

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	14 25V P-MOS
KID65003AP/AF	2.7k	TTL, 5V C-MOS
KID65004AP/AF	10.5k	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 , unless otherwise noted)

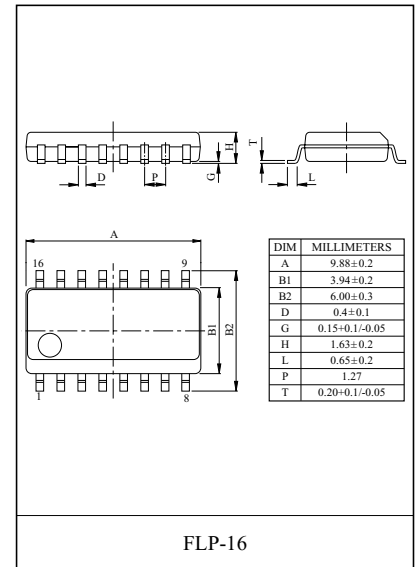
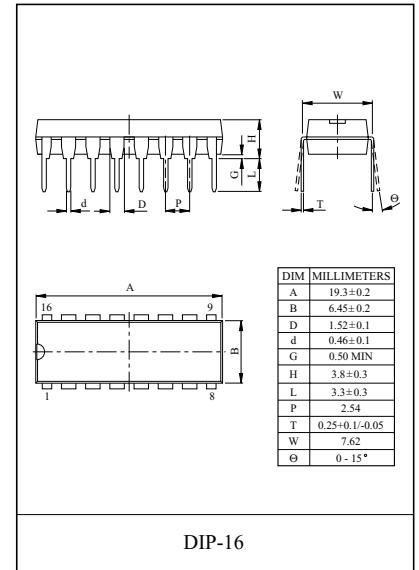
CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage		$V_{CE(SUS)}$	50	V
Output Current		I_{OUT}	500	mA/ch
Input Voltage		$I_{IN}^{1)}$	-0.5 +30	V
Input Current		$I_{IN}^{2)}$	25	mA
Clamp Diode	Reverse Voltage	V_R	50	V
	Forward Current	I_F	500	mA
GND Terminal Current		I_{GND}	2.8	A
Power Dissipation	AP	P_D	1.47	W
	AF		0.54 /0.63 ³⁾ /1.25 ⁴⁾	W
Operating Temperature		T_{opr}	-40 85	
Storage Temperature		T_{stg}	-55 150	

1) Except KID65001AP/AF

2) Only KID65001AP/AF

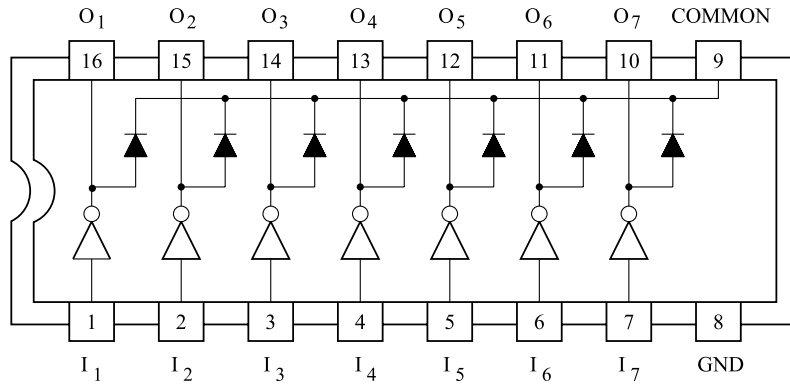
3) On PCB(30 × 30 × 1.6mm, Cu 50%)

4) On PCB (Test Board : JEDEC 2s2p)

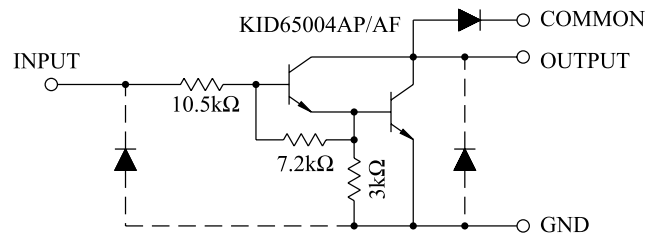
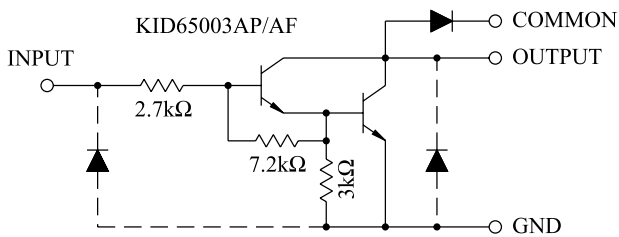
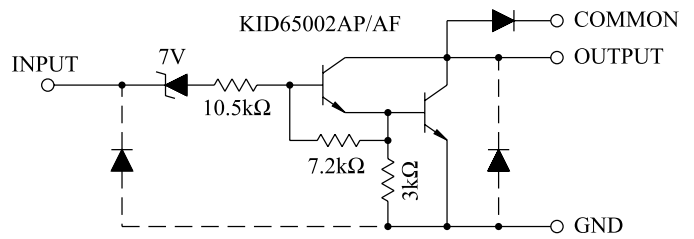
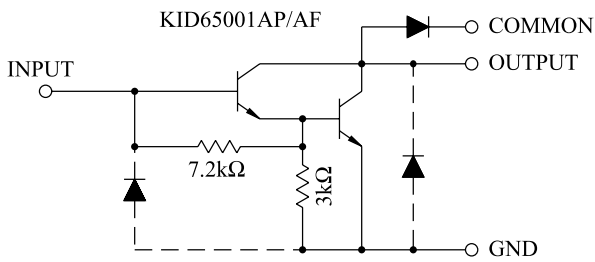


KID65001AP/AF~KID65004AP/AF

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



KID65001AP/AF~KID65004AP/AF

RECOMMENDED OPERATING CONDITIONS (Ta=-40 ~ 85)

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage		V _{CE(SUS)}	-	0	-	50	V
Output Current	I _{OUT} (AP, Ta=85)	I _{OUT}	T _{PW} =25ms, Duty=10%, 7 Circuits	0	-	370	mA
			T _{PW} =25ms, Duty=30%, 7 Circuits	0	-	200	
	I _{OUT} (AF, Ta=85)	I _{OUT}	T _{PW} =25ms, Duty=10%, 7 Circuits	-	-	290	mA
			T _{PW} =25ms, Duty=30%, 7 Circuits	-	-	150	
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	-	-	0.76	W
	AF		Ta=85	0.28 / 0.32* / 0.65**			

* On PCB (30 × 30 × 1.6mm, Cu 50%)

** On PCB (Test Board : JEDEC 2s2p)

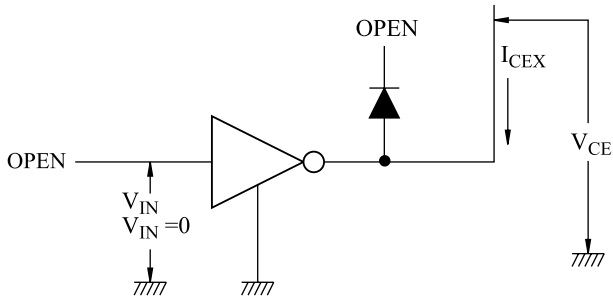
ELECTRICAL CHARACTERISTICS (Ta=25 , unless otherwise noted)

CHARACTERISTICS		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leak Current	KID65002AP/AF KID65004AP/AF	I _{CEX}	1	V _{CE} =50V, Ta=25	-	-	50	μA
				V _{CE} =50V, Ta=85	-	-	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 μA	-	1.3	1.6	V
				I _{OUT} =200mA, I _{IN} =350 μA	-	1.1	1.3	
				I _{OUT} =100mA, I _{IN} =250 μA	-	0.9	1.1	
Input Current (Output On)	KID65002AP/AF KID65003AP/AF KID65004AP/AF	I _{IN(ON)}	3	V _{IN} =17V	-	0.82	1.25	mA
				V _{IN} =3.85V	-	0.93	1.35	
				V _{IN} =5V	-	0.35	0.5	
				V _{IN} =12V	-	1.0	1.45	
Output Current (Output Open)		I _{IN(OFF)}	4	I _{OUT} =500 μA, Ta=85	50	65	-	μA
Input Voltage	KID65002AP/AF KID65003AP/AF KID65004AP/AF	V _{IN(ON)}	5	V _{CE} =2V, I _{OUT} =300mA	-	-	13	V
				V _{CE} =2V, I _{OUT} =200mA	-	-	2.4	
				V _{CE} =2V, I _{OUT} =250mA	-	-	2.7	
				V _{CE} =2V, I _{OUT} =300mA	-	-	3.0	
				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				
	KID65002AP/AF KID65003AP/AF KID65004AP/AF	V _{IN(OFF)}			-	0	-	7.4
					-	0	-	0.7
-					0	-	1.0	
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	-	-	50	μA
				V _R =50V, Ta=85	-	-	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 Ω, C _L =15pF	-	0.1	-	μs
Turn-OFF Delay		t _{OFF}			-	0.2	-	

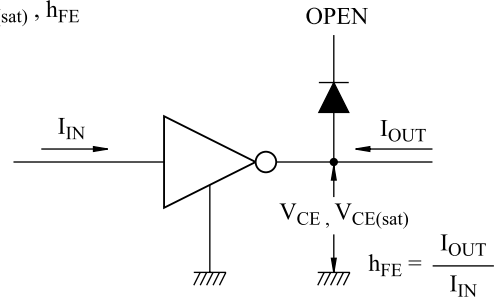
KID65001AP/AF~KID65004AP/AF

TEST CIRCUIT

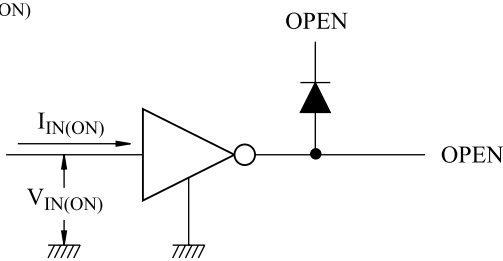
1. I_{CEX}



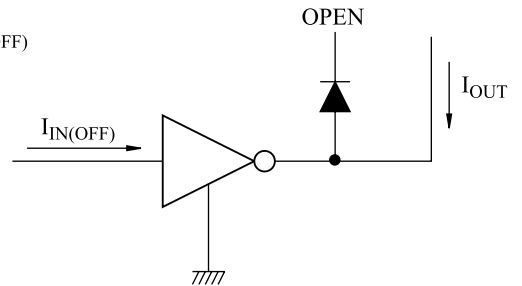
2. $V_{CE(sat)}, h_{FE}$



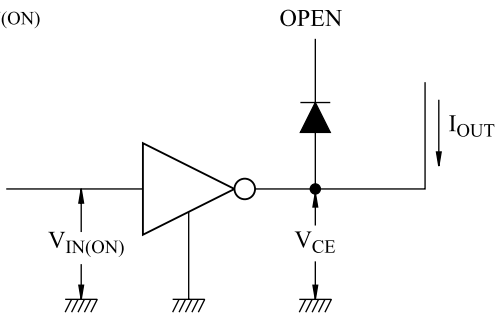
3. $I_{IN(ON)}$



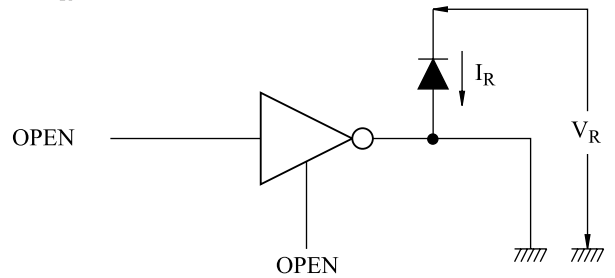
4. $I_{IN(OFF)}$



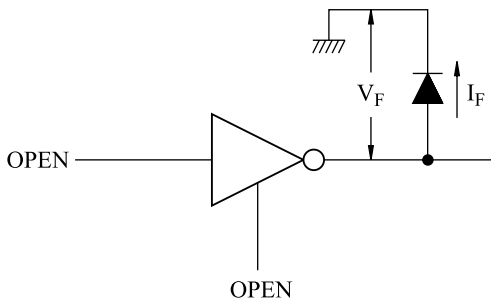
5. $V_{IN(ON)}$



6. I_R

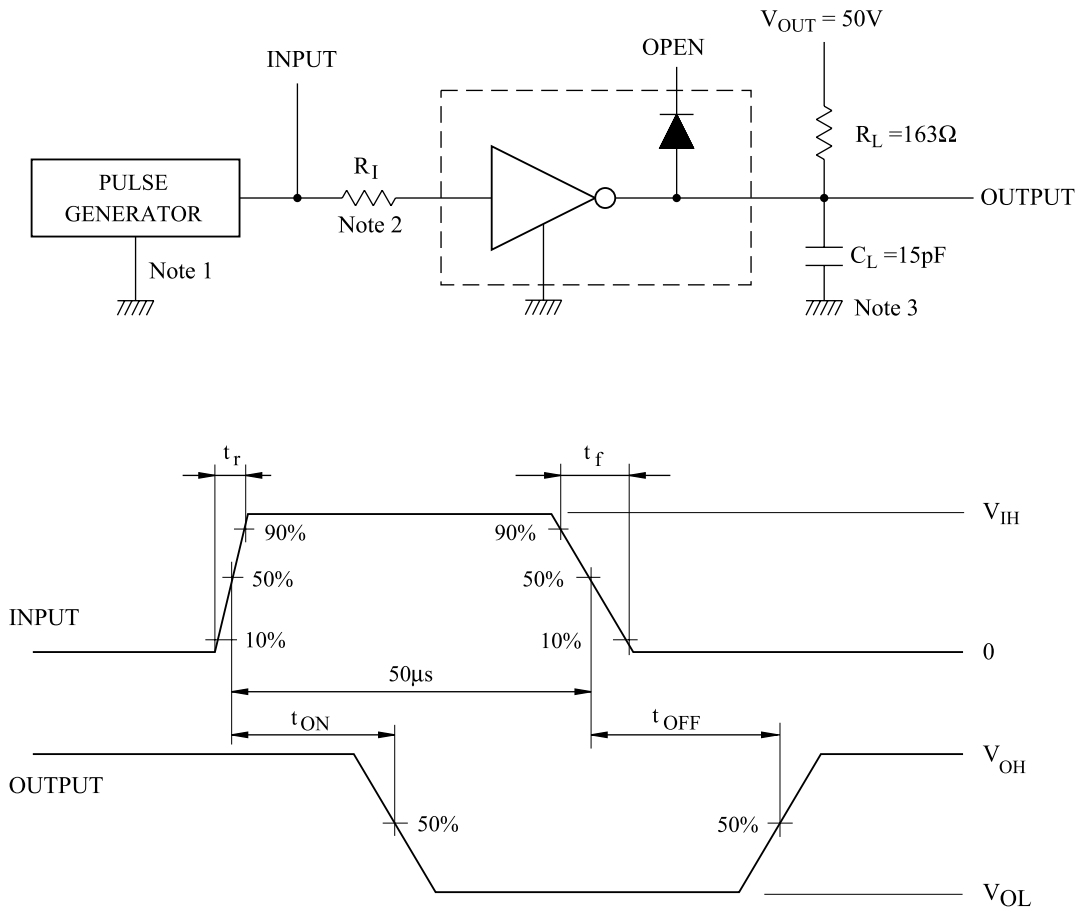


7. V_F



KID65001AP/AF~KID65004AP/AF

8. t_{ON} , t_{OFF}



Notes : 1. Pulse Width 50 μ s, Duty Cycle 10%
Output Impedance 50 Ω , t_r 5ns, t_f 10ns

2. See below

Input Conditions

Type Number	R_I	V_{IH}
KID65001AP/AF	2.7k	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

Fig. 1 I_{OUT} - DUTY CYCLE

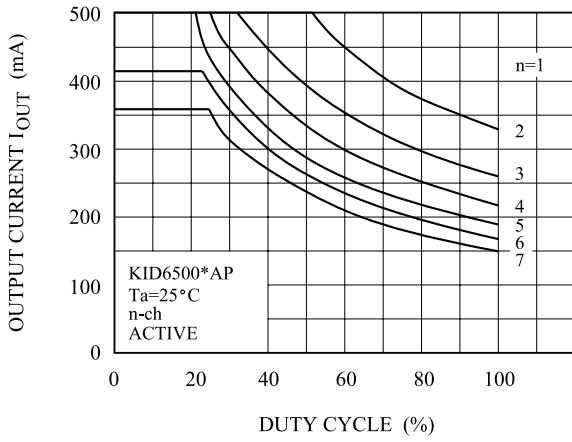


Fig. 2 I_{OUT} - DUTY CYCLE

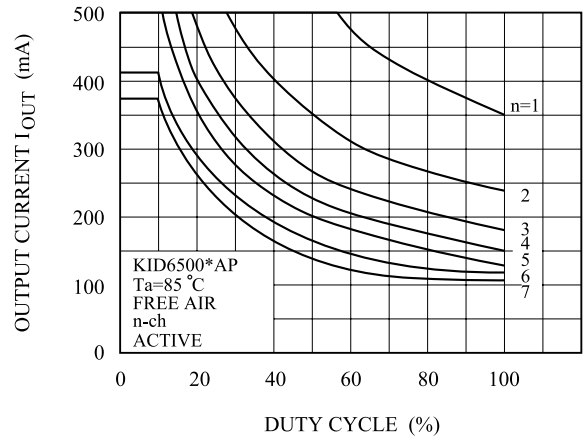


Fig. 3 I_{OUT} - DUTY CYCLE

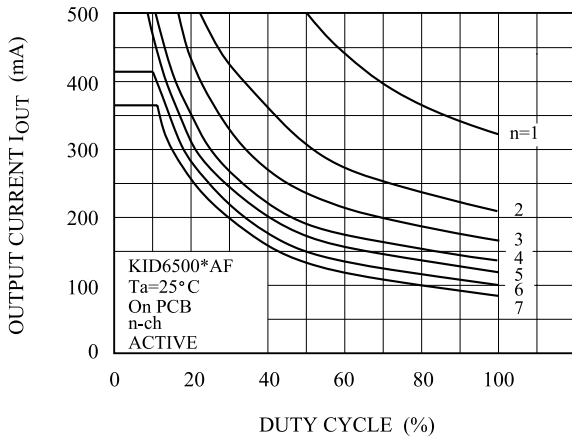


Fig. 4 I_{OUT} - DUTY CYCLE

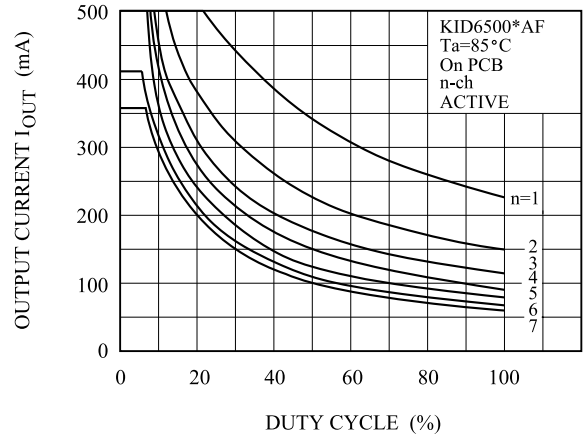


Fig. 5 I_{IN} - V_{IN}

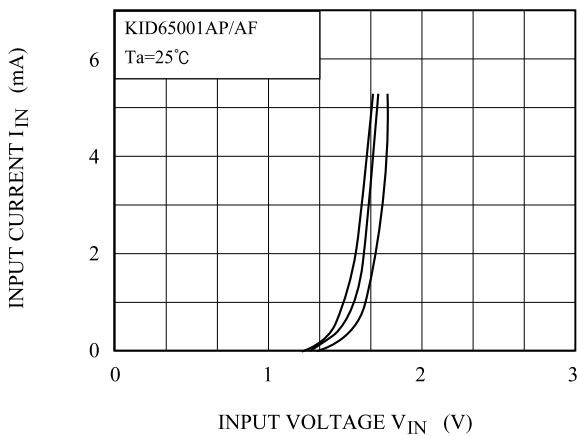
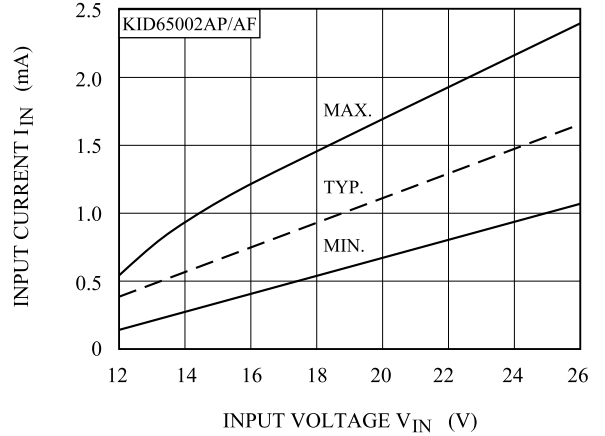


Fig. 6 I_{IN} - V_{IN}



KID65001AP/AF~KID65004AP/AF

Fig. 7 $I_{IN} - V_{IN}$

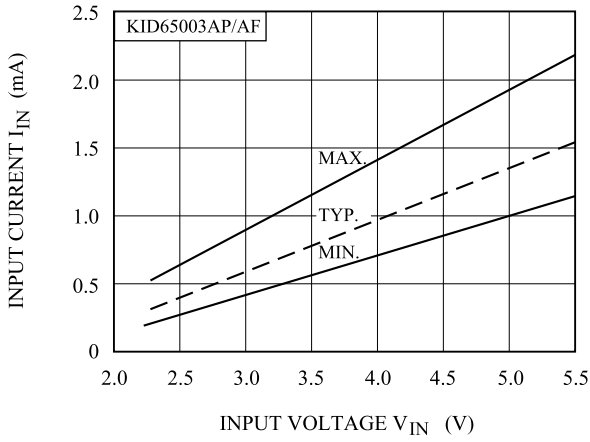


Fig. 8 $I_{IN} - V_{IN}$

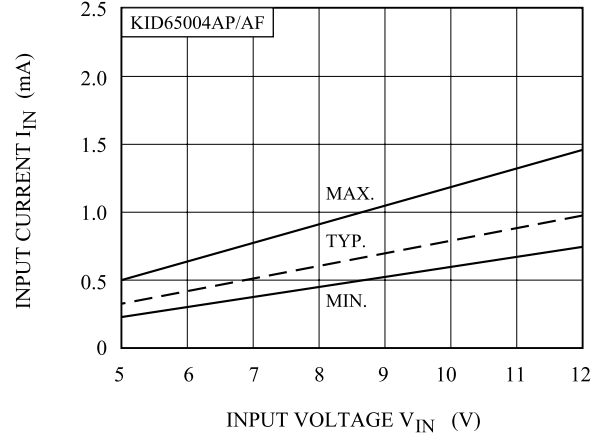


Fig. 9 $I_{OUT} - V_{CE(sat)}$

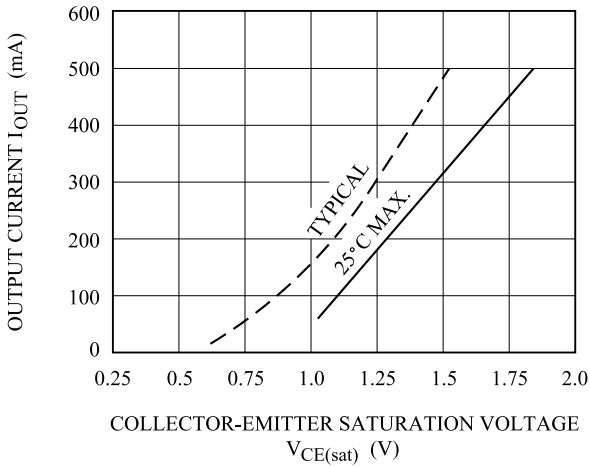


Fig. 10 $h_{FE} - I_{OUT}$

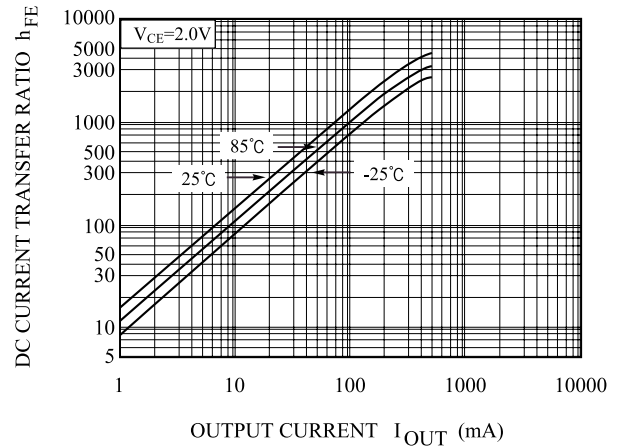


Fig. 11 $I_F - V_F$

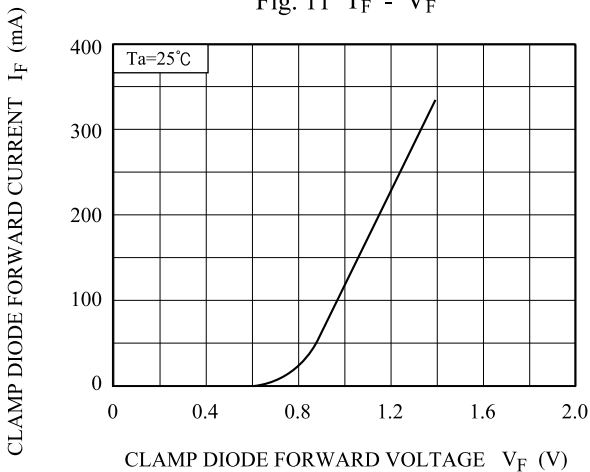
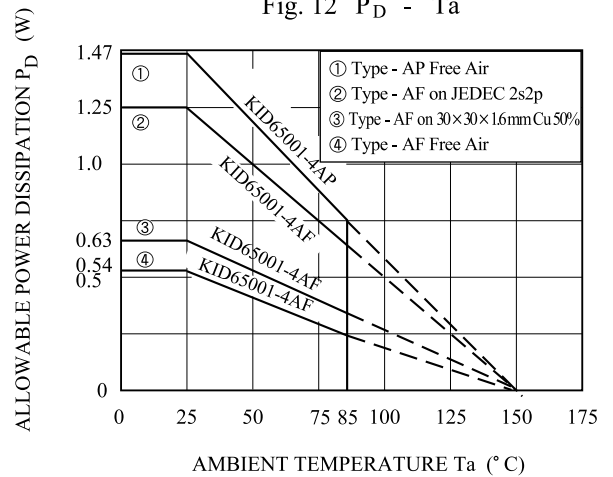


Fig. 12 $P_D - T_a$



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