

#### 7 CIRCUIT DARLINGTON TRANSISTOR ARRAY

#### FEATURES

- Output Current : 500mA Max.
- High Sustaining Voltage Outputs : 50V Min.
- Output Clamp Diodes.
- Inputs Compatible With Various Types of Logic.
- PKG Type AP : DIP-16Pin, AF : FLP-16Pin

TYPE	INPUT RESISTOR	DESIGNATION
KID65001AP/AF	No (External)	General Purpose
KID65002AP/AF	Zener Diode 7V+10.5k $\Omega$	14 ~25V P-MOS
KID65003AP/AF	2.7k $\Omega$	TTL, 5V C-MOS
KID65004AP/AF	10.5k $\Omega$	6 ~15V P-MOS, C-MOS

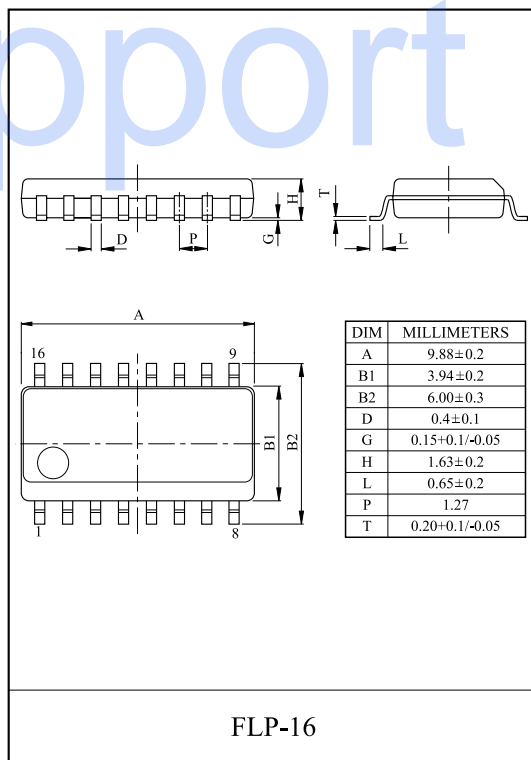
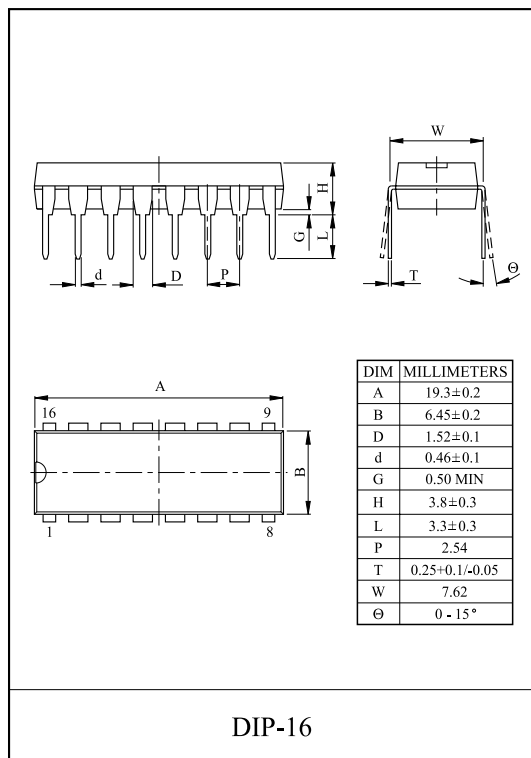
#### DESCRIPTION:

The KID65001AP/AF Series are high-voltage, high-current darlington transistor array comprised of seven NPN darlington pairs. All units feature internal clamp diodes for switching inductive loads.

#### MAXIMUM RATINGS (Ta=25 °C, unless otherwise noted)

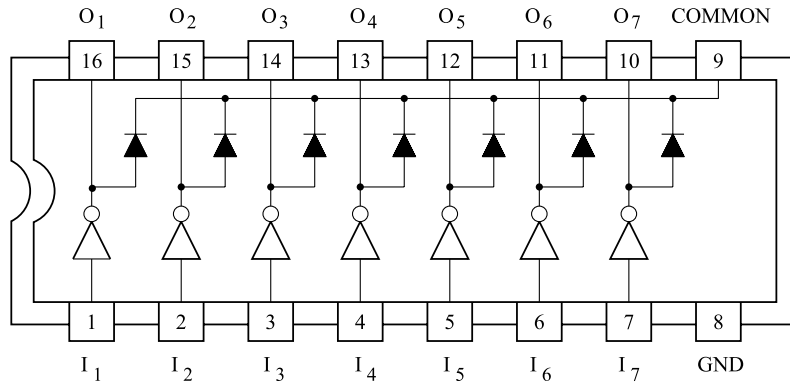
CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage		$V_{CE(SUS)}$	50	V
Output Current		$I_{OUT}$	500	mA
Input Voltage		$V_{IN}^*$	-0.5 ~+30	V
Input Current		$I_{IN}^{**}$	25	mA
Clamp Diode	Reverse Voltage	$V_R$	50	V
	Forward Current	$I_F$	500	mA
GND Terminal Current		$I_{GND}$	2.8	A
Power Dissipation	AP	$P_D$	1.47	W
	AF		0.54	W
Operating Temperature		$T_{opr}$	-40 ~85	°C
Storage Temperature		$T_{stg}$	-55 ~150	°C

\* Except KID65001AP/AF, \*\*Only KID65001AP/AF

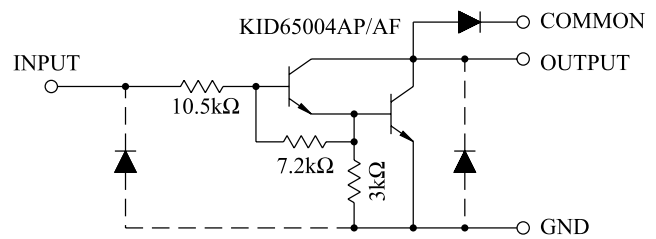
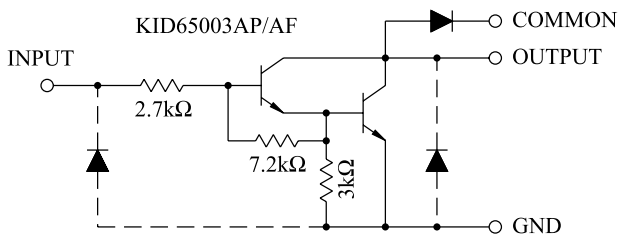
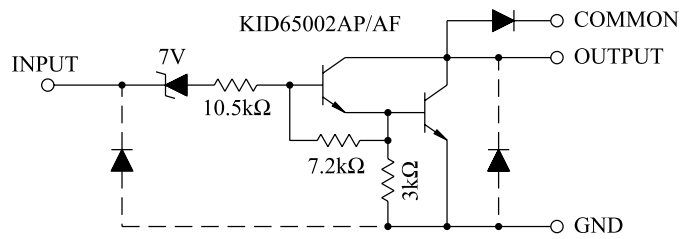
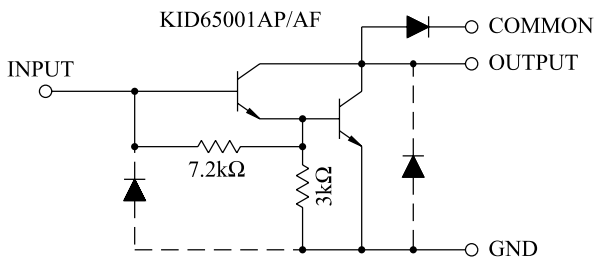


# KID65001AP/AF~KID65004AP/AF

## PIN CONNECTION (TOP VIEW)



## SCHEMATICS (EACH DRIVER)



# KID65001AP/AF~KID65004AP/AF

## RECOMMENDED OPERATING CONDITIONS (Ta=-40~85 °C)

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage		$V_{CE(SUS)}$		0	-	50	V
Output Current		$I_{OUT}$	$T_{PW}=25ms, DF=10\%, 7$ Circuits	0	-	400	mA
			$T_{PW}=25ms, DF=30\%, 7$ Circuits	0	-	200	
Input Voltage		$V_{IN}$	Except KID65001AP/AF	0	-	30	V
Input Current		$I_{IN}$	Only KID65001AP/AF	0	-	5	mA
Clamp Diode Reverse Voltage		$V_R$		-	-	50	V
Clamp Diode Forward Current		$I_F$		-	-	400	mA
Power Dissipation	AP	$P_D$	Ta=85 °C	-	-	0.76	W
	AF		Ta=85 °C*	-	-	0.28	

\* : on glass epoxy PCB (30×30×1.6mm Cu50%)

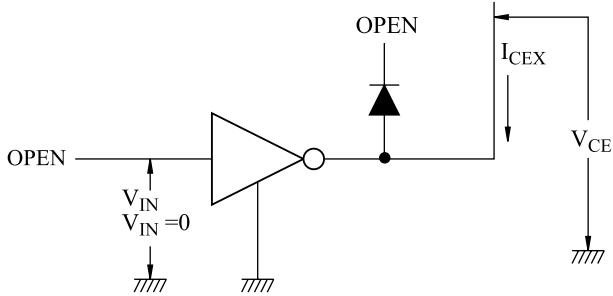
## ELECTRICAL CHARACTERISTICS (Ta=25 °C, unless otherwise noted)

CHARACTERISTICS		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leak Current		$I_{CEX}$	1	$V_{CE}=50V, Ta=25\text{ °C}$	-	-	50	$\mu A$
				$V_{CE}=50V, Ta=85\text{ °C}$	-	-	100	
				$V_{CE}=50V, V_{IN}=6V$	-	-	500	
				$V_{CE}=50V, V_{IN}=1V$	-	-	500	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	2	$I_{OUT}=350mA, I_{IN}=500\mu A$	-	1.3	1.6	V
				$I_{OUT}=200mA, I_{IN}=350\mu A$	-	1.1	1.3	
				$I_{OUT}=100mA, I_{IN}=250\mu A$	-	0.9	1.1	
Input Current	KID65002AP/AF	$I_{IN(ON)}$	3	$V_{IN}=17V$	-	0.82	1.25	mA
	KID65003AP/AF			$V_{IN}=3.85V$	-	0.93	1.35	
	KID65004AP/AF			$V_{IN}=5V$	-	0.35	0.5	
				$V_{IN}=12V$	-	1.0	1.45	
		$I_{IN(OFF)}$	4	$I_{OUT}=500\mu A, Ta=85\text{ °C}$	50	65	-	$\mu A$
Input Voltage	KID65002AP/AF	$V_{IN(ON)}$	5	$V_{CE}=2V, I_{OUT}=300mA$	-	-	13	V
				$V_{CE}=2V, I_{OUT}=200mA$	-	-	2.4	
	KID65003AP/AF			$V_{CE}=2V, I_{OUT}=250mA$	-	-	2.7	
				$V_{CE}=2V, I_{OUT}=300mA$	-	-	3.0	
	KID65004AP/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	$V_R=50V, Ta=25\text{ °C}$	-	-	50	$\mu A$
				$V_R=50V, Ta=85\text{ °C}$	-	-	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	$V_{OUT}=50V, R_L=163\ \Omega$ $C_L=15pF$	-	0.1	-	$\mu s$
Turn-OFF Delay		$t_{OFF}$			-	0.2	-	

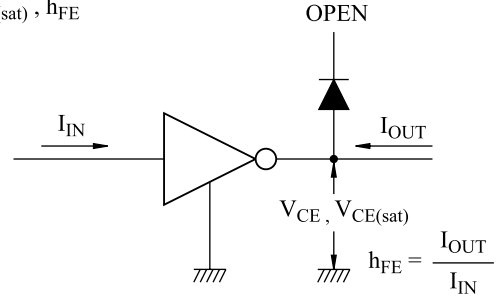
# KID65001AP/AF~KID65004AP/AF

## TEST CIRCUIT

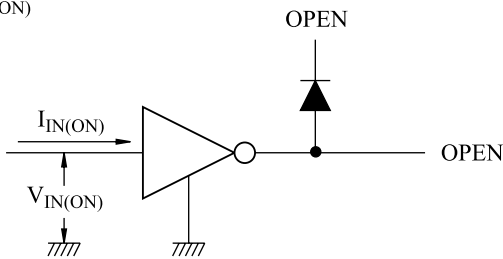
1.  $I_{CEX}$



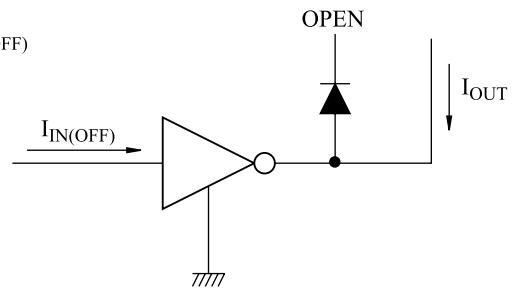
2.  $V_{CE(sat)}, h_{FE}$



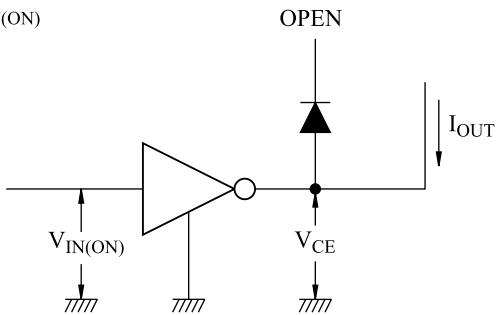
3.  $I_{IN(ON)}$



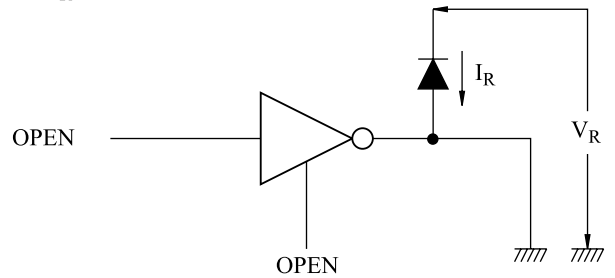
4.  $I_{IN(OFF)}$



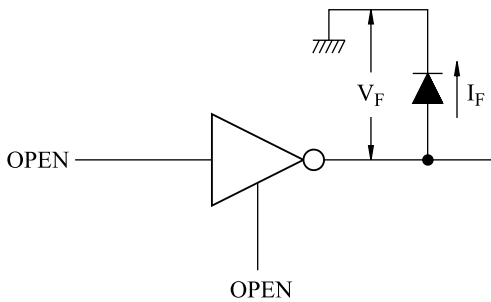
5.  $V_{IN(ON)}$



6.  $I_R$

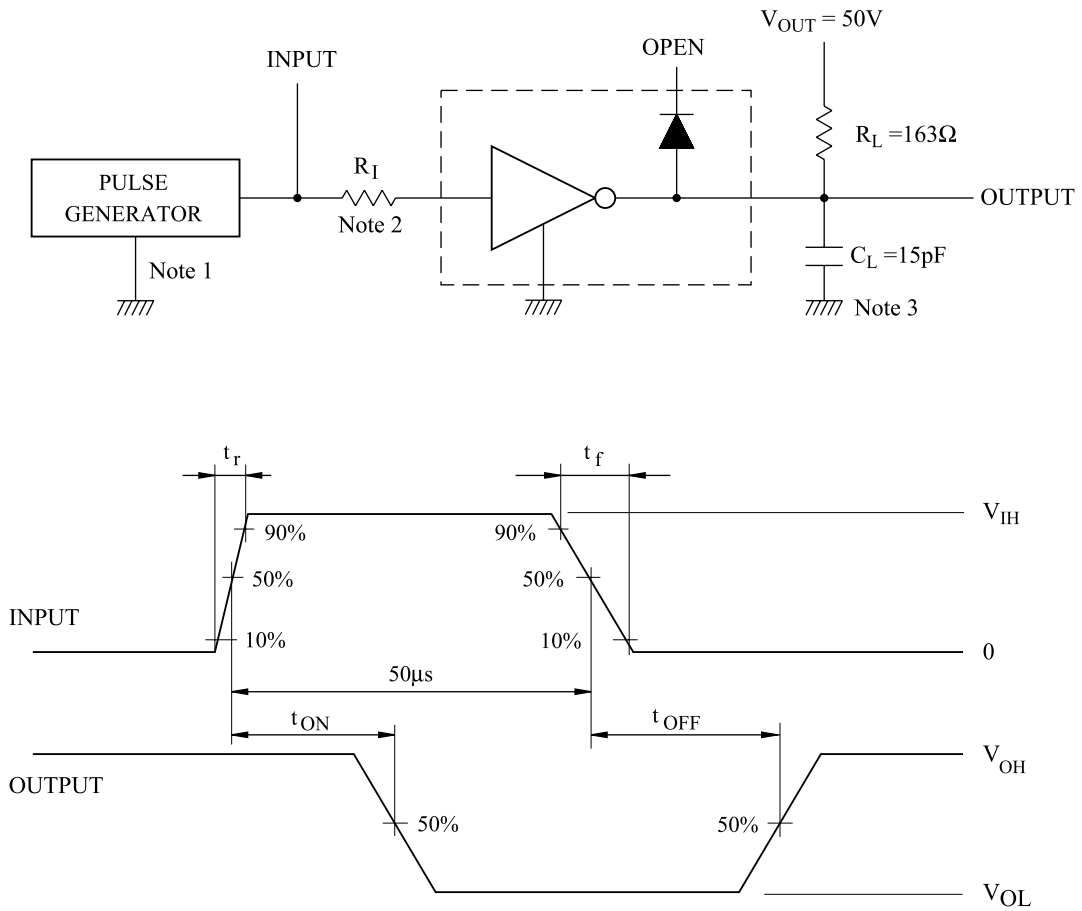


7.  $V_F$



# KID65001AP/AF~KID65004AP/AF

## 8. $t_{ON}$ , $t_{OFF}$



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

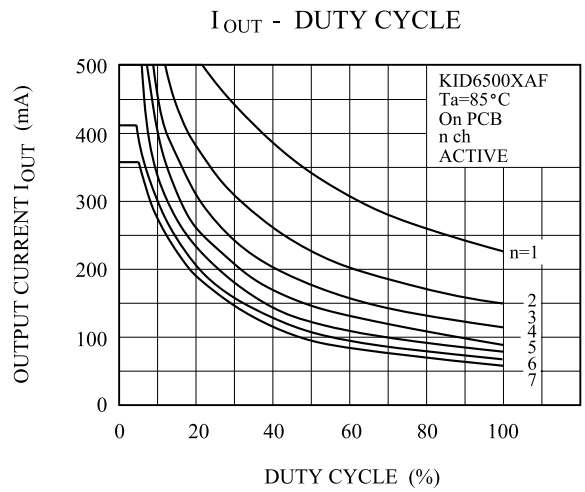
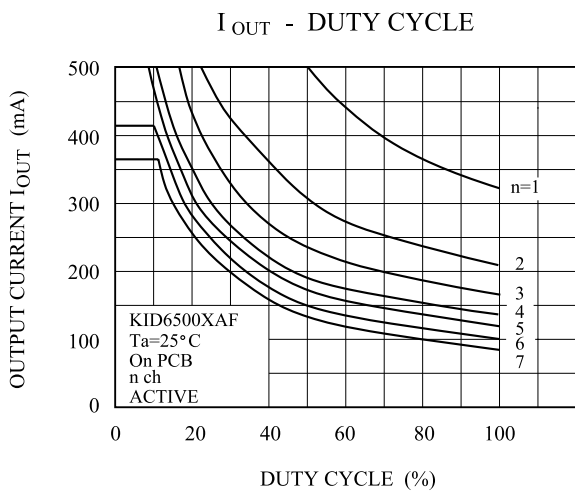
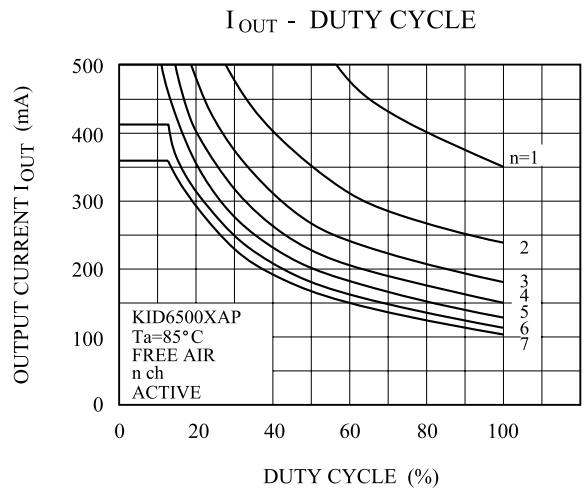
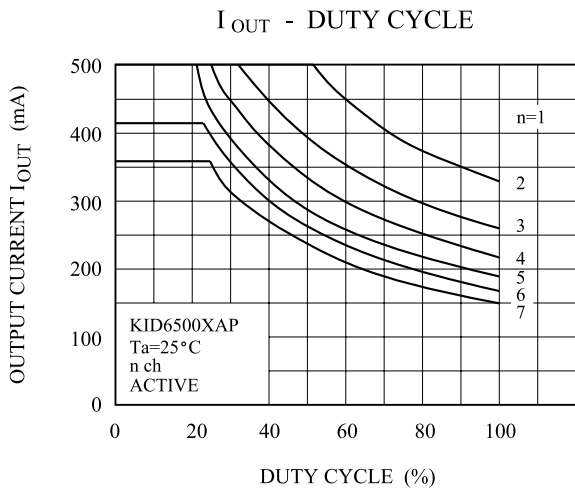
2. See below

### Input Conditions

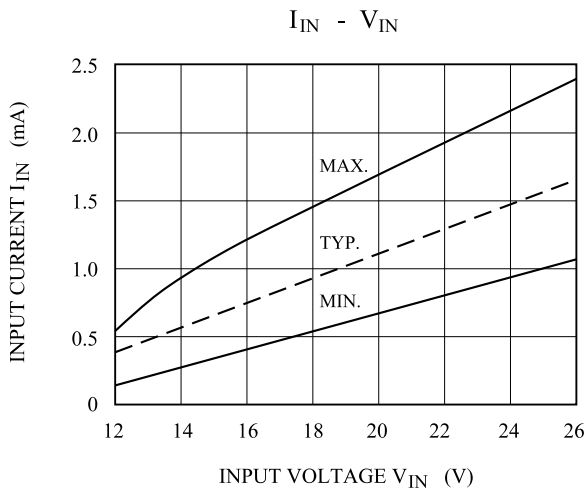
Type Number	$R_I$	$V_{IH}$
KID65001AP/AF	$2.7k\ \Omega$	3V
KID65002AP/AF	0	13V
KID65003AP/AF	0	3V
KID65004AP/AF	0	8V

3.  $C_L$  includes probe and Jig capacitance.

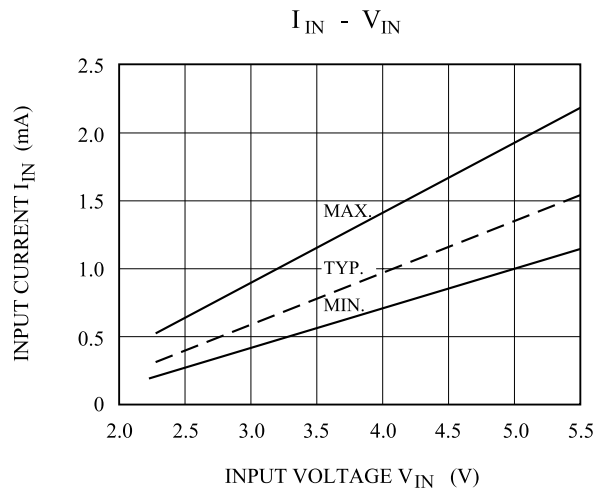
# KID65001AP/AF~KID65004AP/AF



KID65002AP/AF



KID65003AP/AF



# KID65001AP/AF~KID65004AP/AF

KID65004AP/AF

