

9622

FAIRCHILD LINEAR INTEGRATED CIRCUIT

GENERAL DESCRIPTION – The 9622 is a Dual Line Receiver designed to discriminate a worst case logic swing of 2.0V from a ± 10 V common mode noise signal or ground shift. A 1.5V threshold is built into the differential amplifier to offer a TTL compatible threshold voltage and maximum noise immunity. The offset is obtained by use of current sources and matched resistors and varies only $\pm 5\%$ (75 mV) over the military and industrial temperature ranges.

The 9622 allows the choice of output states with the inputs open without affecting circuit performance by use of S_3 (Note 1). A 130 Ω terminating resistor is provided at the input of each line receiver. An enable is also provided for each line receiver. The output is TTL compatible. The output HIGH level can be increased to +12V by tying it to a positive supply through a resistor. The output circuits allow wired-OR operation.

- TTL COMPATIBLE THRESHOLD VOLTAGE
- INPUT TERMINATING RESISTORS
- CHOICE OF OUTPUT STATE WITH INPUTS OPEN
- TTL COMPATIBLE OUTPUT
- HIGH COMMON MODE
- WIRE-OR CAPABILITY
- ENABLE INPUTS
- FULL MILITARY TEMPERATURE RANGE
- LOGIC COMPATIBLE SUPPLY VOLTAGES

ABSOLUTE MAXIMUM RATINGS (above which the useful life may be impaired)

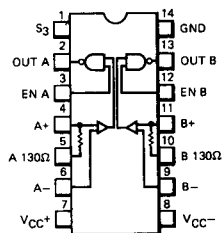
Storage Temperature	-65°C to +150°C
Operating Temperature	
Military (9622)	-55°C to +125°C
Commercial (9622C)	0°C to +70°C
Internal Power Dissipation (Note 2)	
Hermetic DIP, Molded DIP	670 mW
Flatpak	570 mW
V _{CC} + Pin Potential to Ground Pin	-0.5V to +7V
Input Voltage	±15V
Voltage Applied to Outputs for Output HIGH State	-0.5V to +13.2V
V _{CC} - Pin Potential to Ground Pin	-0.5V to -12V
Enable Pin Potential to Ground Pin	-0.5V to +15V
Lead Temperature	
Hermetic DIP, Flatpak (Soldering, 60 s)	300°C
Molded DIP. (Soldering, 10 s)	260°C

NOTE

1. S_3 connected to V_{CC} —open inputs causes output to be HIGH.
 S_3 connected to Ground—open inputs causes output to be LOW.
2. Rating applies to ambient temperature up to 70°C . Above 70°C derate linearly at $8.3\text{ mW}/^{\circ}\text{C}$ for the Hermetic DIP and $7.1\text{ mW}/^{\circ}\text{C}$ for the Flatpak.

CONNECTION DIAGRAMS
14-LEAD
(TOP VIEW)

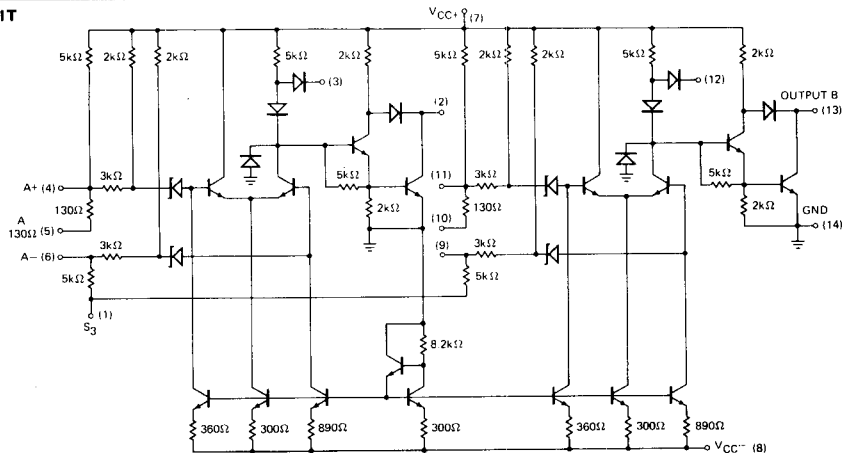
PACKAGE OUTLINES	6A	9A	31
PACKAGE CODES	D	P	F



ORDER INFORMATION

TYPE	PART NO.
9622	9622DM
9622	9622FM
9622C	9622DC
9622C	9622PC

EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS ($V_{CC+} = 5.0 \text{ V} \pm 10\%$, $V_{CC-} = -10 \text{ V} \pm 10\%$) 9622

SYMBOL	CHARACTERISTIC	LIMITS				UNITS	CONDITIONS
		-55°C		+25°C			
		MIN.	MAX.	MIN.	TYP. MAX.		
VOL	Output LOW Voltage		0.40		0.17 0.40	Volts	VCC+ = 4.5 V VCC- = -11 V *VDIFF = 2.0 V IOL = 12.4 mA
VOH	Output HIGH Voltage	2.8		3.0	3.3	Volts	VCC+ = 4.5 V VCC- = -9.0 V *VDIFF = 1.0 V IOH = -0.2 mA
ICEX	Output Leakage Current		50			μA	VCC+ = 4.5 V VCC- = -11 V *VDIFF = 1.0 V VCEX = 12 V
ISC	Output Shorted Current	-1.3	-3.1	-1.4	-2.15 -3.1	mA	VCC+ = 5.0 V VCC- = -10 V *VDIFF = 1.0 V VSC = 0 V
IR(ENABLE)	Enable Input Leakage Current					μA	VCC+ = 4.5 V VCC- = -11 V S3 = 4.5 V VR = 4.0 V
IF(ENABLE)	Enable Input Forward Current		-1.5	-0.96	-1.5	mA	VCC+ = 5.5 V VCC- = -9.0 V S3 = 0 V VF = 0 V
IF(+Input)	+Input Forward Current		-2.3	-1.67	-2.1	mA	VCC+ = 5.0 V VCC- = -10 V -Input = GND VF = 0 V
IF(-Input)	-Input Forward Current		-2.6	-1.87	-2.4	mA	VCC+, S3 = 5.0 V VCC- = -10 V +Input = GND VF = 0 V
VIL(ENABLE)	Input LOW Voltage		1.3		1.4 1.0	Volts	VCC+ = 5.0 V ±10 % VCC- = -10 V ± 10 %
VTH	Differential Input Threshold Voltage	1.0	2.0	1.0	1.5 2.0	Volts	VCC+ = 5.0 V ±10 % VCC- = -10 V ±10 %
VCM	Common Mode Voltage			-10	±12 +10	Volts	VCC+ = 5.0 V VCC- = -10 V *VDIFF = 1.0 V or 2.0 V
R130Ω	Terminating Resistance			100	130 175	Ω	
ICC	5 V Supply Current				13.7 22.9	mA	VCC+ = 5.5 V VCC- = -11 V S3, +Inputs = 5.5 V, -Inputs = 0 V
IEE	-10 V Supply Current				-6.5 -11.1	mA	VCC+ = 5.5 V VCC- = -11 V S3, +Inputs = 5.5 V, -Inputs = 0 V
tPLH	Turn-Off Time				38 50	ns	VCC+ = 5.0 V VCC- = -10 V VIN 0-3 V, RL = 3.9 kΩ, CL = 30 pF See AC Test Circuit
tPHL	Turn-On Time				35 50	ns	VCC+ = 5.0 V VCC- = -10 V VIN 0-3.0 V, RL = 0.39 kΩ, CL = 30 pF See AC Test Circuit

 $\ast V_{DIFF}$ is a differential input voltage referred from A+ to A- and from B+ to B-.

9622C

ELECTRICAL CHARACTERISTICS ($V_{CC+} = 5.0 \text{ V} \pm 5\%$, $V_{CC-} = -10 \text{ V} \pm 5\%$)

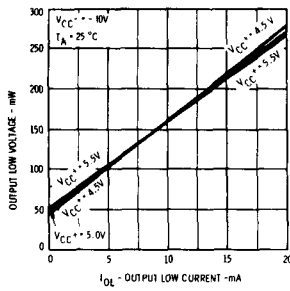
SYMBOL	CHARACTERISTIC	LIMITS					UNITS	CONDITIONS & COMMENTS
		0° C		+25° C		70° C		
		MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.
VOL	Output LOW Voltage	2.9	0.45		0.17	0.45	0.45	
VOH	Output HIGH Voltage			3.0	3.3		2.9	
ICEX	Output Leakage Current		80			100	200	
ISC	Output Shorted Current	-1.3	-3.1	-1.4	-2.15	-3.2	-1.3	-3.1
IR(ENABLE)	Enable Input Leakage Current					5	10	
IF(ENABLE)	Enable Input Forward Current		-1.5		-96	-1.5	-1.5	
IF(+Input)	+ Input Forward Current		-2.6		-1.67	-2.4	-2.3	
IF(-Input)	- Input Forward Current		-2.9		-1.87	-2.7	-2.6	
VIL(ENABLE)	Input LOW Voltage	1.2		1.4	1.0	1.0	0.85	
VTH	Differential Input Threshold Voltage	1.0	2.0	1.0	1.5	2.0	1.0	2.0
VCM	Common Mode Voltage			-7.5	±12	+7.5		
RI30Ω	Terminating Resistance			91	130	185		
ICC	5 V Supply Current				13.7	22.9		
IEE	-10 V Supply Current				-6.5	-11.1		
tPLH	Turn-Off Time				38	100		
tPHL	Turn-On Time				35	100		

* V_{DIFF} is a differential input voltage referred from A+ to A- and from B+ to B-

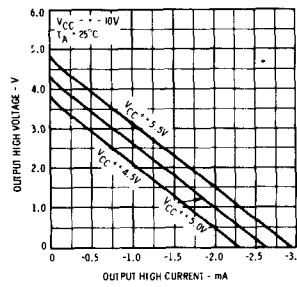
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TYPICAL PERFORMANCE CURVES FOR 9622 AND 9622C

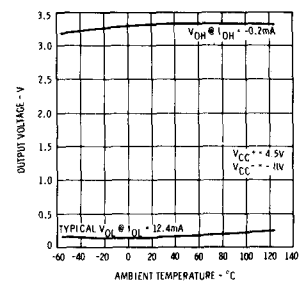
**OUTPUT LOW VOLTAGE
AS A FUNCTION OF
OUTPUT LOW CURRENT**



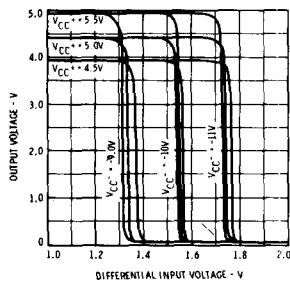
**OUTPUT HIGH VOLTAGE
AS A FUNCTION OF
OUTPUT HIGH CURRENT**



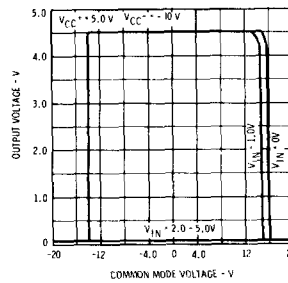
**LOGIC LEVELS
AS A FUNCTION OF
AMBIENT TEMPERATURE**



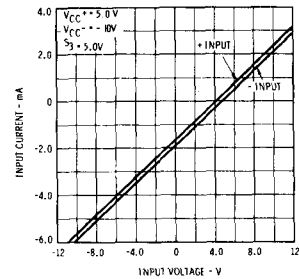
**V_OUT - V_DIFF TRANSFER
CHARACTERISTICS**



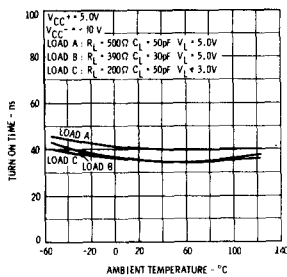
**OUTPUT VOLTAGE
AS A FUNCTION OF
COMMON MODE VOLTAGE**



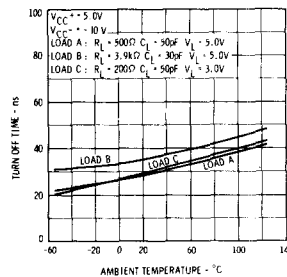
**INPUT CURRENT
AS A FUNCTION OF
INPUT VOLTAGE**



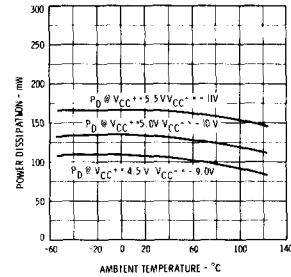
**TURN ON TIME
AS A FUNCTION OF
AMBIENT TEMPERATURE**



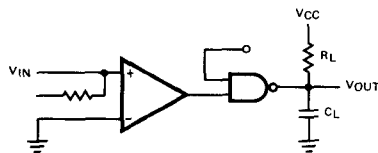
**TURN OFF TIME
AS A FUNCTION OF
AMBIENT TEMPERATURE**



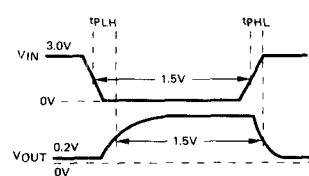
**POWER DISSIPATION
AS A FUNCTION OF
AMBIENT TEMPERATURE**



AC TEST CIRCUIT



WAVEFORMS



STANDARD USAGE

