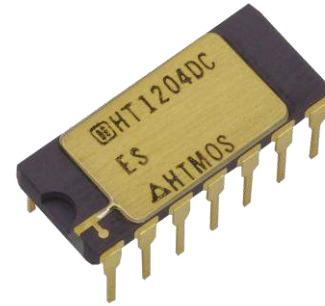


High Temperature Quad Analog Switch

HT1204

The HT1204 monolithic quad analog switch consists of four independently controlled switches capable of switching either analog or digital signals over an extremely wide temperature range. It is fabricated with Honeywell's dielectrically isolated high temperature HTMOS™ linear process, and is designed specifically for use in systems operating in severe high temperature environments. All parts are burned in at 250°C.



These switches provide guaranteed performance over the full -55 to +225°C temperature range. Typically, parts will operate up to +300°C for a year, with derated performance. High temperature applications such as signal gating, chopping, modulation, demodulation, and multiplexing are all possible with the HT1204.

APPLICATIONS

- Down-Hole Oil Well
- Turbine Engine Control
- Avionics
- Industrial Process Control
- Nuclear Reactor
- Electric Power Conversion
- Heavy Duty Internal Combustion Engine

FEATURES

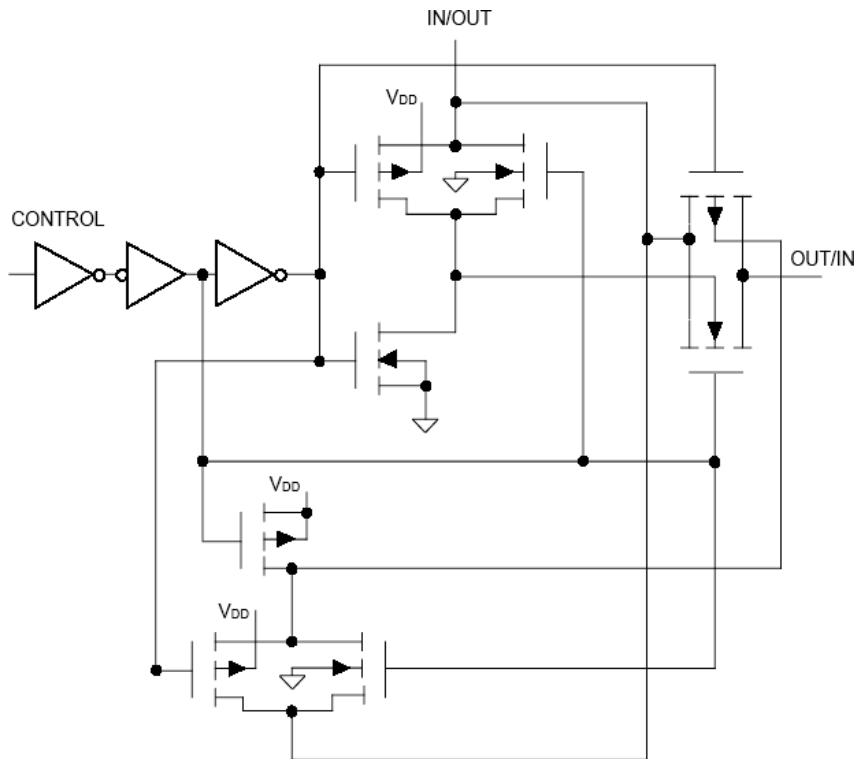
- ▶ Specified Over -55 to +225°C
- ▶ Worst Case Leakage 500nA at 225°C
- ▶ Low Control Input Current
- ▶ High Degree of Linearity
- ▶ Low Crosstalk Between Switches
- ▶ Hermetic 14-Lead Ceramic DIP
- ▶ Latch-up Free Design with Dielectric Isolation
- ▶ Individual Switch Controls
- ▶ CMOS Logic Levels

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions ⁽¹⁾	Typ	Min	Max	Units
V_{DD}	Supply Voltage			5.0	11	V
I_{DD}	Supply Current		1		5	μ A
V_A	Analog Voltage Range			V_{SS}	V_{DD}	
I_I	Control Input Current ⁽²⁾				± 1	μ A
V_{IH}	High Level Input Voltage			$0.6 \times V_{DD}$		V
V_{IL}	Low Level Input Voltage				$0.4 \times V_{DD}$	V
R_{ON}	ON Resistance	$I_S = 1\text{mA}, V_A = V_{SS} \text{ to } V_{DD}$			100	Ω
ΔR_{ON}	ON Resistance Matching	$I_S = 1\text{mA}, V_A = V_{SS} \text{ to } V_{DD}$			15	Ω
$I_{L(ON)}$	ON Leakage Current	$V_A = V_{SS} \text{ to } V_{DD}$		-Vs	+Vs -2.2	nA
$I_{L(OFF)}$	Open Loop Gain	$V_A = V_{SS} \text{ to } V_{DD}$	115	100		nA
C_I	Input Capacitance ⁽³⁾					pF
C_F	Feedthrough Capacitance ⁽³⁾					pF
T_{PD}	Propagation Delay	$C_L = 50\text{pF}$				ns
T_{ON}	Switch Turn-on Time (T_{PHZ}, T_{PZL})	$C_L = 50\text{pF}, R_L = 1\text{K}\Omega$	⁽⁴⁾		100	ns
T_{OFF}	Switch Turn-off Time (T_{PHZ}, T_{PLZ})	$C_L = 50\text{pF}, R_L = 1\text{K}\Omega$	⁽⁴⁾		200	ns

- (1) Specifications apply for 0-10V \pm 10% from -55 to +225°C.
- (2) Rating for a single control pin of the quad.
- (3) These parameters are guaranteed by design and not tested on each device.
- (4) See graphs.

SIMPLIFIED SCHEMATIC (one switch)

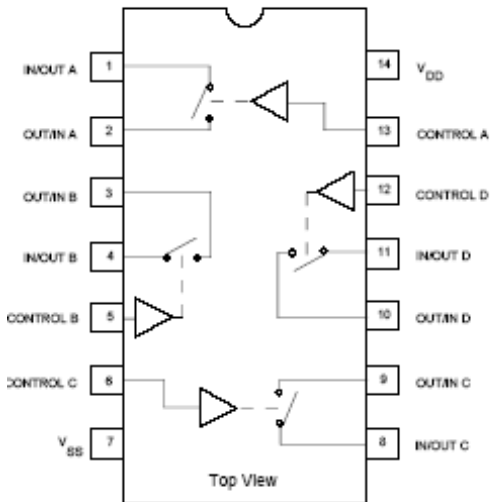


ABSOLUTE MAXIMUM RATING⁽¹⁾

Total Supply Voltage (V+ to V-)	13V
Input Voltage	-0.5 to V _{DD} +0.5V
Output Short Circuit Duration	Continuous
Input Current (each input)	±5 mA
Output Current (each output)	±50 mA
Storage Temperature	-65 to +325°C
Lead Temperature (attachment, 10 sec)	355°C

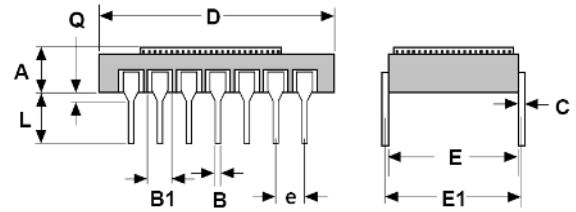
(1) Stresses in excess of those listed above may result in permanent damage. These are stress ratings only, and operation at these levels is not implied. Frequent or extended exposure to absolute maximum conditions may affect device reliability.

PACKAGE PINOUT



14-Lead Cerdip
θ_{jc} = 9°C/W

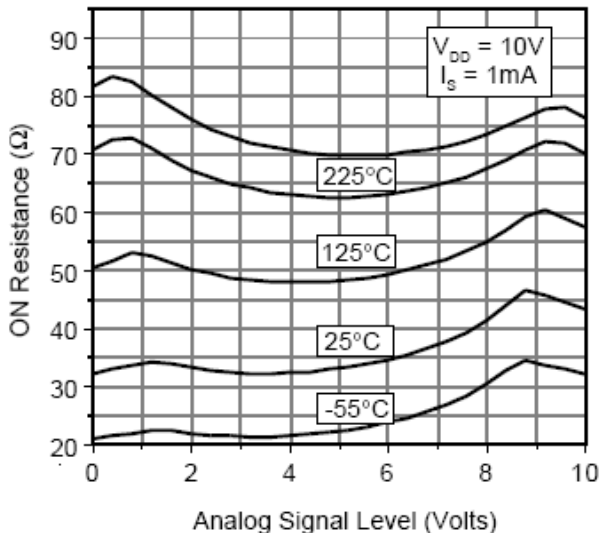
PACKAGE DETAIL



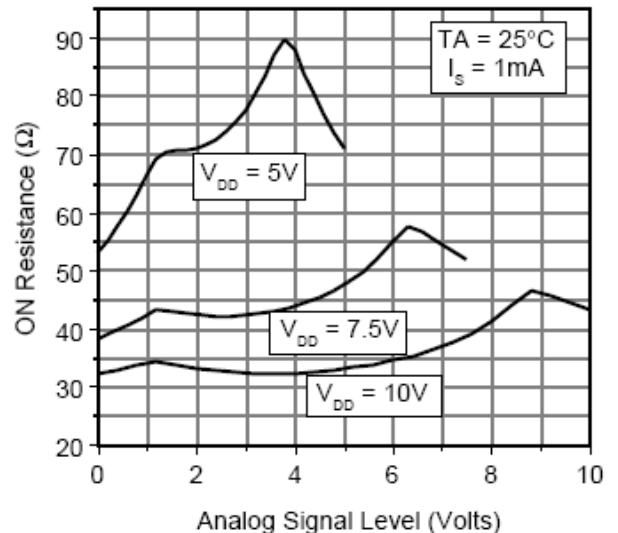
A	0.150 (max)	E1	0.300 ± 0.010
B	0.018 ± 0.002	B1	0.047 ± 0.002
C	0.010 ± 0.002	e	0.100 ± 0.005
D	0.700 ± 0.010	L	0.125 to 0.180
E	0.295 REF	Q	0.035 ± 0.010

All dimensions in inches
Leads are Gold Plated Nickel

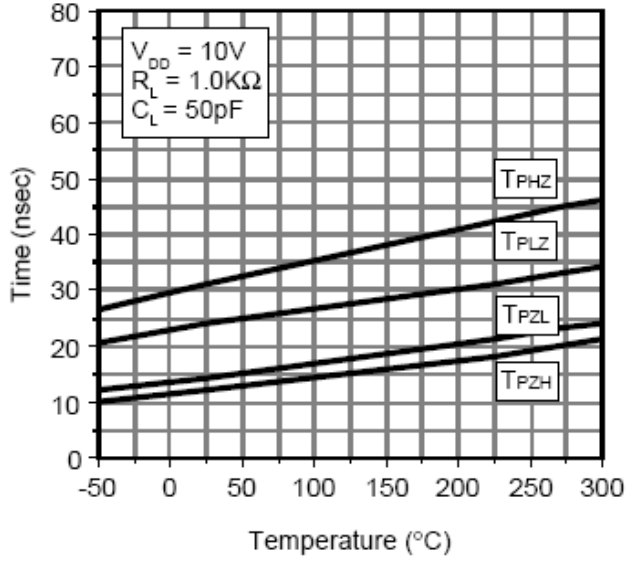
“ON” RESISTANCE vs. ANALOG SIGNAL LEVEL and TEMPERATURE



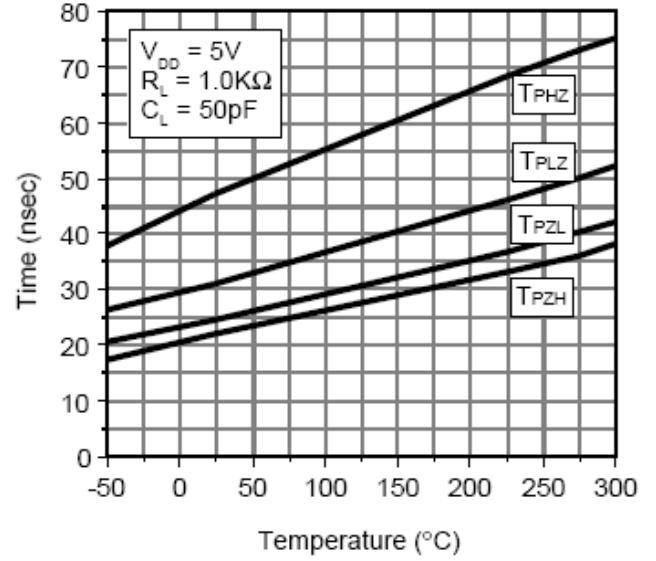
“ON” RESISTANCE vs. ANALOG SIGNAL LEVEL and POWER SUPPLY VOLTAGE



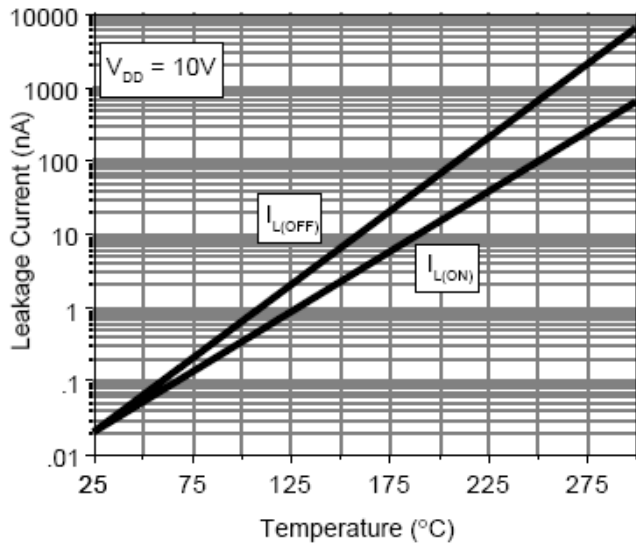
SWITCHING TIME vs. TEMPERATURE



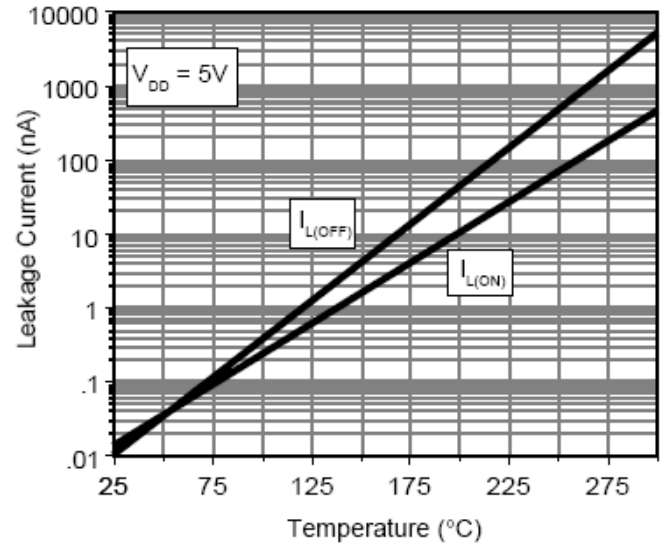
SWITCHING TIME vs. TEMPERATURE



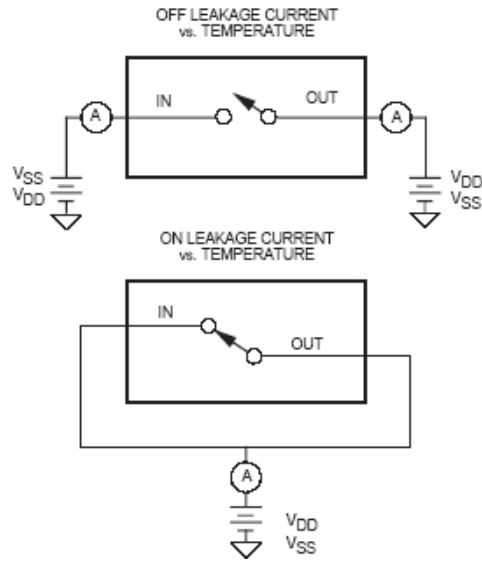
LEAKAGE vs. TEMPERATURE



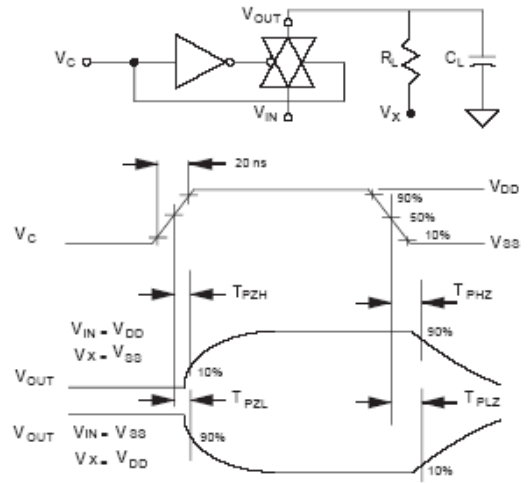
LEAKAGE vs. TEMPERATURE



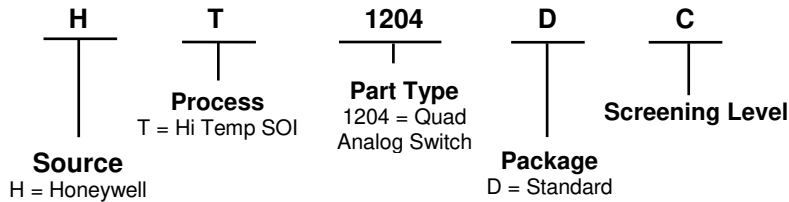
LEAKAGE CURRENT TEST CIRCUITS



TIMING TEST CIRCUIT and WAVEFORMS



ORDERING INFORMATION



Find out more

For more information on Honeywell's High Temperature Electronics visit us online at www.hightempsolutions.com or contact us at 1-800-323-8295. Customer Service Email: ps.customer.support@honeywell.com.

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