

SUPER LOW OPERATING CURRENT AND LOW OFFSET VOLTAGE TINY SINGLE C-MOS COMPARATOR

■ GENERAL DESCRIPTION

The NJU7116 is a super low operating current and low offset voltage tiny single C-MOS comparator with C-MOS output.

The operating current is $1\mu\text{A}$ (typ), and the operating of 1.8V to 3.6V.

The input offset voltage is lower than 2.5mV (max).

Furthermore, the NJU7116 is packaged with very small MTP-5; therefore it can be especially applied to battery operated portable items.

■ PACKAGE OUTLINE

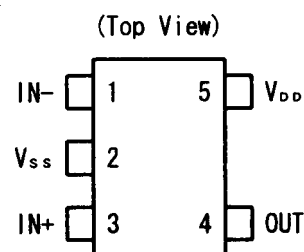


NJU7116F

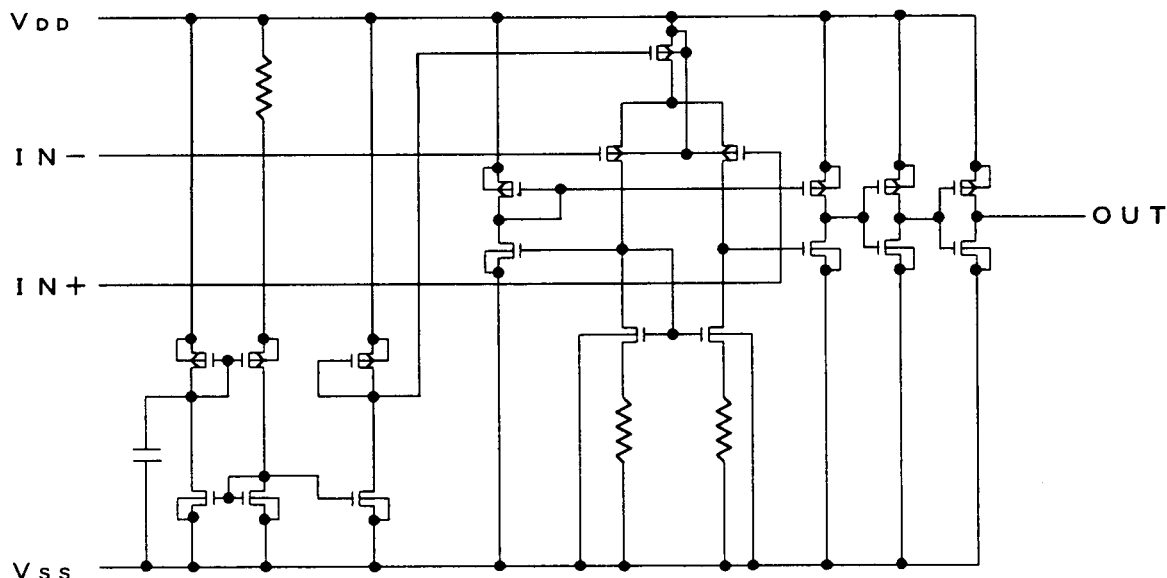
■ FEATURES

- Super Low Operating Current ($I_{DD}=3.0\mu\text{A}$ typ.)
- Single Power Supply ($V_{DD}=1.8\sim 3.6\text{V}$)
- Low Offset Voltage ($V_{IO}=2.5\text{mV}$ max.@ 3.0V)
- Low Bias Current ($I_B=1\text{pA}$ typ.)
- C-MOS (Push-pull) Output
- Package Outline MTP5
- C-MOS Technology

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	7	V
Differential Input Voltage	V_{ID}	± 7 (note1)	V
Common Mode Input Voltage	V_{IC}	-0.3~7	V
Power Dissipation	P_D	200	mW
Operating Temperature Range	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-55~+125	°C

(note1) If the supply voltage (V_{DD}) is less than 7V, the input voltage must not over the V_{DD} level though 7V is limit specified.

(note2) Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V_{DD} =3.0V, R_L = ∞)

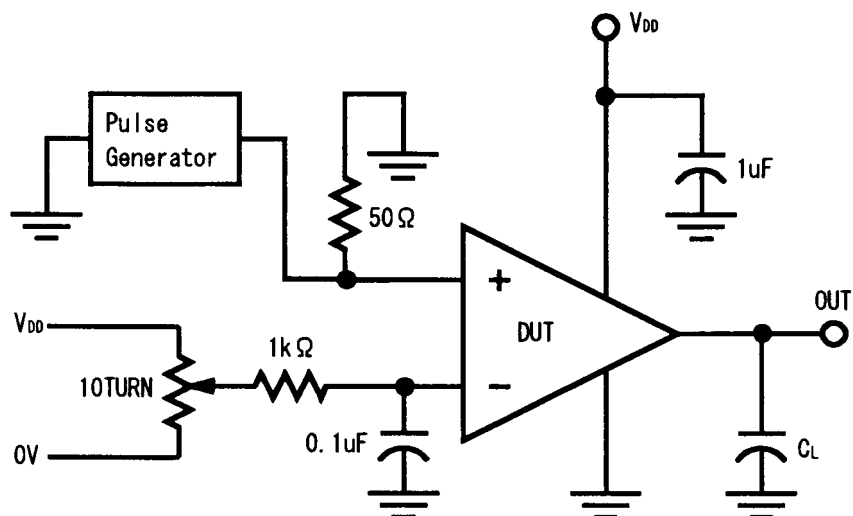
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V_{DD}		1.8	-	3.6	V
Input Offset Voltage	V_{IO}	$V_{IN}=1/2V_{DD}$	-	-	2.5	mV
Input Offset Current	I_{IO}		-	1	-	pA
Input Bias Current	I_{IB}		-	1	-	pA
Input Common Mode Voltage Range	V_{ICM}		0~2.5	-	-	V
Output Leakage Current	I_{OFF}	$V_{OH}=V_{DD}$	-	-	1	μ A
High Level Output Voltage	V_{OH}	$I_{OH}=2mA$	2.7	-	-	V
Low Level Output Voltage	V_{OL}	$I_{OL}=2mA$	-	-	0.3	V
Common Mode Rejection Ratio	CMR	$V_{IC}=1/2V_{DD}$	50	-	-	dB
Supply Voltage Rejection Ratio	SVR	$V_{DD}=1.8\sim 3.6V$	50	-	-	dB
Operating Current	I_{DD}	No Load, $V_O=0V$	-	1	1.5	μ A

■ SWITCHING CHARACTERISTICS

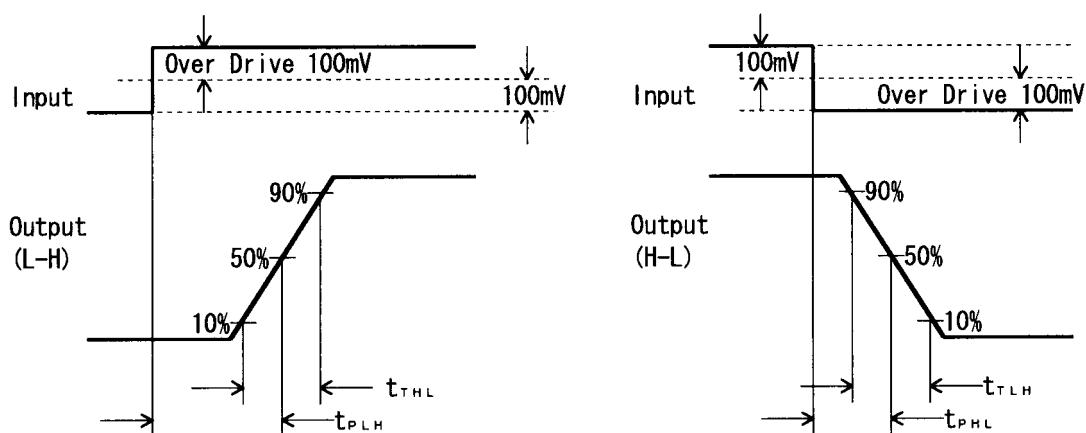
(Ta=25°C, V_{DD} =3.0V, f=1kHz, C_L =15pF)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay High to Low	t_{PHL}	Over Drive=100mV	-	1.2	2.0	μ s
		TTL Level Step In.	-	0.37	-	
Propagation Delay Low to High	t_{PLH}	Over Drive=100mV	-	3.3	5.0	μ s
		TTL Level Step In.	-	2.6	-	
Propagation Delay Time Lag	t_{PD}	$t_{PLH} - t_{PHL}$	-	2.1	3.0	μ s
Output Signal Falling Time	t_{THL}	Over Drive=100mV	-	15	-	ns
Output Signal Rising Time	t_{TLH}	Over Drive=100mV	-	40	-	ns

■ SWITCHING CHARACTERISTICS MEASUREMENT CIRCUIT



■ TIMING WAVEFORM



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