

High speed rail to rail output comparator

General Description

HT331V/393V is a high speed, low power dissipation comparator. It applies 140ns Propagation Delay at 100mV Overdrive voltage. HT331V/393V is DC coupled normally, and It includes internal hysteresis(5mV) to ensure clean output switch, the HYS voltage has a ultra-low temperature drift 5 μ V/°C. HT331V/393V consists of a high speed Class AB structure, which supports rail to rail output.

Feature

- 140ns propagation delay (@100mV Overdrive)
- Rail to Rail output, CMOS/TTL Compatible
- Internal Hysteresis to ensure clean switching
- DC coupled Input
- Offset voltage: +/-5mV Max.
- Low HYS voltage Temperature Drift: 5 μ V/°C.
- 2.7~5.5V power supply Voltage.
- Low quiescent current: 200 μ A
- Chip available in SOT23-5 Package

Applications

- High speed Line Receivers;
- Threshold Detector /Discriminators;
- Sampling Circuits;
- IR Receivers.

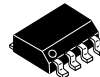
ORDERING INFORMATION



SOT23-5 T SUFFIX
HT331VRTZ



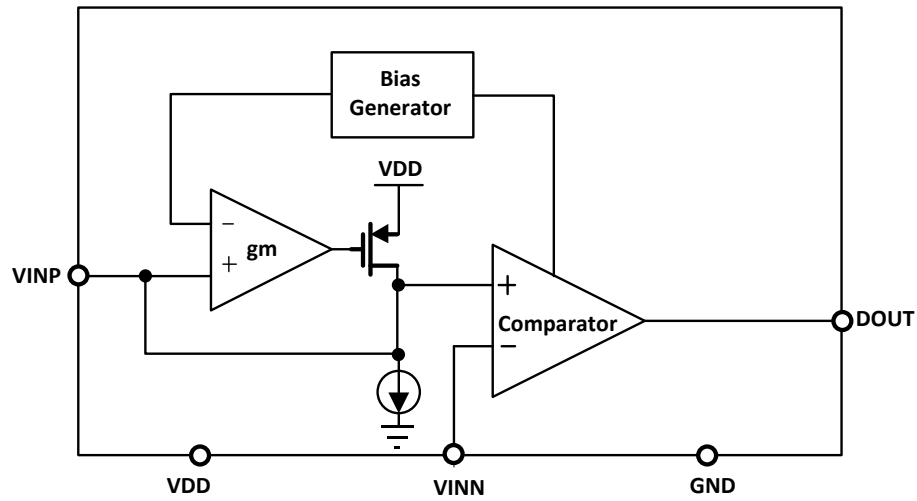
MSOP8 M SUFFIX
HT393VRMZ



SOP-8 R SUFFIX
HT393VRZ

$T_A = -40^{\circ}$ to 85° C for all packages.

Block Diagram



Absolute Maximum Ratings

(If out of these ratings, the filter may be fail or damaged)

Table 1

Symbol	Parameter	Rating	Units
VDD	Power supply	5.5	V
T _A	Operating ambient Temperature Range	-40~+85	°C
T _{STG}	Storage Temperature	-65~+150	°C

Recommended Operating Conditions

Table 2

Symbol	Parameter	Rating	Units
VDD	Power supply	2.7~5.5	V
T _A	Operating ambient Temperature Range	-40~+85	°C

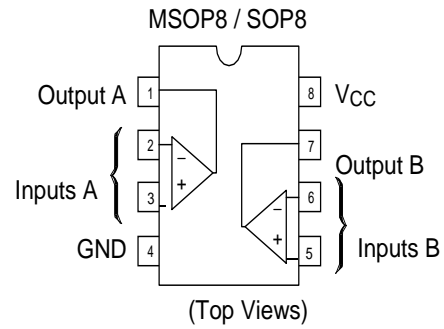
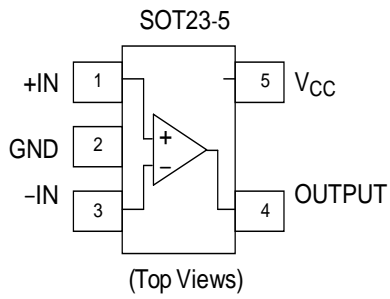
Electrical Characteristics

Table 3

Specifications are at VDD=+2.7V ~ +5.5V Vin+=VDD, Vin-=1.2V RL=10Kohm CL=15pF Vin-=1.2V tt corner & T=30 °C)

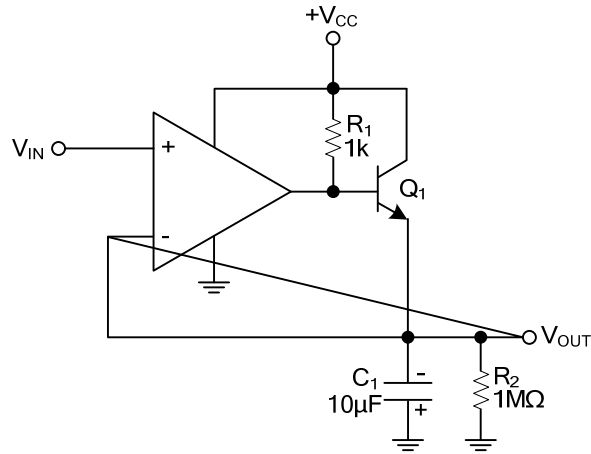
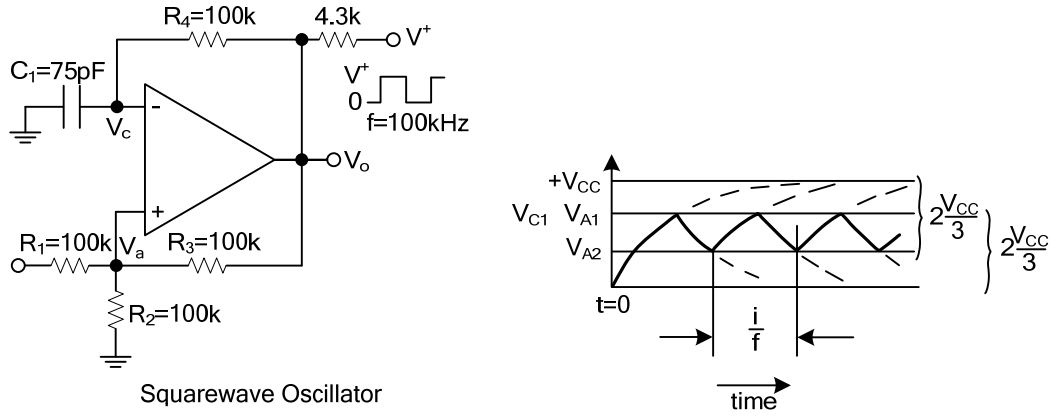
Symbol	Parameter		Spec			Units
			Min	Typ	Max	
VCC	Operating Supply Voltage		2.7	3.3	5.5	V
VOS	Input Offset Voltage		-5	+/-0.15	+5	mV
VOS_TC	Input Offset voltage Temp Drift		0.64	1.96	4.7	uV/°C
Vhyst	Input Hysteresis Voltage		4	5	10.8	mV
Vhyst_TC	Input Hysteresis Voltage Temp Drift			4.8	5.4	uV/°C
CIN	Input Capacitance	Differential		1.8		pF
		Common Mode		3.6		
RIN	Input Resistance			>100		GΩ
IQ	Quiescent Current			200		uA
ISC	Output short to VDD			25		mA
Vin_cm	Common mode Input voltage		GND+0.2	-	VDD-0.2	V
VOH	Output Voltage High Swing		VDD-0.3			V
VOL	Output Voltage Low Swing				GND+0.3	mV
CMRR	Common Mode Rejection Ratio			70		dB
PSRR	Power supply rejection ratio			63		dB
tR	Rising time			35		ns
tF	Falling time			28		ns
TPD+	Propagation Delay(Low to High)			140		ns
TPD-	Propagation Delay(High to Low)			135		ns

*Note1: The input offset voltage is the average of the input-referred trip points. The input hysteresis is the difference between the input-referred trip points.

PIN CONFIGURATION

PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	+V _{IN}	Non-inverting input
2	GND	Ground
3	+V _{IN}	inverting input
4	OUTPUT	Output
5	V _{CC} ⁺	Power supply

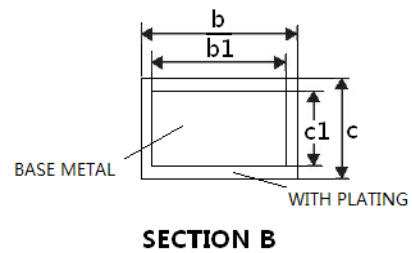
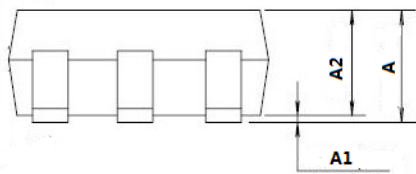
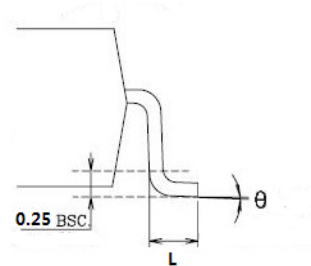
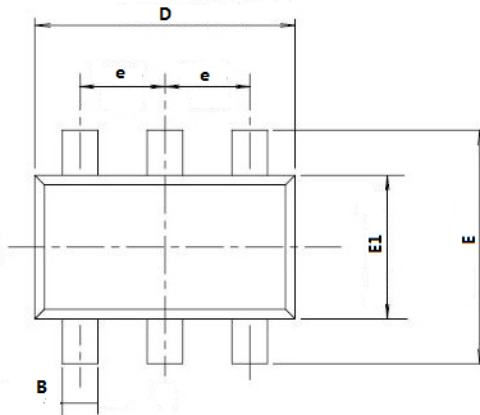
TYPICAL APPLICATION CIRCUIT

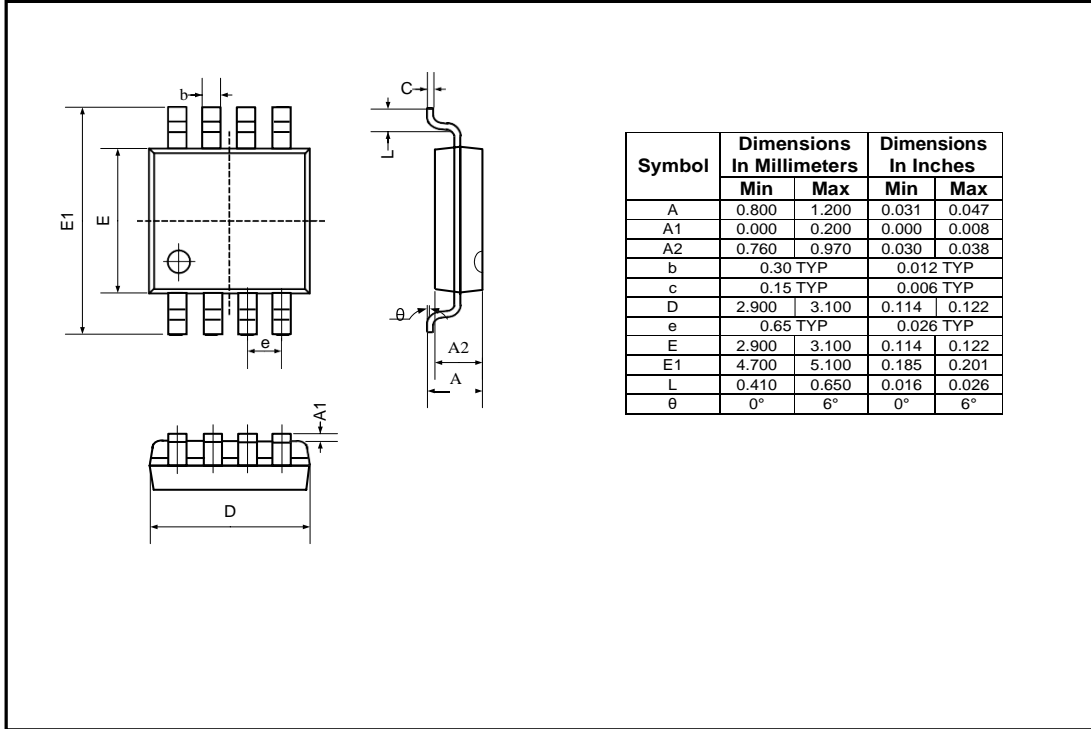


Positive Peak Detector

Package
SOT23-5

Symbol	Unit(mm)		
	Min	Typ	Max
A	-	-	1.35
A1	0.04	-	0.15
A2	1.00	1.10	1.20
b	0.38	-	0.48
b1	0.37	0.40	0.43
c	0.11	-	0.21
c1	0.10	0.13	0.16
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95BSC		
θ	0°	-	8°
L	0.30	-	0.60



PACKAGE OUTLINE DIMENSIONS
MSOP-8

SOP-8
