

KS54AHCT 465/466

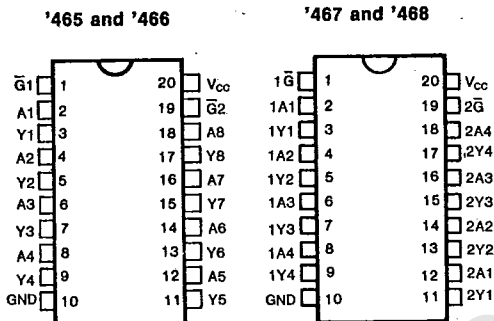
KS74AHCT 467/468

Octal Buffers and Line Drivers with 3-State Outputs

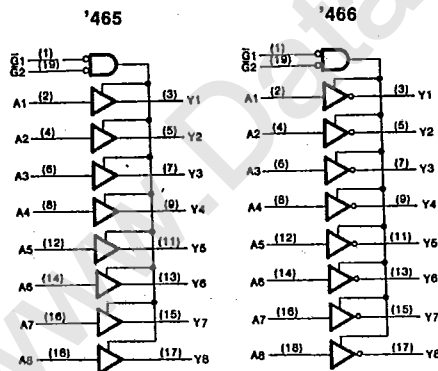
FEATURES

- Function, pin-out, speed and drive compatibility with 54/74ALS logic family
- Low power consumption characteristic of CMOS
- 3-State outputs with high drive current ($I_{OL} = 24 \text{ mA}$ @ $V_{OL} = 0.5\text{V}$) for direct bus interface
- Inputs and outputs interface directly with TTL, NMOS and CMOS devices
- Wide operating voltage range: 4.5V to 5.5V
- Characterized for operation over Industrial and military temperature ranges:
KS74AHCT: -40°C to $+85^{\circ}\text{C}$
KS54AHCT: -55°C to $+125^{\circ}\text{C}$
- Package options include plastic "small outline" packages, standard plastic and ceramic 300-mil DIPs

PIN CONFIGURATIONS



LOGIC DIAGRAMS



DESCRIPTION

These high-speed octal buffers and drivers are designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. The designer has the choice of inverting/noninverting outputs and various types of output controls.

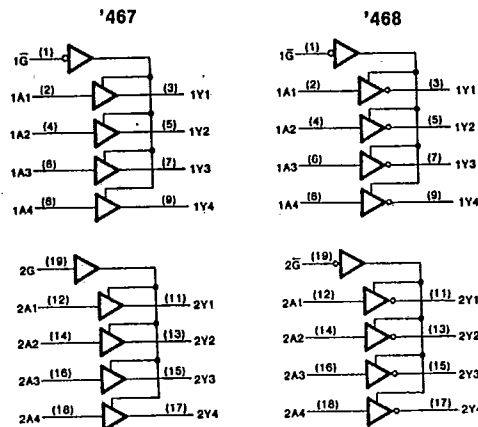
These devices provide speeds and drive capability equivalent to their ALSTTL counterparts and yet maintain CMOS power levels. The input and output voltage levels allow direct interface with TTL, NMOS and CMOS devices without any external components.

All inputs and outputs are protected from damage due to static discharge by internal diode clamps to V_{CC} and ground.

FUNCTION TABLE

Input			Output	
$\overline{G}_1$	$\overline{G}_2$	A	'465	'466
L	L	L	L	H
L	L	H	H	L
H	X	X	Z	Z
X	H	X	Z	Z

Input			Output	
G	$\overline{G}$	A	'467	'468
H	L	L	L	H
H	L	H	H	L
L	H	X	Z	Z



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KS54AHCT 465/466
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**Octal Buffers and Line Drivers
 with 3-State Outputs**

T-52-07

Absolute Maximum Ratings*

Supply Voltage Range V_{CC} -0.5V to +7V
 DC Input Diode Current, I_{IK}
 ($V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$) ± 20 mA
 DC Output Diode Current, I_{OK}
 ($V_O < -0.5V$ or $V_O > V_{CC} + 0.5V$) ± 20 mA
 Continuous Output Current Per Pin, I_O
 ($-0.5V < V_O < V_{CC} + 0.5V$) ± 70 mA
 Continuous Current Through
 V_{CC} or GND pins ± 250 mA
 Storage Temperature Range, T_{stg} -65°C to +150°C
 Power Dissipation Per Package, P_d † 500 mW

* Absolute Maximum Ratings are those values beyond which permanent damage to the device may occur. These are stress ratings only and functional operation of the device at or beyond them is not implied. Long exposure to these conditions may affect device reliability

† Power Dissipation temperature derating:

Plastic Package (N): -12mW/°C from 65°C to 85°C
 Ceramic Package (J): -12mW/°C from 100°C to 125°C

Recommended Operating Conditions

Supply Voltage, V_{CC} 4.5V to 5.5V
 DC Input & Output Voltages*, V_{IN} , V_{OUT} ... 0V to V_{CC}
 Operating Temperature
 Range KS74AHCT: -40°C to +85°C
 KS54AHCT: -55°C to +125°C

Input Rise & Fall Times, t_r , t_f Max 500 ns

* Unused inputs must always be tied to an appropriate logic voltage level (either V_{CC} or GND)

DC ELECTRICAL CHARACTERISTICS ($V_{CC}=5V \pm 10\%$ Unless Otherwise Specified)

Characteristic	Symbol	Test Conditions	T _a = 25°C		KS74AHCT T _a = -40°C to +85°C		KS54AHCT T _a = -55°C to +125°C		Unit
			Typ	Guaranteed Limits					
Minimum High-Level Input Voltage	V _{IH}			2.0	2.0		2.0		V
Maximum Low-Level Input Voltage	V _{IL}			0.8	0.8		0.8		V
Minimum High-Level Output Voltage	V _{OH}	V _{IN} =V _{IH} or V _{IL} I _O = -20μA I _O = -6mA	V _{CC} 4.2	V _{CC} - 0.1 3.98	V _{CC} - 0.1 3.84		V _{CC} - 0.1 3.7		V
Maximum Low-Level Output Voltage	V _{OL}	V _{IN} =V _{IH} or V _{IL} I _O = 20μA I _O = 12mA I _O = 24mA	0	0.1 0.26 0.39	0.1 0.33 0.5		0.1 0.4		V
Maximum Input Current	I _{IN}	V _{IN} =V _{CC} or GND		±0.1	±1.0		±1.0		μA
Maximum 3-State Leakage Current	I _{OZ}	Output Enable = V _{IH} V _{OUT} =V _{CC} or GND		±0.5	±5.0		±10.0		μA
Maximum Quiescent Supply Current	I _{CC}	V _{IN} =V _{CC} or GND I _{OUT} =0μA		8.0	80.0		160.0		μA
Additional Worst Case Supply Current	ΔI _{CC}	per input pin V _I =2.4V other inputs: at V _{CC} or GND I _{OUT} =0μA		2.7	2.9		3.0		mA



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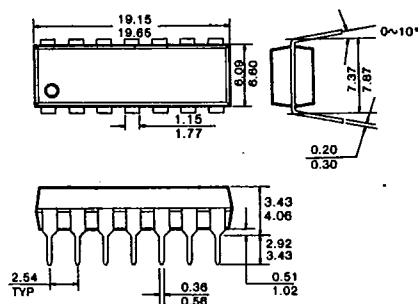
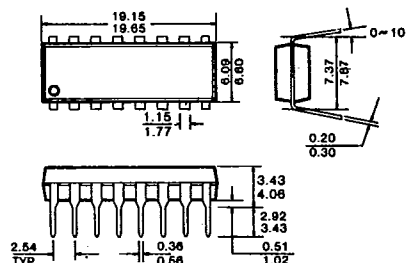
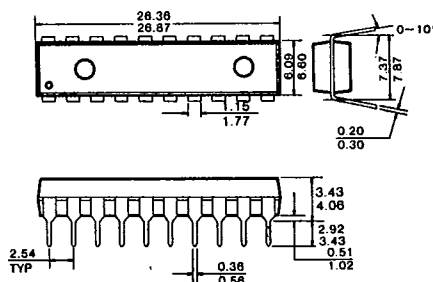
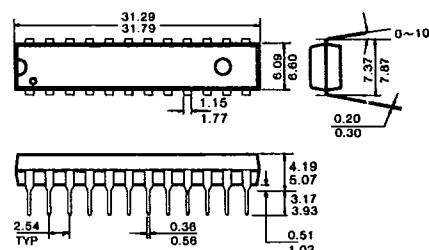
Octal Buffers and Line Drivers
with 3-State Outputs T-52-07

AC ELECTRICAL CHARACTERISTICS (Input $t_r, t_f \leq 2$ ns), AHCT465, AHCT466, AHCT467, AHCT468

Parameter	Symbol	Conditions	$T_a = 25^\circ\text{C}$ $V_{CC} = 5.0\text{V}$	KS74AHCT $T_a = -40^\circ\text{C to } +85^\circ\text{C}$ $V_{CC} = 5.0\text{V} \pm 10\%$		54AHCT $T_a = +55^\circ\text{C to } +125^\circ\text{C}$ $V_{CC} = 5.0\text{V} \pm 10\%$		Unit
			Typ	Min	Max	Min	Max	
Propagation Delay, A to Y	t_{PLH}	$C_L = 50\text{pF}$	7		12		14	ns
		$C_L = 150\text{pF}$	10		17		20	
	t_{PHL}	$C_L = 50\text{pF}$	7		12		14	
		$C_L = 150\text{pF}$	10		17		20	
Output Enable Time, Enable to Y	t_{PZH}	$C_L = 50\text{pF}$	12		20		24	ns
		$C_L = 150\text{pF}$	15		25		30	
	t_{PZL}	$R_L = 1\text{k}\Omega$ $C_L = 50\text{pF}$	12		20		24	
		$C_L = 150\text{pF}$	15		25		30	
Output Disable Time, Enable to Y	t_{PHZ}	$R_L = 1\text{k}\Omega$	13		18		22	ns
	t_{PLZ}	$C_L = 50\text{pF}$	13		18		22	
Input Capacitance	C_{IN}		5					pF
Output Capacitance	C_{OUT}	Output Disabled	10					pF
Power Dissipation Capacitance* (per stage)	C_{PD}	Output Disabled	5					pF
		Output Enabled	30					

* C_{PD} determines the no-load dynamic power dissipation: $P_D = C_{PD} V_{CC}^2 f + I_{CC} V_{CC}$.
 For AC switching test circuits and timing waveforms see section 2.



PACKAGE DIMENSIONS*T-90-20***1. PLASTIC PACKAGES****14-Pin Plastic DIP Units: mm****16-Pin Plastic DIP Units: mm****20-Pin Plastic DIP Units: mm****24-Pin Plastic DIP Units: mm**

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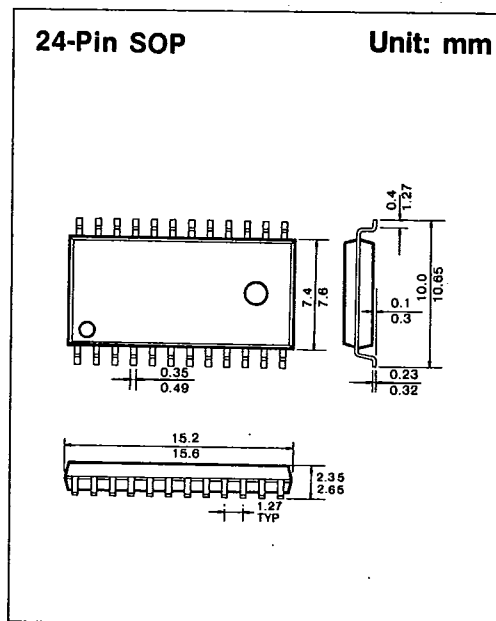
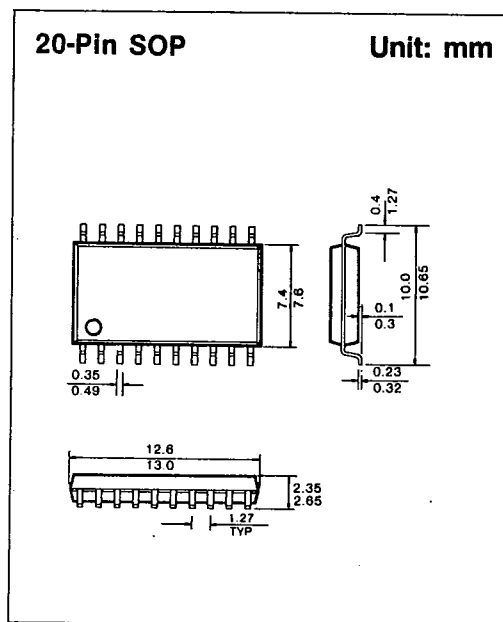
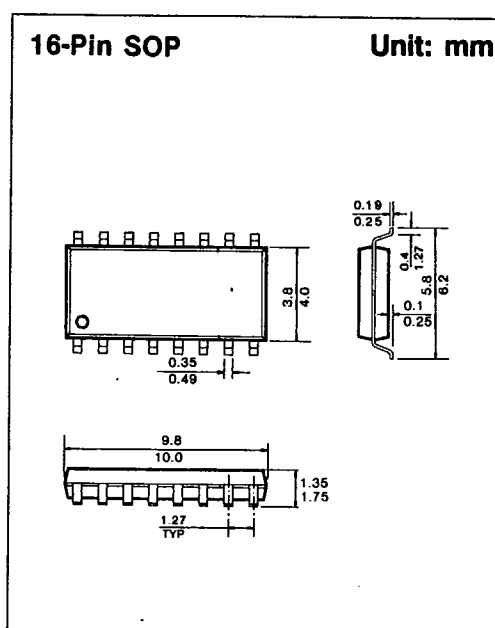
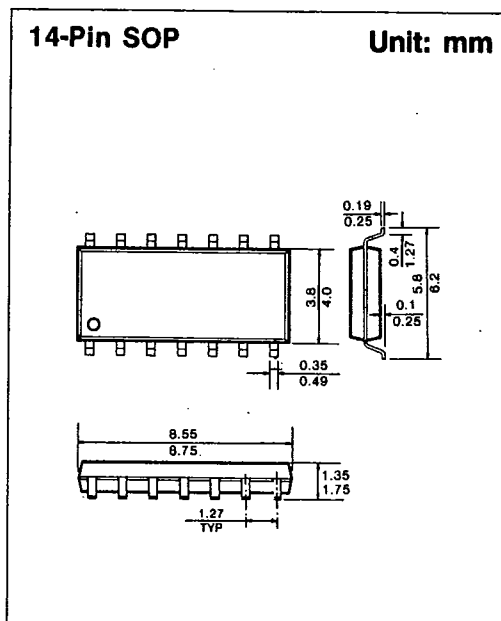
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PACKAGE DIMENSIONS

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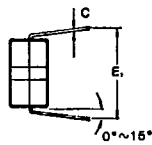
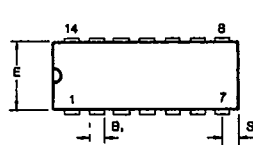
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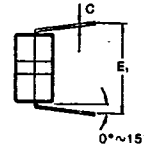
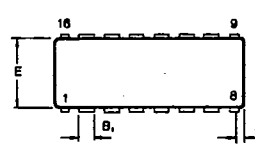
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PACKAGE DIMENSIONS

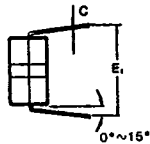
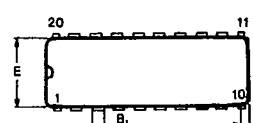
T-90-20

2. CERAMIC PACKAGES**14-Pin Ceramic DIP Units: mm**

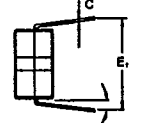
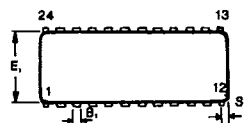
Dim	Millimeters	
	Min	Max
A	—	5.08
B	0.38	0.58
B ₁	1.40	1.78
C	0.20	0.38
D	18.16	19.56
E	8.10	7.49
E ₁	7.62	10.03
F	2.54	
L	3.18	4.19
Q	0.51	1.02
S	1.91	2.29

16-Pin Ceramic DIP Units: mm

Dim	Millimeters	
	Min	Max
A	—	5.08
B	0.38	0.58
B ₁	1.40	1.78
C	0.20	0.38
D	19.05	19.94
E	8.10	7.49
E ₁	7.62	10.03
F	2.54	
L	3.18	4.19
Q	0.51	1.02
S	0.51	1.14

20-Pin Ceramic DIP Units: mm

Dim	Millimeters	
	Min	Max
A	4.06	5.08
B	0.38	0.53
B ₁	1.14	1.52
C	0.20	0.38
D	25.78	26.93
E	8.10	8.60
E ₁	7.77	7.98
F	2.54	
L	3.73	4.01
Q	0.38	0.89
S	0.51	1.14

24-Pin Ceramic DIP Units: mm

Dim	Millimeters	
	Min	Max
A	4.06	5.08
B	0.38	0.53
B ₁	1.14	1.52
C	0.20	0.38
D	31.50	32.84
E	7.24	7.75
E ₁	7.77	7.98
F	2.54	
L	3.73	4.01
Q	0.508	1.778
S	1.85	1.93



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