



**MOTOROLA**

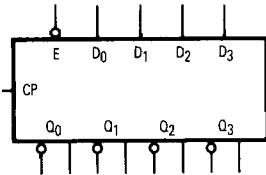
### Product Preview

# Quad Parallel Register with Enable

The MC74AC379/74ACT379 is a 4-bit register with a buffered common Enable. This device is similar to the MC74AC175/74ACT175 but features the common Enable rather than common Master Reset.

- Edge-Triggered D-Type Inputs
- Buffered Positive Edge-Triggered Clock
- Buffered Common Enable Input
- True and Complement Outputs
- Outputs Source/Sink 24 mA
- 'ACT379 Has TTL Compatible Inputs

#### LOGIC SYMBOL



#### PIN NAMES

- $\bar{E}$  Enable Input
- $D_0$ - $D_3$  Data Inputs
- CP Clock Pulse Input
- $Q_0$ - $Q_3$  Flip-Flop Outputs
- $\bar{Q}_0$ - $\bar{Q}_3$  Complement Outputs

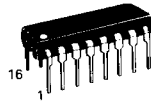
#### TRUTH TABLE

Inputs			Outputs	
$\bar{E}$	CP	$D_n$	$Q_n$	$\bar{Q}_n$
H	$\uparrow$	X	NC	NC
L	$\uparrow$	H	H	L
L	$\uparrow$	L	L	H

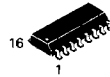
- H = HIGH Voltage Level
- L = LOW Voltage Level
- X = Immaterial
- $\uparrow$  = LOW-to-HIGH Transition
- NC = No Change

**MC74AC379**  
**MC74ACT379**

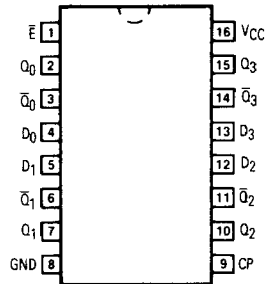
**QUAD PARALLEL REGISTER WITH ENABLE**



**N SUFFIX**  
**CASE 648-08**  
**PLASTIC**



**D SUFFIX**  
**CASE 751B-03**  
**PLASTIC**



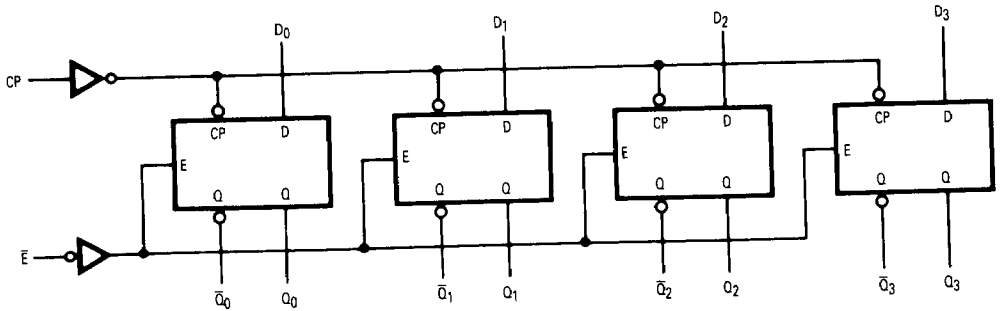
**MC74AC379 • MC74ACT379**

**FUNCTIONAL DESCRIPTION**

The MC74AC379/74ACT379 consists of four edge-triggered D-type flip-flops with individual D inputs and Q and  $\bar{Q}$  outputs. The Clock (CP) and Enable ( $\bar{E}$ ) inputs are common to all flip-flops. When the  $\bar{E}$  input is HIGH,

the register will retain the present data independent of the CP input. When the  $\bar{E}$  is LOW, new data is entered into the register on the LOW-to-HIGH transition of the CP input.

**LOGIC DIAGRAM**



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

**DC CHARACTERISTICS** (unless otherwise specified)

Symbol	Parameter	Value	Units	Test Conditions
$I_{CC}$	Maximum Quiescent Supply Current	80	$\mu A$	$V_{IN} = V_{CC}$ or Ground, $V_{CC} = 5.5 V, T_A = \text{Worst Case}$
$I_{CC}$	Maximum Quiescent Supply Current	8.0	$\mu A$	$V_{IN} = V_{CC}$ or Ground, $V_{CC} = 5.5 V, T_A = 25^\circ C$
$I_{CCT}$	Maximum Additional $I_{CC}$ /Input (ACT379)	1.5	mA	$V_{IN} = V_{CC} - 2.1 V$ , $V_{CC} = 5.5 V, T_A = \text{Worst Case}$

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**MC74AC379 • MC74ACT379**

**AC CHARACTERISTICS** (For Figures and Waveforms — See Section 3)

Symbol	Parameter	V <sub>CC</sub> * (V)	74AC			74AC		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max		
f <sub>max</sub>	Maximum Clock Frequency	3.3 5.0		118 160			MHz	3-3	
t <sub>PLH</sub>	Propagation Delay CP to Q <sub>N</sub> , Q <sub>N</sub>	3.3 5.0		8.5 7.0			ns	3-6	
t <sub>PHL</sub>	Propagation Delay CP to Q <sub>N</sub> , Q <sub>N</sub>	3.3 5.0		8.5 6.0			ns	3-6	

\*Voltage Range 3.3 is 3.3 V ± 0.3 V  
Voltage Range 5.0 is 5.0 V ± 0.5 V

**AC OPERATING REQUIREMENTS**

Symbol	Parameter	V <sub>CC</sub> * (V)	74AC		74AC		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Typ	Guaranteed Minimum				
t <sub>s</sub>	Setup Time, HIGH or LOW D <sub>N</sub> to CP	3.3 5.0	4.5 3.0				ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW D <sub>N</sub> to CP	3.3 5.0	0 0				ns	3-9
t <sub>s</sub>	Setup Time, HIGH or LOW E to CP	3.3 5.0	4.5 3.0				ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW E to CP	3.3 5.0	3.0 2.0				ns	3-9
t <sub>w</sub>	CP Pulse Width HIGH or LOW	3.3 5.0	5.5 4.0				ns	3-6

\*Voltage Range 3.3 is 3.3 V ± 0.3 V  
Voltage Range 5.0 is 5.0 V ± 0.5 V

**MC74AC379 • MC74ACT379**

**AC CHARACTERISTICS** (For Figures and Waveforms — See Section 3)

Symbol	Parameter	V <sub>CC</sub> * (V)	74ACT			74ACT		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max		
f <sub>max</sub>	Maximum Clock Frequency	5.0		160			MHz	3-3	
t <sub>PLH</sub>	Propagation Delay CP to Q <sub>n</sub> , $\bar{Q}_n$	5.0		7.0			ns	3-6	
t <sub>PHL</sub>	Propagation Delay CP to Q <sub>n</sub> , $\bar{Q}_n$	5.0		6.0			ns	3-6	

\*Voltage Range 5.0 is 5.0 V ± 0.5 V

**AC OPERATING REQUIREMENTS**

Symbol	Parameter	V <sub>CC</sub> * (V)	74ACT		74ACT		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Typ	Guaranteed Minimum				
t <sub>s</sub>	Setup Time, HIGH or LOW D <sub>n</sub> to CP	5.0	3.0				ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW D <sub>n</sub> to CP	5.0	0				ns	3-9
t <sub>s</sub>	Setup Time, HIGH or LOW $\bar{E}$ to CP	5.0	3.0				ns	3-9
t <sub>h</sub>	Hold Time, HIGH or LOW $\bar{E}$ to CP	5.0	2.0				ns	3-9
t <sub>w</sub>	CP Pulse Width HIGH or LOW	5.0	4.0				ns	3-6

\*Voltage Range 5.0 is 5.0 V ± 0.5 V

**CAPACITANCE**

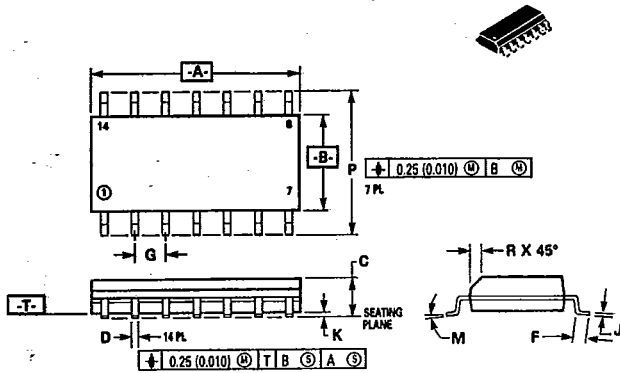
Symbol	Parameter	Value Typ	Units	Test Conditions
C <sub>IN</sub>	Input Capacitance	4.5	pF	V <sub>CC</sub> = 5.0 V
CPD	Power Dissipation Capacitance		pF	V <sub>CC</sub> = 5.0 V

T-90-20

PACKAGE OUTLINES

SOIC

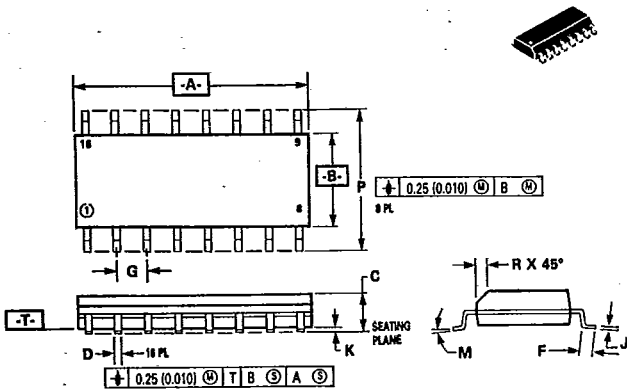
Case 751A-02 D Suffix  
14-Pin Plastic  
SO-14



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  3. CONTROLLING DIMENSION: MILLIMETER.
  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.55	8.75	0.337	0.344
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

Case 751B-03 D Suffix  
16-Pin Plastic  
SO-16



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  3. CONTROLLING DIMENSION: MILLIMETER.
  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

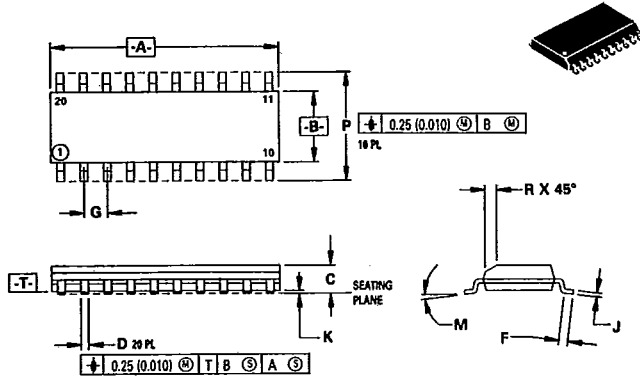
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FACT DATA

T-90-20

SOIC (continued)

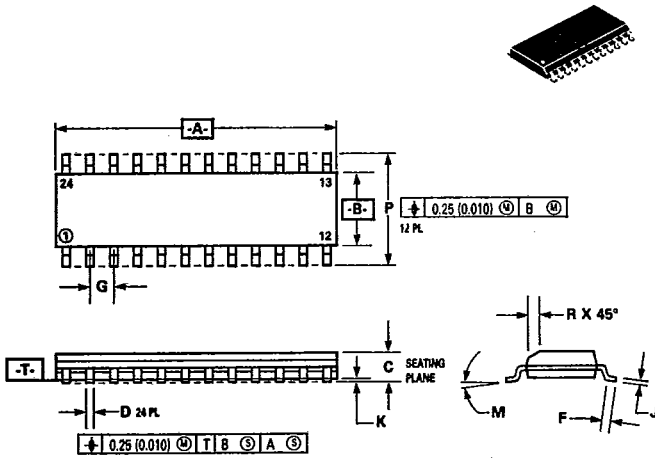
Case 751D-03 DW Suffix  
20-Pin Plastic  
SO-20



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  3. CONTROLLING DIMENSION: MILLIMETER.
  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.65	12.95	0.499	0.510
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC		0.050 BSC	
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

Case 751E-02 DW Suffix  
24-Pin Plastic  
SO-24



- NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
  2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  3. CONTROLLING DIMENSION: MILLIMETER.
  4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	15.25	15.50	0.601	0.610
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC		0.050 BSC	
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

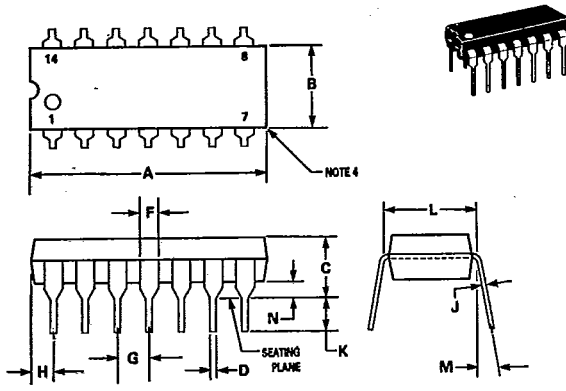
FACT DATA

T-90-20

PLASTIC DUAL-IN-LINE

Case 646-06 N Suffix  
14-Pin Plastic

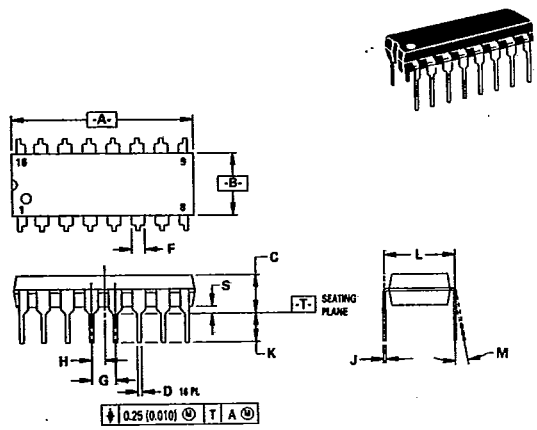
- NOTES:
- LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
  - DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
  - DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
  - ROUNDED CORNERS OPTIONAL.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.16	19.56	0.715	0.770
B	6.10	6.60	0.240	0.260
C	3.69	4.69	0.145	0.185
D	0.38	0.53	0.015	0.021
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	1.32	2.41	0.052	0.095
J	0.20	0.38	0.008	0.015
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	0°	10°	0°	10°
N	0.39	1.01	0.015	0.039

Case 648-08 N Suffix  
16-Pin Plastic

- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  - CONTROLLING DIMENSION: INCH.
  - DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
  - DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
  - ROUNDED CORNERS OPTIONAL.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.80	19.55	0.740	0.770
B	6.35	6.85	0.250	0.270
C	3.69	4.44	0.145	0.175
D	0.39	0.53	0.015	0.021
F	1.02	1.77	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	1.27 BSC		0.050 BSC	
J	0.21	0.38	0.008	0.015
K	2.90	3.30	0.110	0.130
L	7.50	7.74	0.295	0.305
M	0°	10°	0°	10°
S	0.51	1.01	0.020	0.040

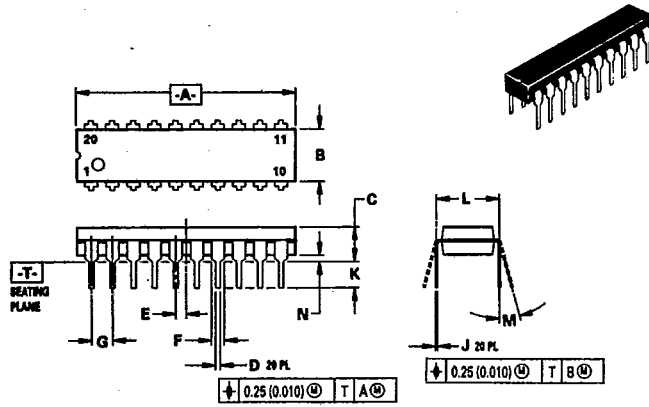
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FACT DATA

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PLASTIC DUAL-IN-LINE (continued)

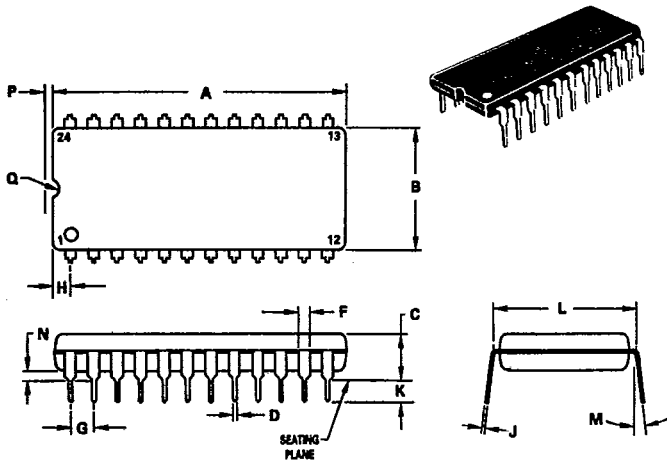
Case 738-03 N Suffix  
20-Pin Plastic



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION "L" TO CENTER OF LEAD WHEN FORMED PARALLEL.
  4. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.65	27.17	1.010	1.070
B	6.10	6.60	0.240	0.260
C	3.81	4.57	0.150	0.180
D	0.39	0.55	0.015	0.022
E	1.27 BSC		0.050 BSC	
F	1.27	1.77	0.050	0.070
G	2.54 BSC		0.100 BSC	
J	0.21	0.38	0.008	0.015
K	2.80	3.55	0.110	0.140
L	7.62 BSC		0.300 BSC	
M	0° 15°		0° 15°	
N	0.51	1.01	0.020	0.040

Case 649-03 N Suffix  
24-Pin Plastic



- NOTES:
1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
  2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.50	32.13	1.240	1.265
B	13.21	13.72	0.520	0.540
C	4.70	5.21	0.185	0.205
D	0.38	0.51	0.015	0.020
F	1.02	1.52	0.040	0.060
G	2.54 BSC		0.100 BSC	
H	1.65	2.16	0.065	0.085
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	14.99	15.49	0.590	0.610
M	10°		10°	
N	0.51	1.02	0.020	0.040
P	0.13	0.38	0.005	0.015
Q	0.51	0.76	0.020	0.030

FACT DATA