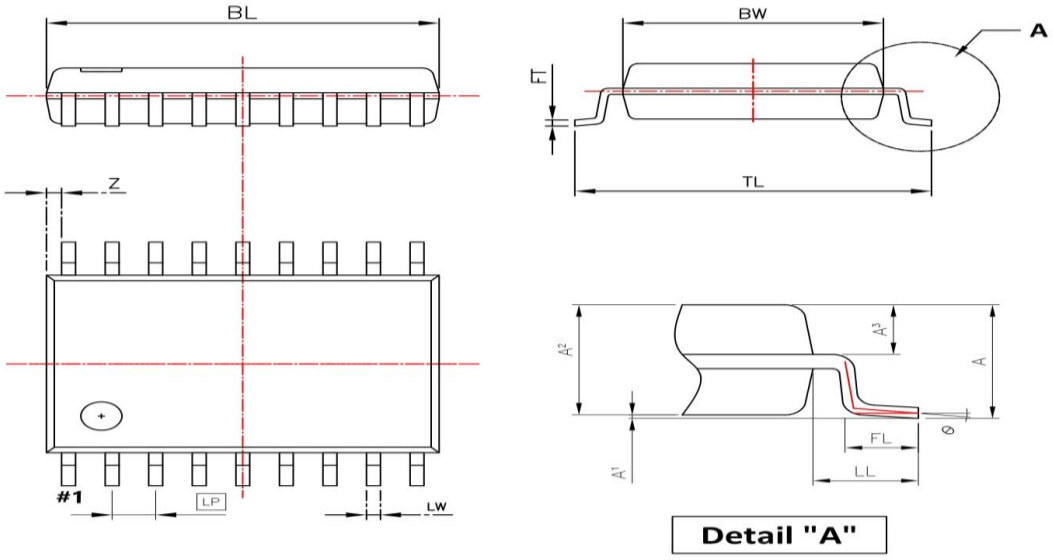

SYMBOL	Dimension (mm)		
	Min	Typ	Max
BL	11.250		11.650
BW	7.400		7.800
FT	0.204		0.304
TL	10.300		10.500
LP	1.245		1.295
LW	0.381		0.431
A			2.700
A1	0.050		0.250
A2	2.250		2.450
A3	1.048BSC		
LL	1.40BSC		
FL	0.670		1.070
Θ	0		8
Z		0.440	