JK FLIP-FLOP

SY10EL35
SY100EL35

Features

- **525ps propagation delay**
- **2.2GHz toggle frequency**
- **High bandwidth output transistions**
- **Internal 75KΩ input pull-down resistors**
- **Available in 8-pin SOIC package**

General Description

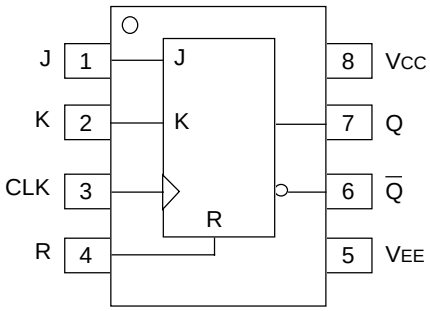
The SY10/100EL35 are high-speed JK Flip-Flops. The J/K data enters the master portion of the flip-flop when the clock is LOW and is transferred to the slave and, thus, the outputs, upon a positive transition of the clock. The reset pin is asynchronous and is activated with a logic HIGH.

Truth Table

J	K	R	CLK	Qn+1
L	L	L	Z	Qn
L	H	L	Z	L
H	L	L	Z	H
H	H	L	Z	$\overline{Q}$n
X	X	H	X	L

NOTE:

1. Z = LOW-to-HIGH transition.



8-PIN SOIC (Z8-1)

Ordering Information[1]

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10EL35LZC	Z8-1	Commercial	HEL35	Sn-Pb
SY10EL35LZCTR[2]	Z8-1	Commercial	HEL35	Sn-Pb
SY100EL35LZC	Z8-1	Commercial	XEL35	Sn-Pb
SY100EL35LZCTR[2]	Z8-1	Commercial	XEL35	Sn-Pb
SY10EL35LZI	Z8-1	Industrial	HEL35	Sn-Pb
SY10EL35LZITR[2]	Z8-1	Industrial	HEL35	Sn-Pb
SY100EL35LZI	Z8-1	Industrial	XEL35	Sn-Pb
SY100EL35LZITR[2]	Z8-1	Industrial	XEL35	Sn-Pb
SY10EL35LZG[3]	Z8-1	Industrial	HEL35 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10EL35LZGTR[2, 3]	Z8-1	Industrial	HEL35 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL35LZG[3]	Z8-1	Industrial	XEL35 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL35LZGTR[2, 3]	Z8-1	Industrial	XEL35 with Pb-Free bar-line indicator	Pb-Free NiPdAu

Notes:

1. Contact factory for die availability. Dice are guaranteed at T_A = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

10EL/100EL DC Electrical Characteristics

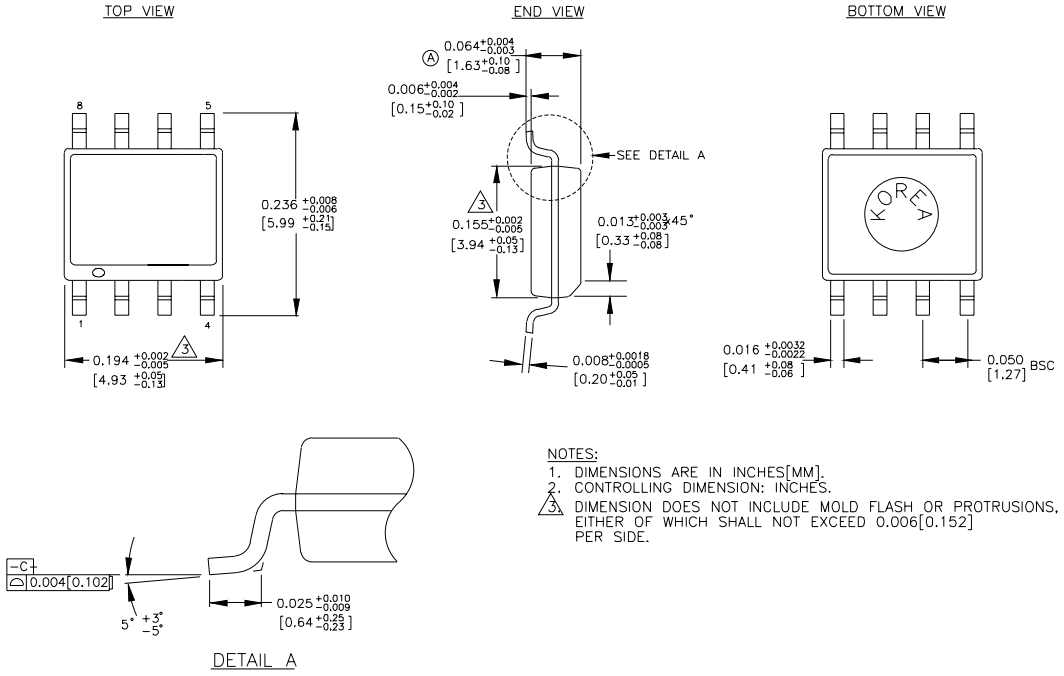
$V_{EE} = V_{EE}$ (Min.) to V_{EE} (Max.); V_{CC} = GND

Symbol	Parameter	$T_A = -40°C$			$T_A = 0°C$			$T_A = +25°C$			$T_A = +85°C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{EE}	Power Supply Current													mA
	10EL	—	27	32	—	27	32	—	27	32	—	27	32	
	100EL	—	27	32	—	27	32	—	27	32	—	32	37	
V_{EE}	Power Supply Voltage													V
	10EL	—	–5.2	—	–4.75	–5.2	–5.5	–4.75	–5.2	–5.5	–4.75	–5.2	–5.5	
	100EL	—	–4.5	—	–4.20	–4.5	–5.5	–4.20	–4.5	–5.5	–4.20	–4.5	–5.5	
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA

10EL/100EL AC Electrical Characteristics

$V_{EE} = V_{EE}$ (Min.) to V_{EE} (Max.); V_{CC} = GND

Symbol	Parameter	$T_A = -40°C$			$T_A = 0°C$			$T_A = +25°C$			$T_A = +85°C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
f_{MAX}	Maximum Toggle Frequency	1.4	2.0	—	1.8	2.2	—	1.8	2.2	—	1.8	2.2	—	GHz
t_{PD}	Propagation Delay CLK	290	515	—	340	515	690	350	525	700	395	570	745	ps
	to Output MR	225	450	—	275	450	625	275	450	625	350	525	700	
t_S	Set-up Time	150	0	—	150	0	—	150	0	—	150	0	—	ps
t_H	Hold Time	250	100	—	250	100	—	250	100	—	250	100	—	ps
t_{RR}	Reset Recovery	400	200	—	400	200	—	400	200	—	400	200	—	ps
t_{PW}	Minimum Pulse Width CLK, Reset	400	—	—	400	—	—	400	—	—	400	—	—	ps
t_r t_f	Output Rise/Fall Times Q (20% to 80%)	100	225	350	100	225	350	100	225	350	100	225	350	ps



NOTES:
1. DIMENSIONS ARE IN INCHES[MM].
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.006[0.152] PER SIDE.

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