HIGH VOLTAGE, HIGH CURRENT DARLINGTON ARRAYS

The KA2655/6/7/8/9 are comprised of seven high voltage, high current NPN darlington transistors arrays with common emitter, open collector outputs. Suppression diodes are included for inductive load driving and the inputs are pinned opposite the outputs to simplify board layout. Peak inrush currents to 600mA permit them to drive incandescent lamps.

The KA2655 is a general purpose array for use with DTL, TTL, PMOS or CMOS logic directly.

The KA2656 version does away with the need for any external discrete resistors, since each unit has a resistor and a zener diode in series with the input. The KA2656 is designed for use with 14 to 25V PMOS devices. The zener diode also gives these devices excellent noise immunity.

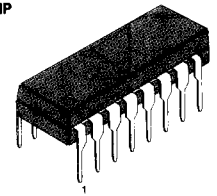
The KA2657 has a series base resistor to each darlington pair, and thus allows operation directly with TTL or CMOS operating at supply voltages of 5V. The KA2657 will handle numerous interfaces needs particularly those beyond the capabilities of standard logic buffers.

The KA2658 has an appropriate input resistor to allow direct operation from CMOS or PMOS outputs operating supply voltages of 6 to 15V.

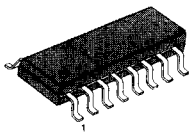
The KA2659 is designed for use with standard TTL and Schottky TTL, with which higher output currents are required and loading of the logic output is not a concern. These devices will sink a minimum of 350mA when driven from a "totempole" logic output.

These versatile devices are useful for driving a wide range of loads including Solenoids, Relays, DC motors, LED displays. Filament lamps, thermal printheads and high power buffer. Applications requiring sink currents beyonds the capability of a single output may be accommodated by paralleling the outputs.

16 DIP



16 SOP



ORDERING INFORMATION

Device	Package	Input Level	Operating Temperature
KA2655	16 DIP	DTL, TTL, PMOS, CMOS	– 20 ~ + 85°C
KA2655D	16 SOP		
KA2656	16 DIP	PMOS	
KA2656D	16 SOP		
KA2657	16 DIP	TTL, CMOS	
KA2657D	16 SOP		
KA2658	16 DIP	CMOS, PMOS	
KA2658D	16 SOP		
KA2659	16 DIP	TTL	
KA2659D	16 SOP		

APPLICATIONS

- Relay driver
- DC motor driver
- Solenoids driver
- LED display driver
- Filament lamp driver
- High power buffer
- Thermal print head driver

SCHEMATIC DIAGRAM

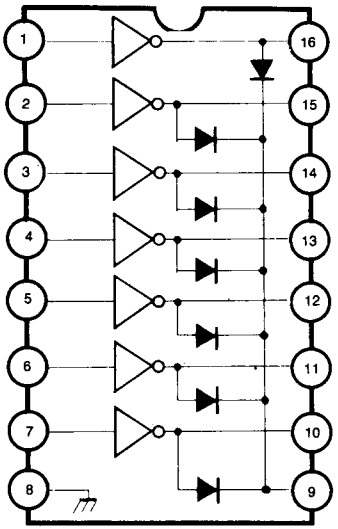


Fig. 1

PARTICAL SCHEMATIC

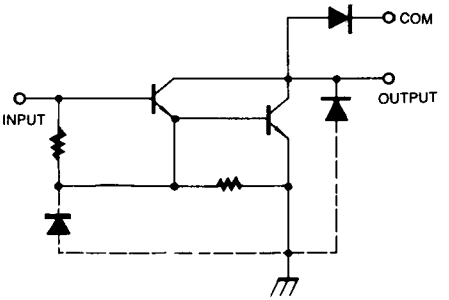


Fig. 2 **KA2655 (each driver)**

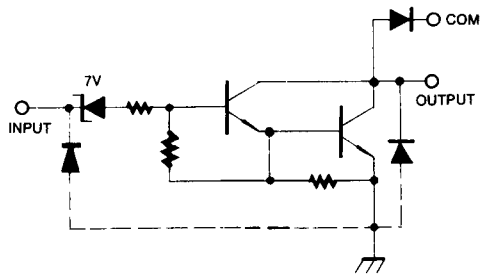


Fig. 3 KA2656 (each driver)

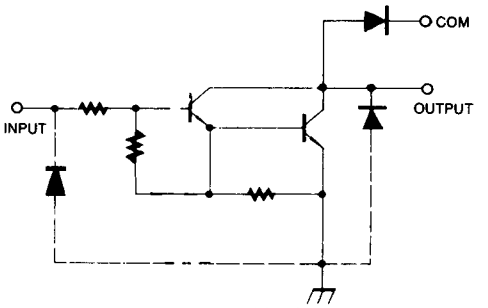


Fig. 4 KA2657 (each driver)

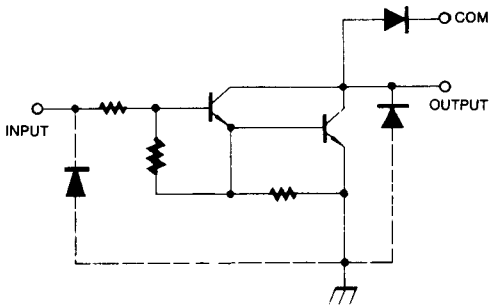


Fig. 5 KA2658 (each driver)

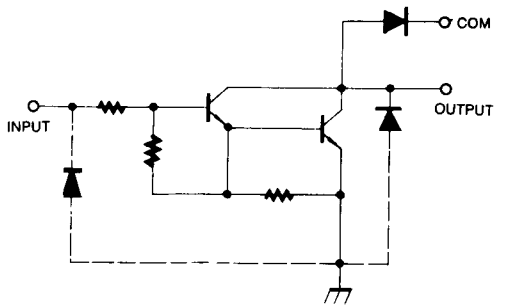


Fig. 6 KA2659 (each driver)

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Output Voltage	V_O	50	V
Input Voltage (KA2656/7/8)	V_I	30	V
(KA2659)		15	
Continuous Collector Current	I_C	500	mA
Continuous Input Current	I_I	25	mA
Power Dissipation	P_D	1.0	W
Operating Temperature	T_{OPR}	−20 ~ +85	°C
Storage Temperature	T_{STG}	−55 ~ +150	°C

ELECTRICAL CHARACTERISTICS

(Ta = 25°C, unless otherwise noted)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Current 1 (Off Condition)	$I_{I(ON)1}$	I_C = 500μA, Ta = 70°C	50	65		μA
Input Current 2 (On Condition)	$I_{I(ON)2}$	V_{IN} = 17V (KA2656), V_O = open		0.85	1.3	mA
		V_{IN} = 3.85V (KA2657), V_O = open		0.93	1.35	
		V_{IN} = 5V (KA2658), V_O = open		0.35	0.5	
		V_{IN} = 12V (KA2658), V_O = open		1.0	1.45	
		V_{IN} = 3.0V (KA2659), V_O = open		1.5	2.4	
Input Voltage	V_I	V_{CE} = 2.0V, I_C = 300mA (KA2656)			13	V
		V_{CE} = 2.0V, I_C = 200mA (KA2657)			2.4	
		V_{CE} = 2.0V, I_C = 250mA (KA2657)			2.7	
		V_{CE} = 2.0V, I_C = 300mA (KA2657)			3.0	
		V_{CE} = 2.0V, I_C = 125mA (KA2658)			5.0	
		V_{CE} = 2.0V, I_C = 200mA (KA2658)			6.0	
		V_{CE} = 2.0V, I_C = 275mA (KA2658)			7.0	
		V_{CE} = 2.0V, I_C = 350mA (KA2658)			8.0	
		V_{CE} = 2.0V, I_C = 350mA (KA2659)			2.4	
Output Leakage Current	$I_{O(LKG)}$	V_{CE} = 50V, Ta = 25°C, V_{IN} = open			50	μA
		V_{CE} = 50V, Ta = 70°C, V_{IN} = open			100	
		V_{CE} = 50V, Ta = 70°C, V_{IN} = 6.0V (KA2656)			500	
		V_{CE} = 50V, Ta = 70°C, V_{IN} = 1.0V (KA2658)			500	
Output Saturation Voltage	$V_{O(SAT)}$	I_C = 100mA, I_{IN} = 250μA		0.9	1.1	V
		I_C = 200mA, I_{IN} = 350μA		1.1	1.3	
		I_C = 350mA, I_{IN} = 500μA		1.25	1.6	

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ELECTRICAL CHARACTERISTICS

(Ta = 25°C, unless otherwise noted)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Current Gain	h_{FE}	V_{CE} = 2.0V, I_C = 350mA (KA2655)	1000			
Clamp Diode Leakage Current	$I_{LKG\ (CD)}$	V_{IN} = open, V_O = GND, V_R = 50V, Ta = 250C			50	μA
		V_{IN} = open, V_O = GND, V_R = 50V, Ta = 70°C			100	μA
Clamp Diode Forward Voltage	$V_{F\ (CD)}$	I_F = 350mA		1.7	2.0	V
Input Capacitance	C_I			15	30	pF
Propagation Delay Time	$t_{D\ (P)\ ON}$	0.5 V_{IN} to 0.5 V_O		0.25	1.0	μs
	$t_{D\ (P)\ OFF}$	0.5 V_{IN} to 0.5 V_O		0.25	1.0	μs

APPLICATION CIRCUIT

KA2656

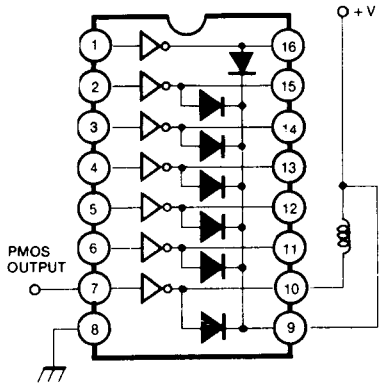

Fig. 7 PMOS TO LOAD

KA2657/9

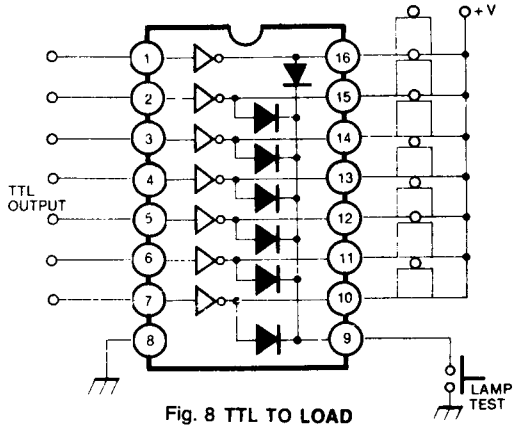

Fig. 8 TTL TO LOAD

KA2658

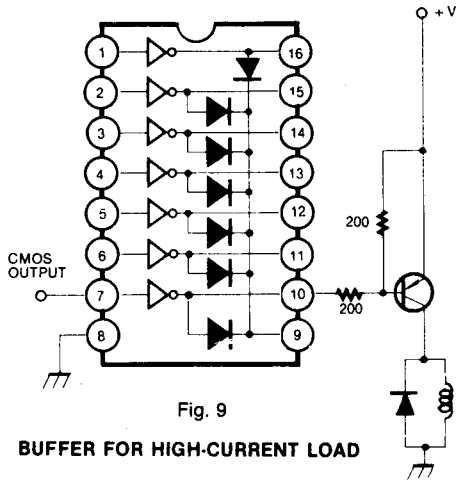

Fig. 9

BUFFER FOR HIGH-CURRENT LOAD

KA2657

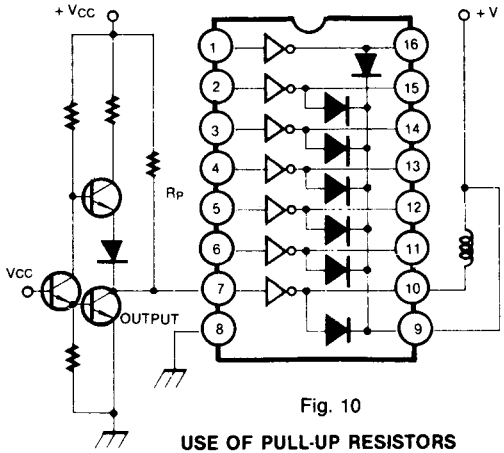

Fig. 10

USE OF PULL-UP RESISTORS
TO INCREASE DRIVE CURRENT

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