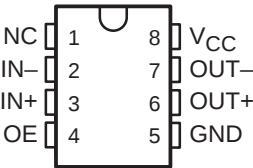


- Operates From a Single 5-V Supply
- 0 to 5.5 V Common-Mode Input Voltage Range
- Self-Biased Inputs
- Complementary 3-State Outputs
- Enable Capability
- Hysteresis . . . 5 mV Typ
- Response Times . . . 25 ns Typ

D, P, OR PS PACKAGE
(TOP VIEW)



NC—No internal connection

description

The TL712 is a high-speed comparator fabricated with bipolar Schottky process technology. The circuit has differential analog inputs and complementary 3-state TTL-compatible logic outputs with symmetrical switching characteristics. When the output enable (OE) is low, both outputs are in the high-impedance state. This device operates from a single 5-V supply and is useful as a disk memory read-chain data comparator.

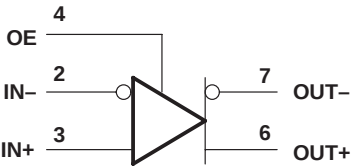
The TL712C is characterized for operation from 0°C to 70°C.

AVAILABLE OPTIONS

T _A	PACKAGED DEVICES		
	PLASTIC SMALL OUTLINE (D)	PLASTIC SMALL-OUTLINE EIAJ (PS)	PLASTIC DIP (P)
0°C to 70°C	TL712CD	TL712CPSR	TL712CP

The PS package is only available tape and reeled. The D package also is available taped and reeled. Add the suffix R to device type (e.g., TL712CDR).

symbol (positive logic)

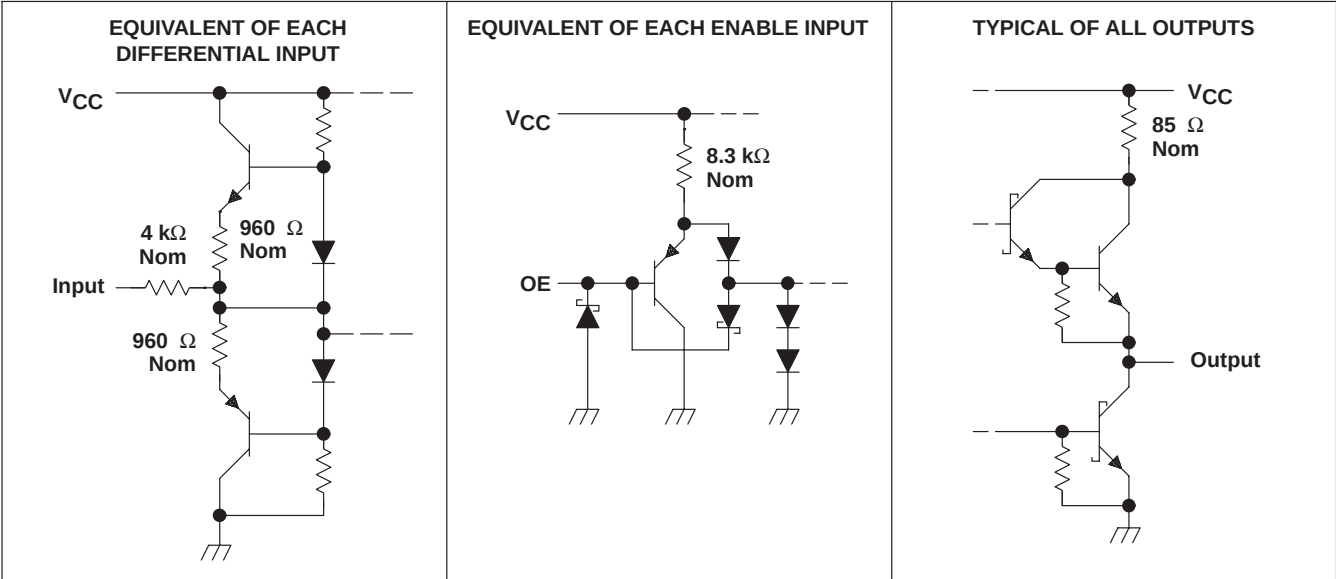


TL712

DIFFERENTIAL COMPARATOR

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schematics of inputs and outputs



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]

Supply voltage, V _{CC} (see Note 1)	7 V
Differential input voltage, V _{ID} (see Note 2)	±25 V
Input voltage, V _I , any differential input	±25 V
Output enable voltage	7 V
Low-level output current, I _{OL}	50 mA
Package thermal impedance, θ _{JA} (see Note 3): D package	97°C/W
P package	85°C/W
PS package	95°C/W
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C
Storage temperature range, T _{stg}	–65°C to 150°C

[†] Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the “recommended operating conditions” section of this specification is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. All voltage values, except differential voltages, are with respect to the network ground.
2. Differential voltage values are at IN+ with respect to IN–.
3. The package thermal impedance is calculated in accordance with JESD 51.

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	4.75	5	5.25	V
Common-mode input voltage, V_{IC}	0		5.5	V
High-level output current, I_{OH}			-1	mA
Low-level output current, I_{OL}			16	mA
Operating free-air temperature, T_A	0		70	°C

electrical characteristics at $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_T Threshold voltage (V_{T+} and V_{T-})	$V_{ICR} = 0\text{ to }5\text{ V}$	-100 [†]		100	mV
V_{hys} Hysteresis ($V_{T+} - V_{T-}$)			5		mV
V_{OH} High-level output voltage	$V_{ID} = 100\text{ mV}$, $I_{OH} = -1\text{ mA}$	2.7	3.5		V
V_{OL} Low-level output voltage	$V_{ID} = -100\text{ mV}$, $I_{OL} = 16\text{ mA}$		0.4	0.5	V
I_{OZ} Off-state output current	$V_O = 2.4\text{ V}$			-20	μA
I_I Enable current	$V_I = 5.5\text{ V}$			100	μA
I_{IH} High-level enable current	$V_{IH} = 2.7\text{ V}$			20	μA
I_{IL} Low-level enable current	$V_{IL} = 0.4\text{ V}$			-360	μA
r_i Differential input resistance		4			kΩ
r_o Output resistance				100	W
I_{OS} Short-circuit output current		-15		-85	mA
I_{CC} Supply current	$V_{ID} = 0$, No load		17	20	mA

[†] The algebraic convention, where the more negative limit is designated as minimum, is used in this data sheet for input threshold voltage levels only.

switching characteristics, $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$

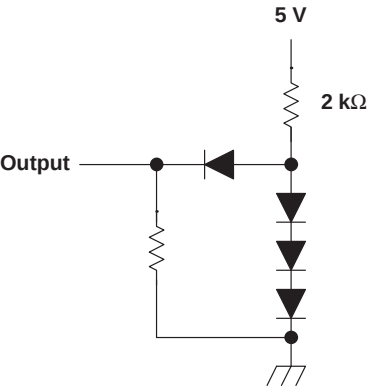
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH} Propagation delay time, low-to-high-level output	TTL load, See Figure 1, See Note 4		25		ns
t_{PHL} Propagation delay time, high-to-low-level output			25		ns

NOTE 4: The response time specified is for a 100-mV input step with 5-mV overdrive (105 mV total), and is the interval between the input step function and the instant when the output crosses 2.5 V.

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DIFFERENTIAL COMPARATOR

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PARAMETER MEASUREMENT INFORMATION



NOTE A: All diodes are 1N4148 or equivalent.

Figure 1. TTL Output Load Circuit

TYPICAL CHARACTERISTICS

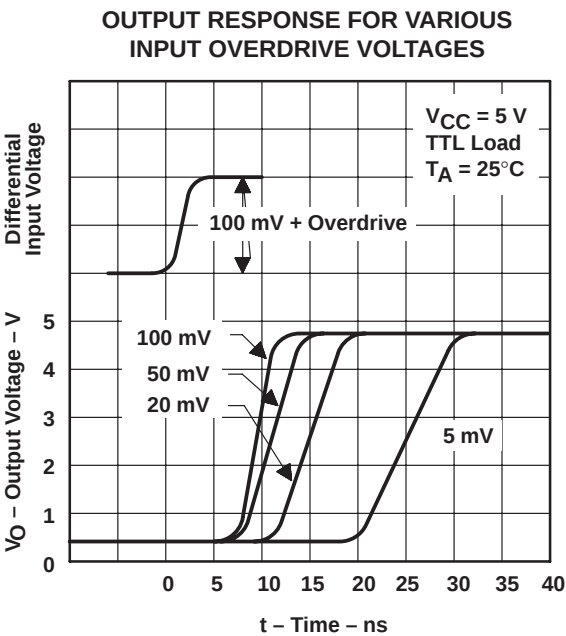


Figure 2

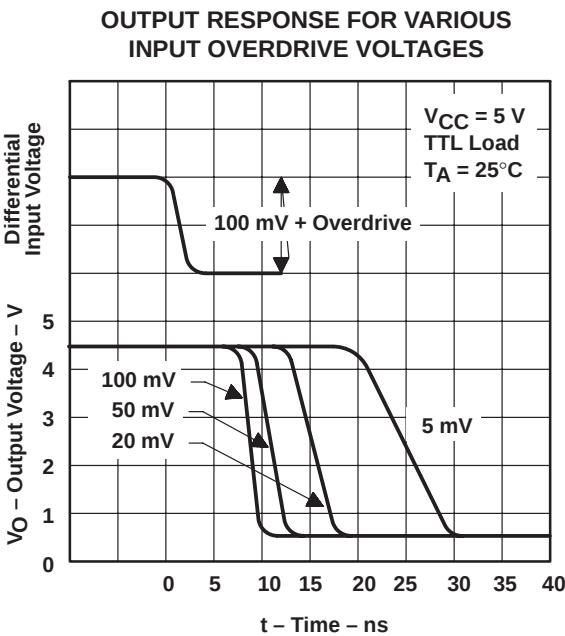


Figure 3

TYPICAL CHARACTERISTICS

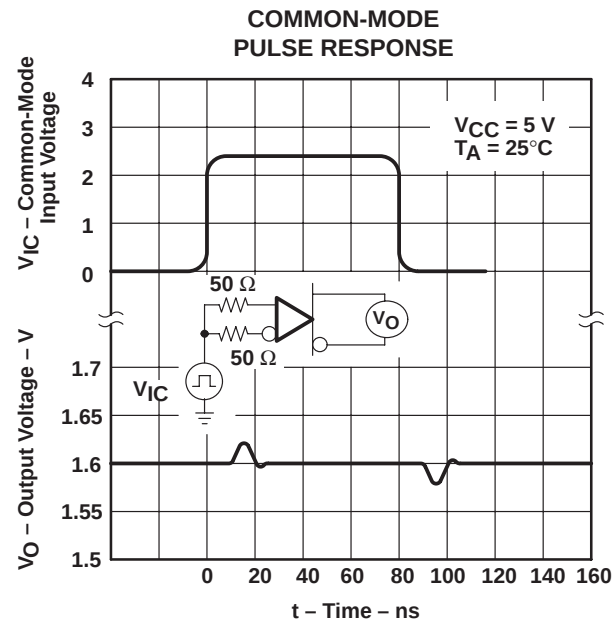


Figure 4

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