

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+10.5kΩ	14~25V P-MOS
KID65003AP/AF	2.7kΩ	TTL, 5V C-MOS
KID65004AP/AF	10.5kΩ	6~15V P-MOS, C-MOS

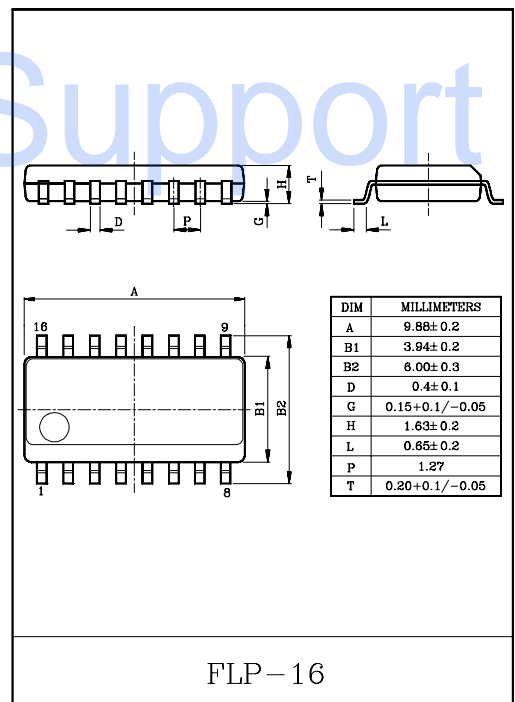
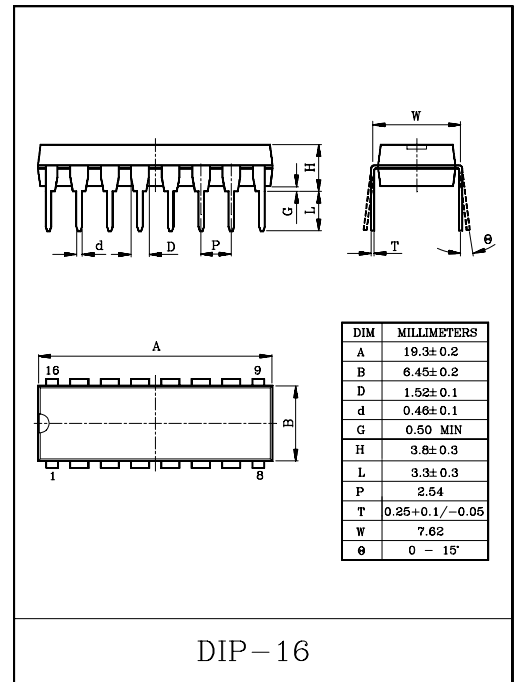
DESCRIPTION:

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)

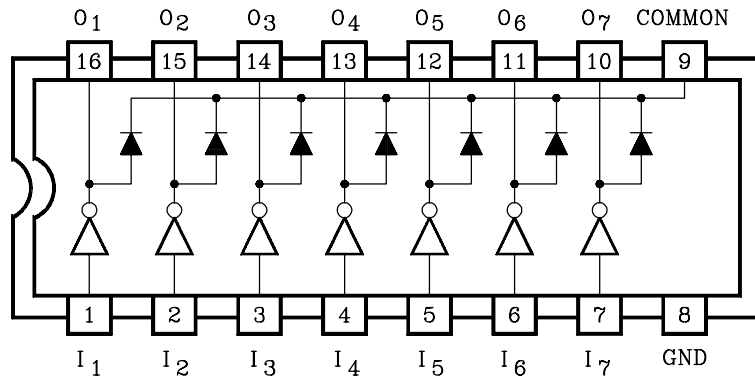
CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage		$V_{CE(SUS)}$	50	V
Output Current		I_{OUT}	500	mA
Input Voltage		V_{IN}^*	-0.5~+30	V
Input Current		I_{IN}^{**}	25	mA
Clamp Diode	Reverse Voltage	V_R	50	V
	Forward Current	I_F	500	mA
GND Terminal Current		I_{GND}	2.8	A
Power Dissipation	AP	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



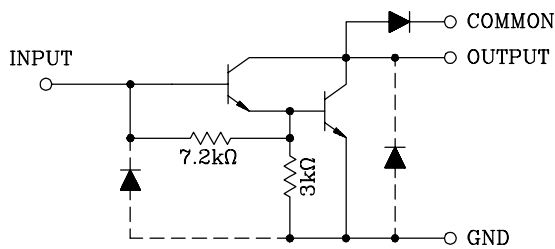
KID65001AP/AF ~ KID65004AP/AF

PIN CONNECTION (TOP VIEW)

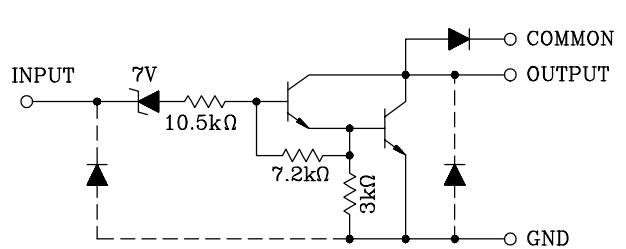


SCHEMATICS (EACH DRIVER)

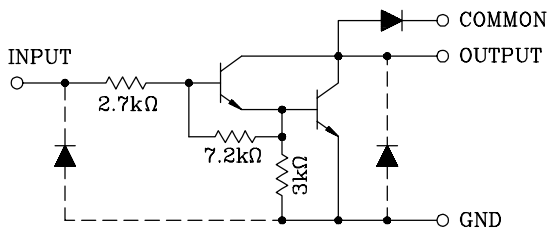
KID65001AP/AF



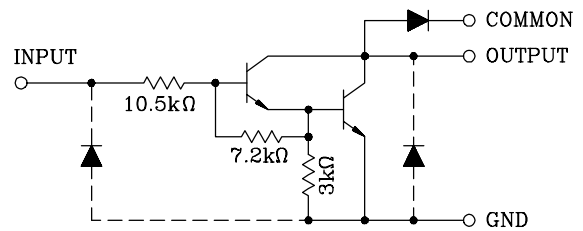
KID65002AP/AF



KID65003AP/AF



KID65004AP/AF



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=Topr(max) *	-	-	0.52	W
	AF			-	-	0.32	

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

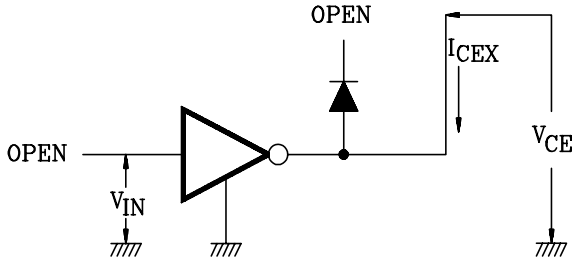
ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise noted)

CHARACTERISTICS		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leak Current	KID65002AP/AF KID65004AP/AF	I _{CEX}	1	V _{CE} =50V, Ta=25°C	-	-	50	μA
				V _{CE} =50V, Ta=85°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} =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	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				
		I _{IN(OFF)}	4	I _{OUT} =500μA, Ta=85°C	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	
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°C	-	-	50	μA
				V _R =50V, Ta=85°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 =163Ω C _L =15pF	-	0.1	-	μS
Turn-OFF Delay		t _{OFF}			-	0.2	-	

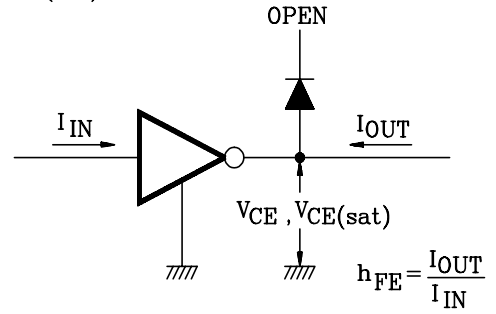
KID65001AP/AF ~ KID65004AP/AF

TEST CIRCUIT

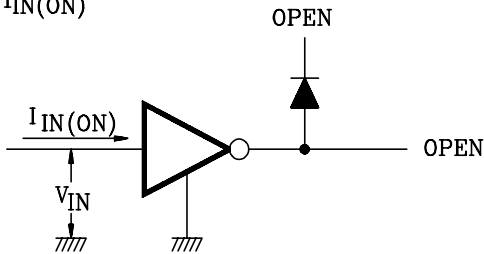
1. I_{CEX}



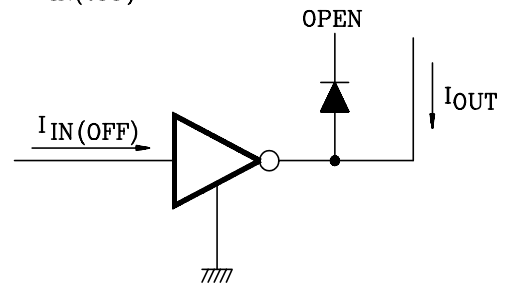
2. $V_{CE(sat)}$, h_{FE}



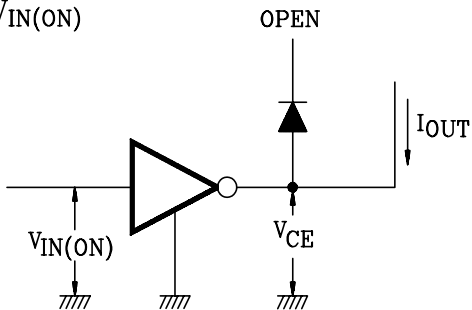
3. $I_{IN(ON)}$



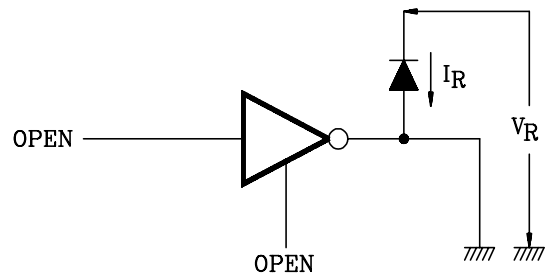
4. $I_{IN(OFF)}$



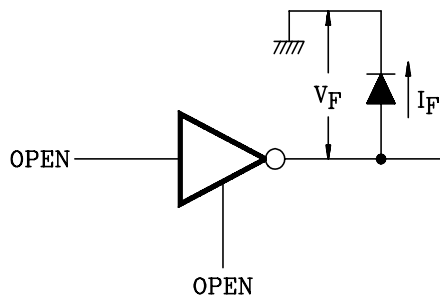
5. $V_{IN(ON)}$



6. I_R

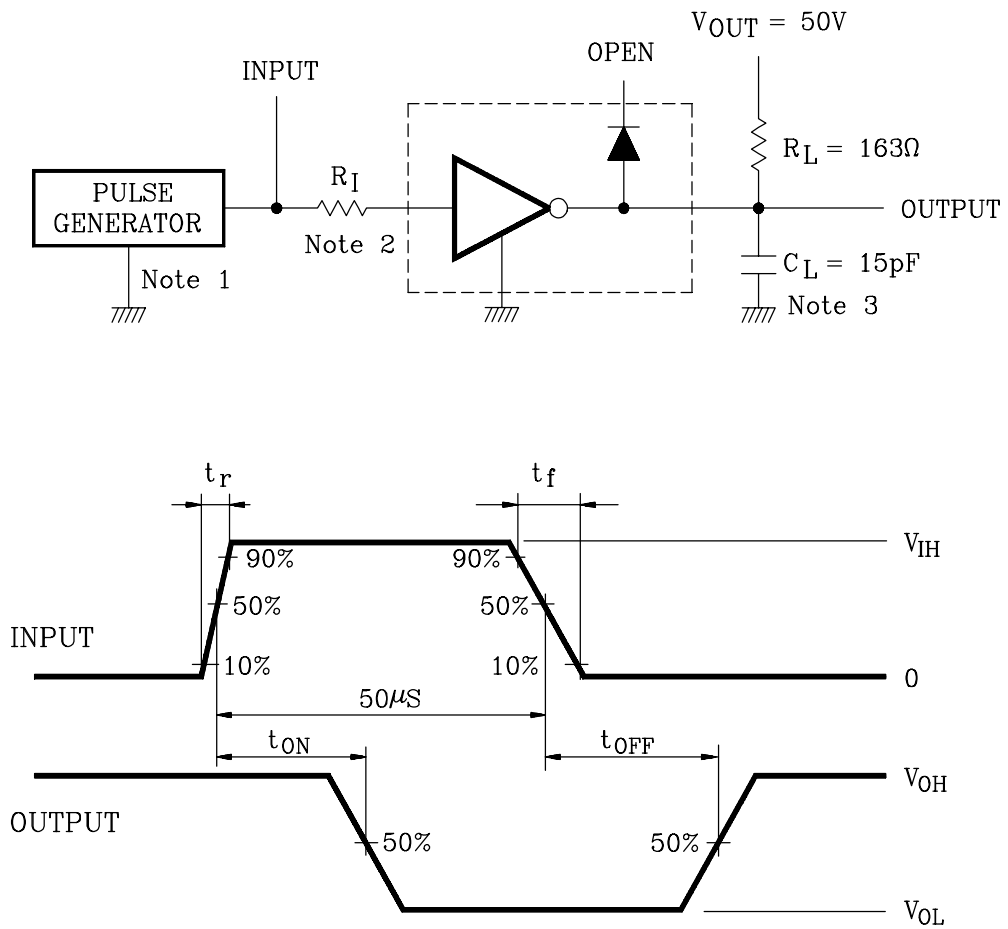


7. V_F



KID65001AP/AF ~ KID65004AP/AF

8. t_{ON}, t_{OFF}



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

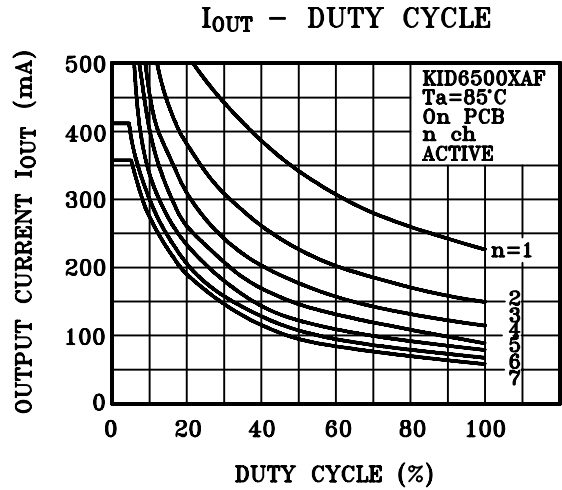
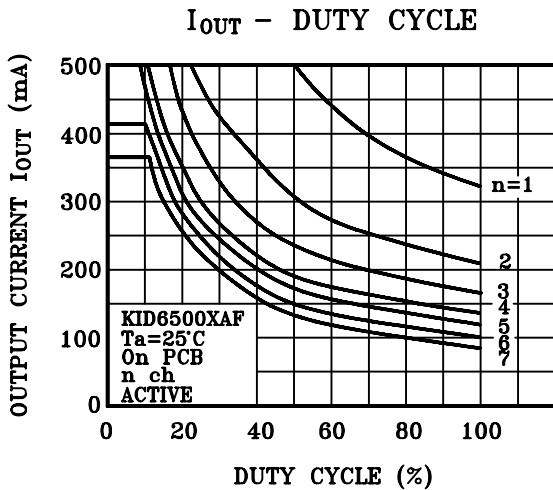
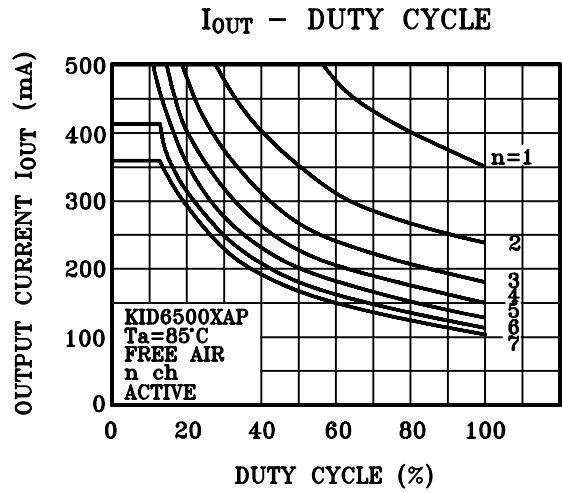
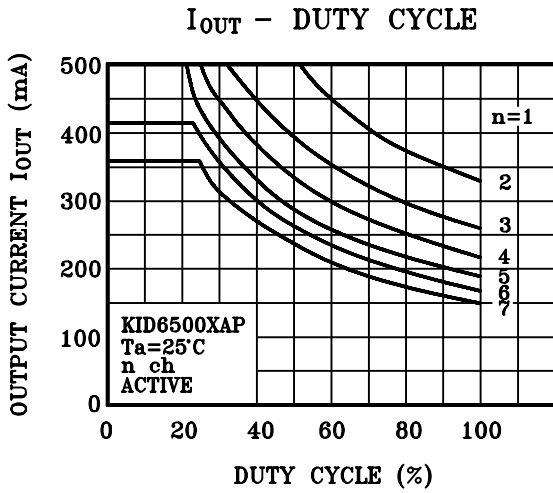
2. See below

Input Conditions

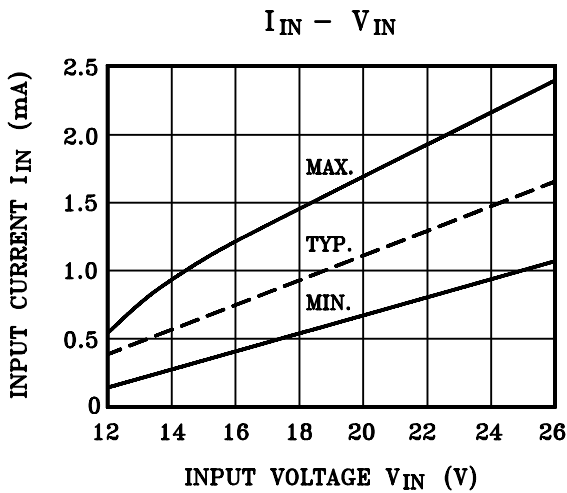
Type Number	R_I	V_{IH}
KID65001AP/AF	$2.7\text{k}\Omega$	3V
KID65002AP/AF	0	13V
KID65003AP/AF	0	3V
KID65004AP/AF	0	8V

3. C_L includes probe and Jig capacitance.

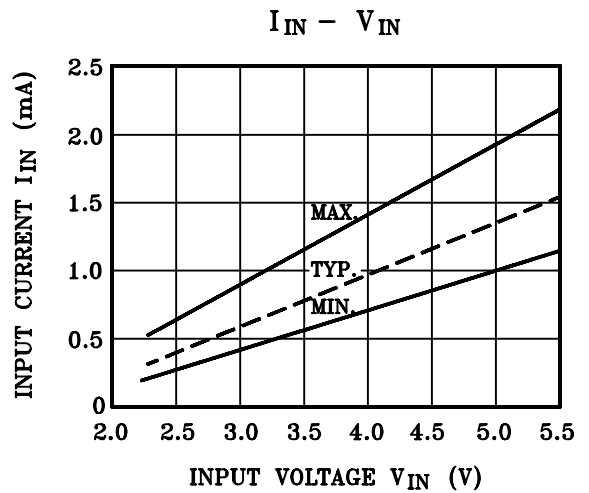
KID65001AP/AF ~ KID65004AP/AF



KID65002AP/AF



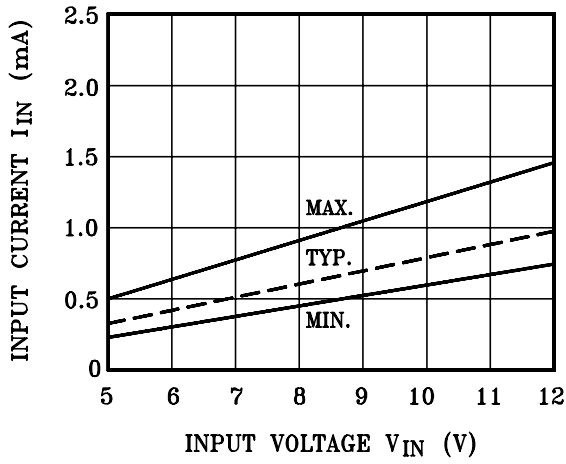
KID65003AP/AF



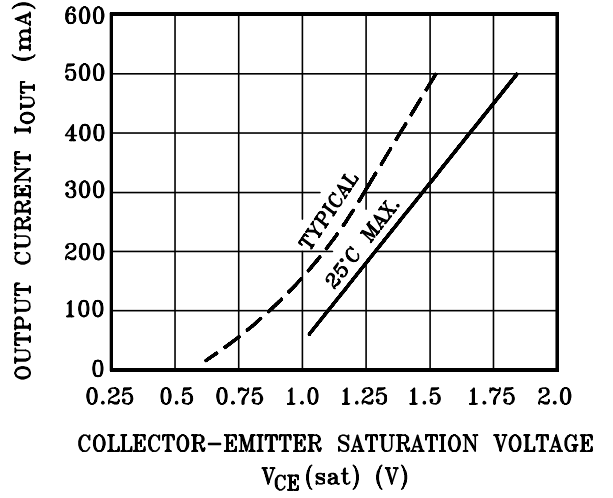
KID65001AP/AF ~ KID65004AP/AF

KID65004AP/AF

$I_{IN} - V_{IN}$



$I_{OUT} - V_{CE(sat)}$



$P_D - T_a$

