

8 HIGH-VOLTAGE HIGH-CURRENT DARLINGTON TRANSISTOR ARRAYS

The KID6508* series 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

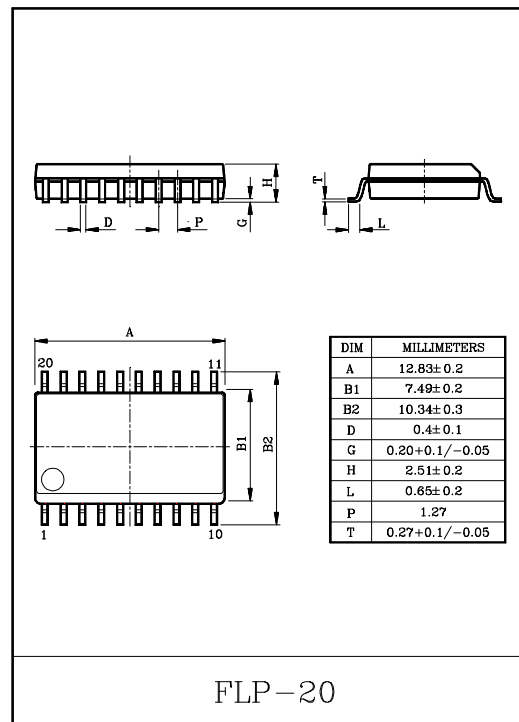
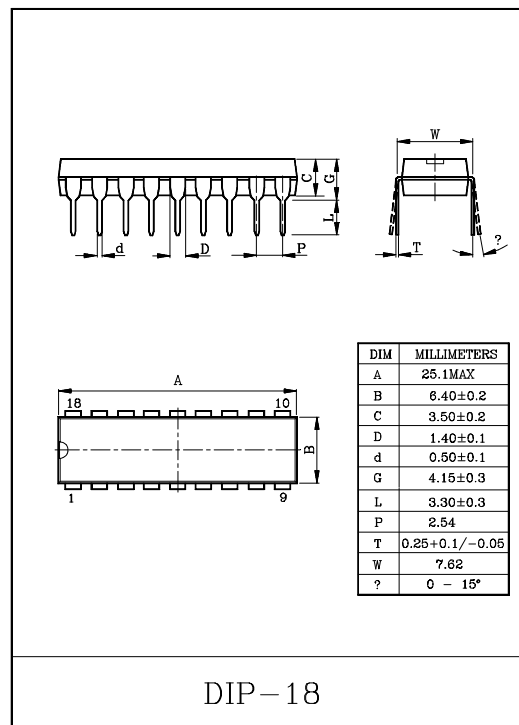
- Output Current (Single Output) : 500mA Max.
- High Sustaining Voltage Outputs : 50V Min.
- Output Clamp Diodes
- Inputs Compatible With Various Types of Logic.
- PKG Type, AP : DIP-18Pin.
- PKG Type, AF : FLP-20Pin

TYPE	INPUT BASE RESISTOR	DESIGNATION
KID65081AP/AF	External	General Purpose
KID65082AP/AF	10.5k Ω +7V Zenner diode	14~25V P-MOS
KID65083AP/AF	2.7k Ω	TTL, 5V C-MOS
KID65084AP/AF	10.5k Ω	6~15V P-MOS, C-MOS

MAXIMUM RATINGS (Ta=25°C)

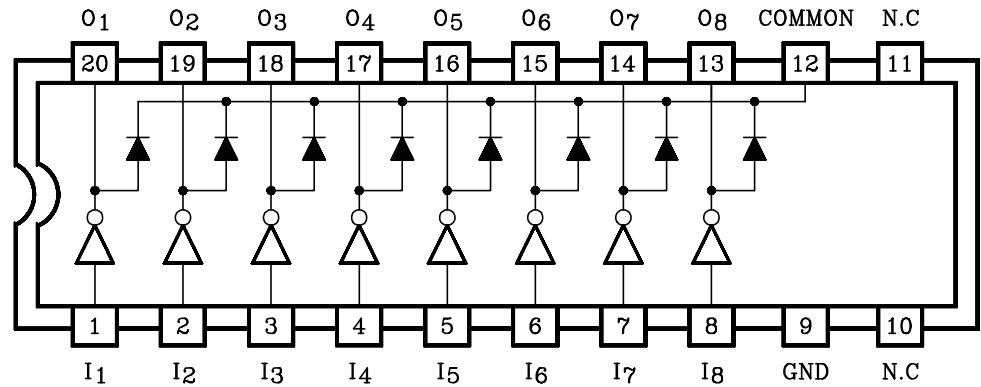
CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage		V _{CE(SUS)}	-0.5~50	V
Output Current		I _{OUT}	500	mA/ch
Input Voltage		V _{IN} (*1)	-0.5~+30	V
Input Current		I _{IN} (**2)	25	mA
Clamp Diode	Reverse Voltage	V _R	50	V
	Forward Current	I _F	500	mA
Power Dissipation	AP	P _D	1.47	W
	AF		0.96	W
Operating Temperature		T _{opr}	-40~85	°C
Storage Temperature		T _{stg}	-55~150	°C

*1 Except KID65081AP/AF, **2 Only KID65081AP/AF



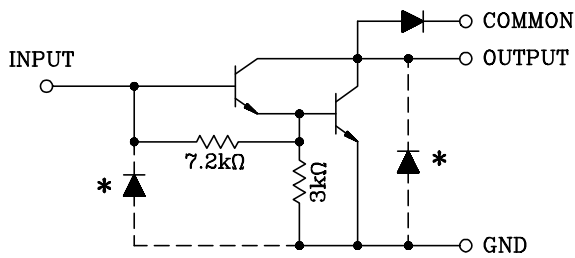
KID65081AP/AF ~ KID65084AP/AF

PIN CONNECTION (TOP VIEW)

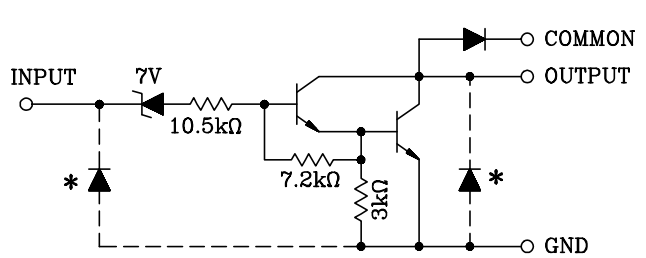


SCHEMATICS (EACH DRIVER)

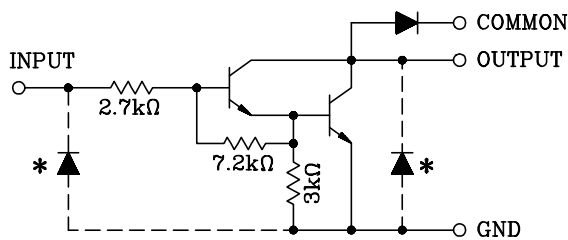
KID65081AP/AF



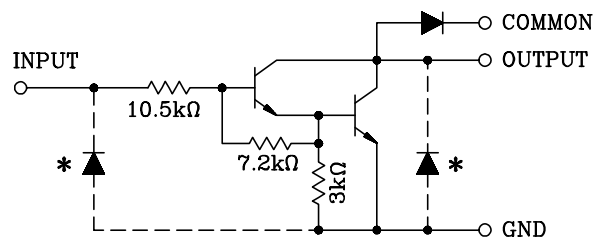
KID65082AP/AF



KID65083AP/AF



KID65084AP/AF



(* : Parasitic Diodes
NOTE. The input and output parasitic diodes cannot be used as clamp diodes.)

KID65081AP/AF ~ KID65084AP/AF

RECOMMENDED OPERATING CONDITIONS ($T_a = -40 \sim 85^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage		V _{CE(SUS)}		0	–	50	V
Output Current	AP	I _{OUT}	T _{PW} =25ms, Duty=8%, 8 Circuits	0	–	400	mA/ch
			T _{PW} =25ms, Duty=25%, 8 Circuits	0	–	200	
	AF		T _{PW} =25ms, Duty=8%, 8 Circuits	0	–	350	
			T _{PW} =25ms, Duty=25%, 8 Circuits	0	–	140	
Input Voltage	Except KID65081AP/AF	V _{IN}		0	–	30	V
Input Voltage (Output ON)	KIA65082AP/AF	V _{IN(ON)}		14	–	30	V
	KID65083AP/AF			3.5	–	30	
	KID65084AP/AF			8	–	30	
Input Current	Only KID65081AP/AF	I _{IN}		–	–	5	mA
Clamp Diode Reverse Voltage		V _R		–	–	50	V
Clamp Diode Forward Current		I _F		–	–	400	mA
Power Dissipation	AP	P _D		–	–	0.52	W
	AF			–	–	0.35	

KID65081AP/AF ~ KID65084AP/AF

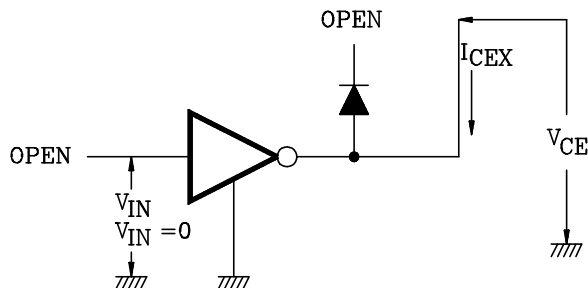
ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise noted)

CHARACTERISTICS		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leak Current		I _{CEX}	1	V _{CE} =50V, T _a =25℃	—	—	50	μA
				V _{CE} =50V, T _a =85℃	—	—	100	
	KID65082AP/AF			V _{CE} =50V, V _{IN} =6V	—	—	500	
	KID65084AP/AF			V _{CE} =50V, V _{IN} =1V	—	—	500	
Collector-Emitter 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	KID65082AP/AF	I _{IN(ON)}	3	V _{IN} =17V	—	0.82	1.25	mA
	KID65083AP/AF			V _{IN} =3.85V	—	0.93	1.35	
	KID65084AP/AF			V _{IN} =5V	—	0.35	0.5	
				V _{IN} =12V	—	1.0	1.45	
		I _{IN(OFF)}	4	I _{OUT} =500μA, T _a =85℃	50	65	—	μA
Input Voltage (Output On)	KID65082AP/AF	V _{IN(ON)}	5	V _{CE} =2V, I _{OUT} =300mA	—	—	13	V
	KID65083AP/AF			V _{CE} =2V, I _{OUT} =200mA	—	—	2.4	
				V _{CE} =2V, I _{OUT} =250mA	—	—	2.7	
				V _{CE} =2V, I _{OUT} =300mA	—	—	3.0	
	KID65084AP/AF			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	T _a =25℃ (*1)	—	—	50	μA
				T _a =85℃ (*1)	—	—	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 =120Ω, V _{OUT} =50V	—	0.1	—	μS
Turn-Off Delay		t _{OFF}			—	0.2	—	

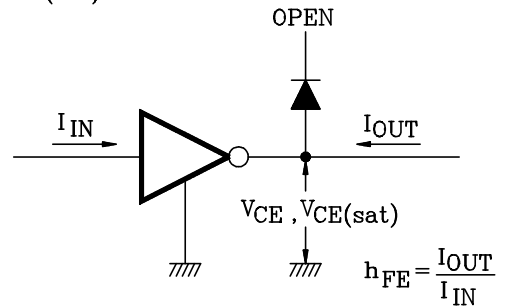
*1 VR=VR MAX

TEST CIRCUIT

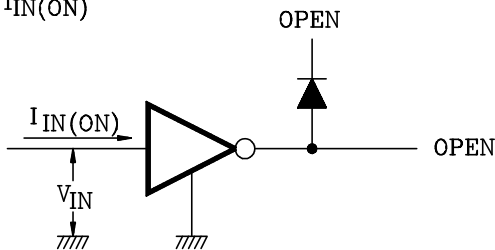
1. I_{CEX}



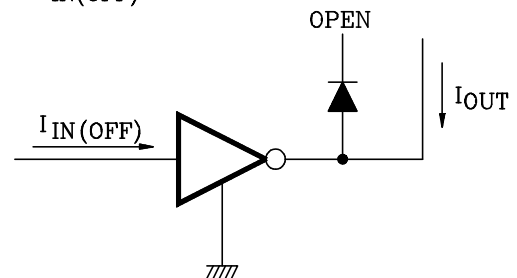
2. $V_{CE(sat)}$, h_{FE}



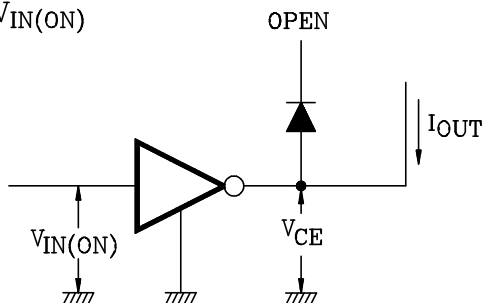
3. $I_{IN(ON)}$



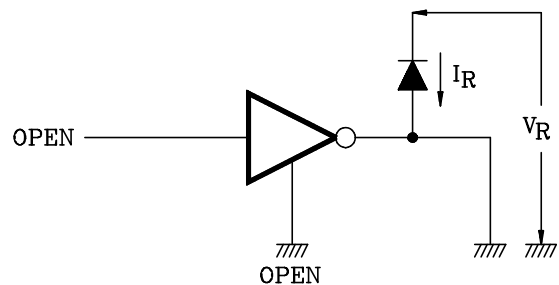
4. $I_{IN(OFF)}$



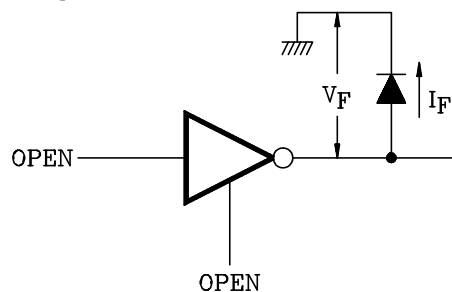
5. $V_{IN(ON)}$



6. I_R

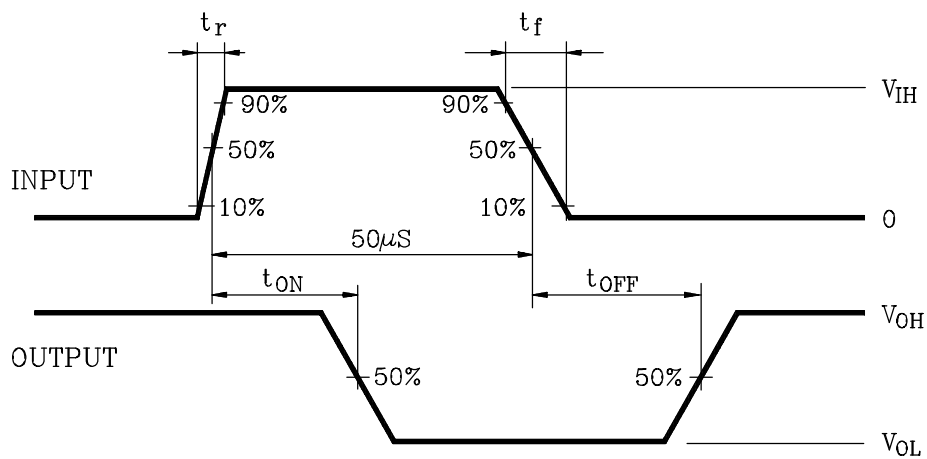
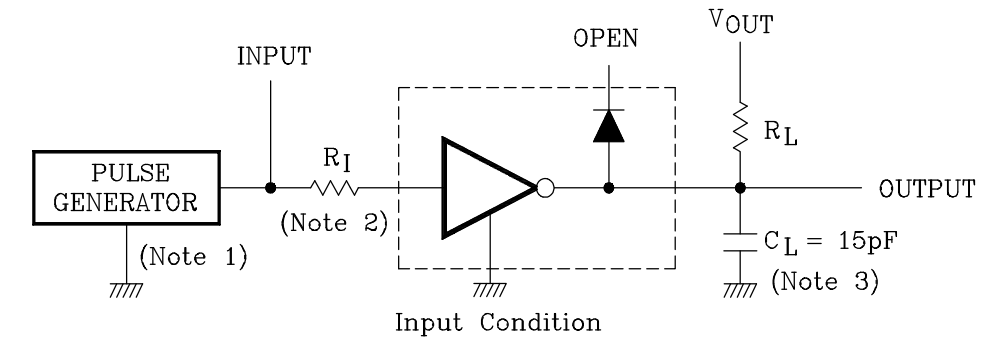


7. V_F



KID65081AP/AF ~ KID65084AP/AF

8. t_{ON}, t_{OFF}



Notes : 1. Pulse Width $50\mu\text{s}$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5\text{ns}$, $t_f \leq 10\text{ns}$

2. See below

Input Conditions

Type Number	R_I	V_{IH}
KID65081AP/AF	$2.7\text{k}\Omega$	3V
KID65082AP/AF	0	13V
KID65083AP/AF	0	3V
KID65084AP/AF	0	8V

3. C_L includes probe and Jig capacitance.

KID65081AP/AF ~ KID65084AP/AF

