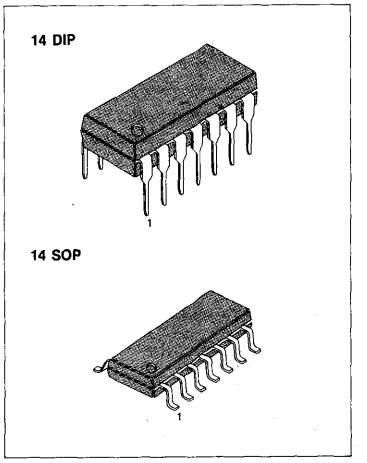
QUAD CMOS LINE DRIVER

The KS5788 is designed to interface data terminal equipment (DTE) with data communications equipment (DCE) in conformance with the specifications of EIA RS-232-C, CCITT V.24 standards. The KS5788 is direct replacement for the bipolar device (MC1488).



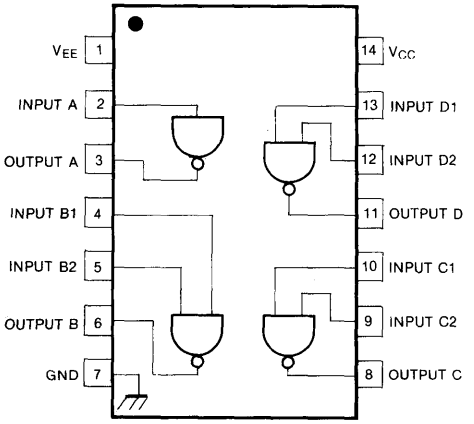
FEATURES

- **Low power consumption & low delay slew**
- **Pin for pin equivalent to MC1488**
- **Power-off source impedance: 300Ω (min)**
- **Compatible with TTL and HCTLS families**
- **Flexible operating supply range: 4.5~12.6V**

ORDERING INFORMATION

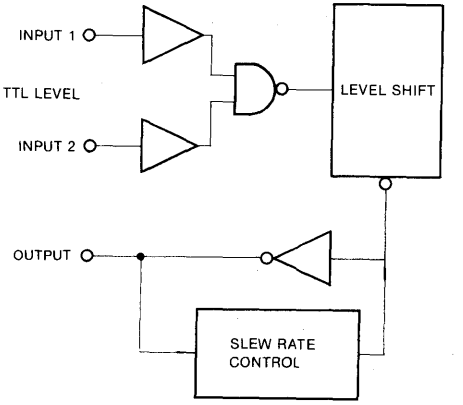
Device	Package	Operating Temperature
KS5788N	14 DIP	−40 ~ +85°C
KS5788D	14 SOP	

PIN CONFIGURATION



BLOCK DIAGRAM

(1/4 OF CIRCUIT SHOWN)



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

Characteristic	Symbol	Value	Unit
Power Supply Voltage	V_{CC} V_{EE}	−0.5 ~ 13.5 0.5 ~ −13.5	V_{dc}
Input Voltage (Any Input Pin)	V_{IN}	−0.3 ~ V_{CC} + 0.3	V_{dc}
Output Voltage (Any Output Pin)	V_{OUT}	−25 ~ 25	V_{dc}
Power Dissipation	P_D	1.0	W
Operating Temperature	T_a	−40 ~ 85	°C
Storage Temperature	T_{stg}	−65 ~ 150	°C

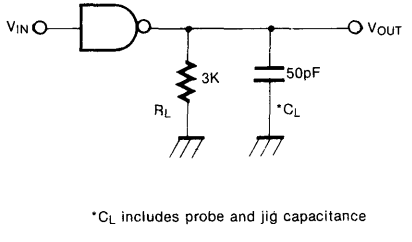
ELECTRICAL CHARACTERISTICS

(V_{CC} = 4.5 to 12V, V_{EE} = −4.5 to −12V, GND = 0V, Ta = −40° to 85°C, unless otherwise noted)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
RECOMMENDED OPERATING CONDITIONS						
Power Supply Voltage V_{CC} V_{EE}	V_{CC} V_{EE}		4.5 −4.5		12.6 −12.6	V_{dc}
DC ELECTRICAL CHARACTERISTICS						
Input Current 1	I_{IL}	V_{IN} = GND	−10		10	μA
Input Current 2	I_{IH}	V_{IN} = V_{CC}	−10		10	μA
Positive Supply Current 1 (V_{IN} = V_{IL}, R_L = ∞, per package)	I_{CC1}	V_{CC} = 4.5V, V_{EE} = −4.5V V_{CC} = 9.0V, V_{EE} = −9.0V V_{CC} = 12.0V, V_{EE} = −12.0V			10 30 60	μA μA μA
Positive Supply Current 2 (V_{IN} = V_{IH}, R_L = ∞, per package)	I_{CC2}	V_{CC} = 4.5V, V_{EE} = −4.5V V_{CC} = 9.0V, V_{EE} = −9.0V V_{CC} = 12.0V, V_{EE} = −12.0V			30 190 425	μA μA μA
Negative Supply Current 1 (V_{IN} = V_{IL}, R_L = ∞, per package)	I_{EE1}	V_{CC} = 4.5V, V_{EE} = −4.5V V_{CC} = 9.0V, V_{EE} = −9.0V V_{CC} = 12.0V, V_{EE} = −12.0V			−10 −10 −10	μA μA μA
Negative Supply Current 2 (V_{IN} = V_{IH}, R_L = ∞, per package)	I_{EE2}	V_{CC} = 4.5V, V_{EE} = −4.5V V_{CC} = 9.0V, V_{EE} = −9.0V V_{CC} = 12.0V, V_{EE} = −12.0V			−30 −30 −60	μA μA μA
Input Voltage High	V_{IH}		2.0		V_{DD}	V_{dc}
Input Voltage Low	V_{IL}	$V_{CC} \geqq 7V$, $V_{EE} \leqq -7V$ $V_{CC} \leqq 7V$, $V_{EE} \geqq -7V$	GND GND		0.8 0.6	V_{dc}

ELECTRICAL CHARACTERISTICS (Continued)

Characteristic		Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage High ($V_{IN}=V_{IL}$, $R_L=3K\Omega\sim7K\Omega$)		V_{OH}	$V_{CC}=4.5V$, $V_{EE}=-4.5V$ $V_{CC}=9.0V$, $V_{EE}=-9.0V$ $V_{CC}=12V$, $V_{EE}=-12V$	3.0 6.5 9.0			V_{dc}
Output Voltage Low ($V_{IN}=V_{IH}$, $R_L=3K\Omega\sim7K\Omega$)		V_{OL}	$V_{CC}=4.5V$, $V_{EE}=-4.5V$ $V_{CC}=9.0V$, $V_{EE}=-9.0V$ $V_{CC}=12V$, $V_{EE}=-12V$			-3.0 -6.5 -9.0	V_{dc}
Output Short Circuit Current	$V_{IN}=V_{IL}$	I_{OS}	$V_O=GND$			45	mA
	$V_{IN}=V_{IH}$		$V_{CC}=12V$, $V_{EE}=-12V$			-45	
Power Off Output Resistance		R_O	$V_{CC}=V_{EE}=0V$, $V_{OUT}=\pm2V$	300			Ω
SWITCHING CHARACTERISTICS ($V_{CC}=4.5V$ to $12V$, $V_{EE}=-4.5V$ to $-12V$, $Ta=-40°C\sim85°C$, Fig. 1)							
Propagation Delay		t_{pd}	$V_{CC}=4.5V$, $V_{EE}=-4.5V$ $V_{CC}=9.0V$, $V_{EE}=-9.0V$ $V_{CC}=12V$, $V_{EE}=-12V$			6.0 5.0 4.0	μS
Output Rise Time		t_r	V_{OUT} = from $-3V$ to $3V$	0.2			μS
Output Fall Time		t_f	V_{OUT} = from $3V$ to $-3V$	0.2			μS
Output Slew Rate		S_R	$R_L=3K\Omega$ to $7K\Omega$ $15pF<C_L<2.5nF$			30	V/μS
Typical Propagation Delay Skew		t_{SK}	$V_{CC}=12V$, $V_{EE}=-12V$		400		nS



*C_L includes probe and jig capacitance

Fig. 1 AC Test Circuit

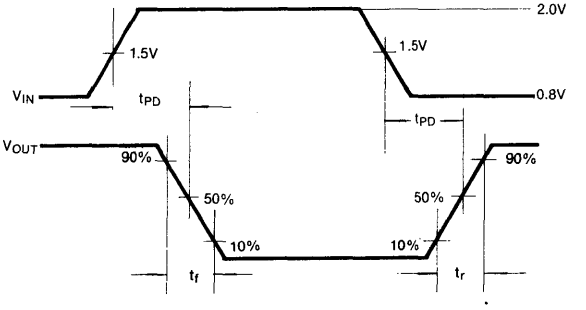


Fig. 2 Switching Waveforms