

## Description

The series MIK2801 - MIK2824 are high voltage, high current darlington arrays each containing eight open collector darlington pairs with common emitters. Each channel is rated at 500mA and can withstand peak currents of 600mA.

Suppression diodes are included for inductive load driving and the inputs are pinned opposite the outputs to simplify board layout.

## Features

- Eight darlington pairs per package
- Output current 500 mA per driver (600 mA peak)
- Output voltage 50V (MIK280X)  
95V (MIK 282X)
- Integral suppression diodes for inductive loads
- Outputs can be paralleled for higher current
- TTL/CMOS/PMOS/DTL compatible inputs
- Inputs pinned opposite outputs to simplify layout

## The five versions interface to all common logic families

MIK2801	General purpose, DTL, TTL, PMOS, CMOS
MIK2802	14-25 V PMOS
MIK2803, MIK2823	5 V TTL, CMOS
MIK2804, MIK2824	6-15 V CMOS, PMOS
MIK2805	2-5 V CMOS, PMOS

These devices are useful for driving a wide range of loads including solenoids, relays DC motors, LED displays, filament lamps and high power buffers. The MIK2801-MIK2824 are supplied in 18 pin plastic DIP packages with a copper leadframe to reduce thermal resistance.

## Absolute Maximum Ratings

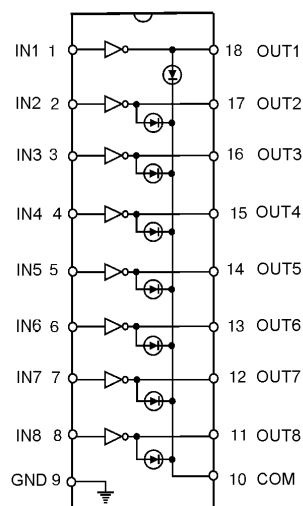
Characteristic		Symbol	Limits	Unit
Output voltage	Typ	V <sub>CE</sub>		V
	MIK2801-MIK2805		50	
	MIK2823-MIK2824		95	
Input voltage	Typ	V <sub>IN</sub>		V
	MIK2801-2804, 2823, 2824		30	
	MIK2805		15	
Continuous collector current		I <sub>C</sub>	500	mA
Continuous base current		I <sub>IN</sub>	25	mA
Power dissipation at T <sub>amb</sub> = 25°C (one Darlington pair) total package		P <sub>tot</sub>	1	W
			2	
Operating ambient temperature range		T <sub>amb</sub>	-20 to +85	°C
Storage temperature range		T <sub>stg</sub>	-55 to+150	°C

## Electrical characteristics

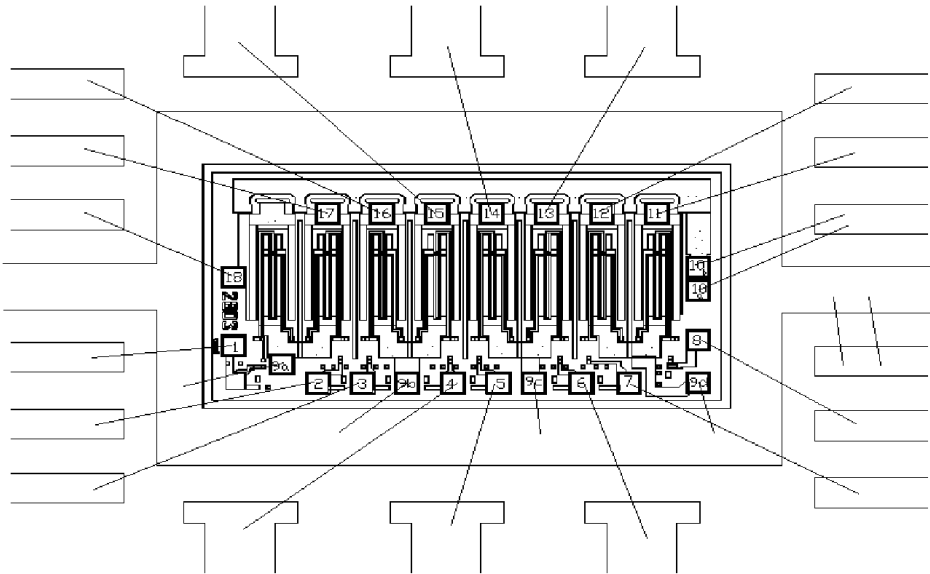
$T_A = +25^{\circ}\text{C}$  (unless otherwise noted)

Characteristics	Symbol	Device	Test Condition	Min	Typ	Max	Units
Output Leakage Current	$I_{\text{CEX}}$	MIK2801 to MIK2805	$V_{\text{CE}}=50\text{V}$ $T_A=25^{\circ}\text{C}$ $V_{\text{CE}}=50\text{V}$ $T_A=70^{\circ}\text{C}$		< 1 < 1	50 100	$\mu\text{A}$
		MIK2823, MIK2824	$V_{\text{CE}}=95\text{V}$ $T_A=25^{\circ}\text{C}$ $V_{\text{CE}}=95\text{V}$ $T_A=70^{\circ}\text{C}$		< 1 < 1	50 100	
Collector-Emitter Saturation Voltage	$V_{\text{CE(SAT)}}$	All	$I_{\text{C}}=100\text{mA}$ $I_{\text{B}}=250\mu\text{A}$		0.9	1.1	V
			$I_{\text{C}}=200\text{mA}$ $I_{\text{B}}=350\mu\text{A}$		1.1	1.3	
			$I_{\text{C}}=350\text{mA}$ $I_{\text{B}}=500\mu\text{A}$		1.3	1.6	
Input Current	$I_{\text{IN(ON)}}$	MIK2802	$V_{\text{IN}}=17\text{V}$		0.82	1.25	mA
		MIK2803, MIK2823	$V_{\text{IN}}=3.85\text{V}$		0.93	1.35	
		MIK2804, MIK2824	$V_{\text{IN}}=5.0\text{V}$		0.35	0.5	
		MIK2805	$V_{\text{IN}}=3.0\text{V}$		1.5	2.4	
	$I_{\text{IN(OFF)}}$	All	$I_{\text{C}}=500\mu\text{A}$ $T_A=70^{\circ}\text{C}$	50	65		$\mu\text{A}$
Input Voltage	$V_{\text{IN(ON)}}$	MIK2802	$V_{\text{CE}}=2.0\text{V}$ $I_{\text{C}}=300\text{mA}$			13	V
		MIK2803, MIK2823	$V_{\text{CE}}=2.0\text{V}$ $I_{\text{C}}=300\text{mA}$			3.0	
		MIK2804, MIK2824	$V_{\text{CE}}=2.0\text{V}$ $I_{\text{C}}=350\text{mA}$			8.0	
		MIK2805	$V_{\text{CE}}=2.0\text{V}$ $I_{\text{C}}=350\text{mA}$			2.4	
DC Forward Current Transfer Ratio	$h_{\text{FE}}$	MIK2801	$V_{\text{CE}}=2.0\text{V}$ $I_{\text{C}}=350\text{mA}$	1000			
Turn-On Delay	$t_{\text{PLH}}$	All	$0.5 V_{\text{IN}}$ to $0.5 V_{\text{OUT}}$		0.25	1.0	$\mu\text{S}$
Turn-Off Delay	$t_{\text{PHL}}$	All	$0.5 V_{\text{IN}}$ to $0.5 V_{\text{OUT}}$		0.25	1.0	$\mu\text{S}$
Clamp Diode Leakage Current	$I_{\text{R}}$	MIK2801 to MIK2805	$V_{\text{R}}=50\text{V}$ $T_A=25^{\circ}\text{C}$			50	$\mu\text{A}$
			$V_{\text{R}}=50\text{V}$ $T_A=70^{\circ}\text{C}$			100	
		ULN2823, ULN2824	$V_{\text{R}}=95\text{V}$ $T_A=25^{\circ}\text{C}$			50	
			$V_{\text{R}}=95\text{V}$ $T_A=70^{\circ}\text{C}$			100	
Clamp Diode Forward Voltage	$V_{\text{F}}$	All	$I_{\text{F}}=350\text{mA}$		1.7	2.0	V
Input Capacitance	$C_{\text{IN}}$	All			15	25	pF

## Connection Diagram



**Pad Location MIK28XX**



Chip size: 2.8 x 1.5 mm

**Pad Location Coordinates (Note1)**

Pad N	Pad name	Coordinates(μm)	
		X	Y
1	IN1	105	330
9a	GND (out 1,2), Note 2	365	215
2	IN2	555	100
3	IN3	790	100
9b	GND (out 3,4), Note 2	1030	100
4	IN4	1270	100
5	IN5	1510	100
9c	GND (out 5,6), Note 2	1700	100
6	IN6	1955	100
7	IN7	2205	100
9d	GND (out 7,8), Note 2	2575	105
8	IN8	2575	365
10a	COM, Note 3	2575	675
10b	COM, Note 3	2575	815
11	OUT8	2355	1145
12	OUT7	2065	1145
13	OUT6	1770	1145
14	OUT5	1480	1145
15	OUT4	1185	1145
16	OUT3	895	1145
17	OUT2	605	1145
18	OUT1	105	755

Note 1: Chip carrier must be connected with 9 lead of package by two wire.

Note 2: Pads 9a, 9b, 9c, 9d must be connected to chip carrier.

Note 3: Pads 10a, 10b must be connected with 10 lead of package.