

10K SERIES DC ELECTRICAL CHARACTERISTICS⁽¹⁾

$V_{EE} = V_{EE} \text{ (Min.) to } V_{EE} \text{ (Max.)}; V_{CC} = \text{GND}^{(4)}$

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
VOH	Output HIGH Voltage	-1080	-890	-1020	-840	-980	-810	-910	-720	mV
VOL	Output LOW Voltage	-1950	-1650	-1950	-1630	-1950	-1630	-1950	-1595	mV
VIH	Input HIGH Voltage	-1230	-890	-1170	-840	-1130	-810	-1060	-720	mV
VIL	Input LOW Voltage	-1950	-1500	-1950	-1480	-1950	-1480	-1950	-1445	mV
IIL	Input LOW Current	0.5	—	0.5	—	0.5	—	0.3	—	μA

100K SERIES DC ELECTRICAL CHARACTERISTICS⁽²⁾

$V_{EE} = V_{EE} \text{ (Min.) to } V_{EE} \text{ (Max.)}; V_{CC} = \text{GND}^{(4)}$

Symbol	Parameter	TA = -40°C			TA = 0°C to +85°C			Unit	Conditions	
		Min.	Typ.	Max.	Min.	Typ.	Max.			
VOH	Output HIGH Voltage	-1085	-1005	-880	-1025	-955	-880	mV	VIN = VIH(Max) or VIL(Min)	Loading with 50Ω to -2.0V
VOL	Output LOW Voltage	-1830	-1695	-1555	-1810	-1705	-1620			
VOHA	Output HIGH Voltage	-1095	—	—	-1035	—	—	mV	VIN = VIH(Min) or VIL(Max)	
VOLA	Output LOW Voltage	—	—	-1555	—	—	-1610			
VIH	Input HIGH Voltage ⁽⁵⁾	-1165	—	-880	-1165	—	-880	mV		
VIL	Input LOW Voltage ⁽⁶⁾	-1810	—	-1475	-1810	—	-1475	mV		
IIL	Input LOW Current	0.5	—	—	0.5	—	—	μA	VIN = VIL(Min)	

ABSOLUTE MAXIMUM RATINGS⁽³⁾

Symbol	Parameter	Rating	Unit
V _{EE}	Power Supply (V _{CC} = 0V)	-8.0 to 0	V
V _I	Input Voltage (V _{CC} = 0V)	0 to -6.0	V
I _{OUT}	Output Current:	Continuous Surge	50 100
TA	Operating Temperature Range	-40 to +85	°C
V _{EE} ⁽⁴⁾	Operating Range	-5.7 to -4.2	V
T _{store}	Storage Temperature Range	-65 to +150	°C

NOTES:

- 10EL circuits are designed to meet the DC specifications shown in the table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500lfpm is maintained. Outputs are terminated through a 50Ω resistor to -2.0V except where otherwise specified on the individual data sheets.
- This table replaces the three tables traditionally seen in ECL 100K data books. The same DC parameter values at V_{EE} = -4.5V now apply across the full V_{EE} range of -4.2V to -5.5V. Outputs are terminated through a 50Ω resistor to -2.0V except where otherwise specified on the individual data sheets. 100K circuits are designed to meet the DC specifications shown in the table where transverse airflow greater than 500lfpm is maintained.
- Absolute maximum rating, beyond which device life may be impaired unless otherwise specified on an individual data sheet.
- Parametric values specified at:

5 volt Power Supply Range	100EL Series:	-4.2V to -5.5V.
	10EL Series	-4.75V to -5.5V.
3 volt Power Supply Range	10/100EL Series:	-3.0V to -3.8V.
- Guaranteed HIGH Signal for all Inputs.
- Guaranteed LOW Signal for all Inputs.

DC characteristics for the 100K parametric limits listed below are guaranteed for the entire *SUPER-300K* family **unless specified on the individual data sheet.**

The specified DC limits represent the "worst case" value for the

parameter. Since these "worst case" values normally occur at the temperature extremes, additional noise immunity and guard banding can be achieved by decreasing the allowable system operating ranges.

GUARANTEED OPERATING CONDITIONS⁽¹⁾

Symbol	Parameter	Min.	Typ.	Max.	Unit
VEE	Supply Voltage	-5.5	-4.5	-4.2	V
TA	Operating Temperature	0	25	85	°C

NOTE:

1. Referenced to Vcc.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Rating	Value	Unit
VEE	VEE Pin Potential to Ground Pin	+0.5 to -7.0	V
VIN	Input Voltage	+0.5 to VEE	V
IOUT	DC Output Current (Output HIGH)	-50	mA
Tc	Temperature Under Bias	-55 to +125	°C
Tj	Junction Temperature	+150	°C
Tstore	Storage Temperature	-65 to +150	°C

NOTE:

1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data book. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS⁽¹⁾

Vcc = 0V, Output Load = 50Ω to -2.0V; TA = 0°C to 85°C

Symbol	Parameter	VEE	Min.	Typ.	Max.	Unit	Condition
VOH	Output HIGH Voltage	-4.2V	-1020	—	-870	mV	VIN = VIH Max. or VIL Min.
		-4.5V	-1025	-955	-880		
		-5.5V	-1035	—	-880		
VOL	Output LOW Voltage	-4.2V	-1810	—	-1605	mV	VIN = VIH Max. or VIL Min.
		-4.5V	-1810	-1705	-1620		
		-5.5V	-1830	—	-1620		
VOHA	Output HIGH Voltage	-4.2V	-1030	—	—	mV	VIN = VIH Min. or VIL Max.
		-4.5V	-1035	—	—		
		-5.5V	-1045	—	—		
VOLA	Output LOW Voltage	-4.2V	—	—	-1595	mV	VIN = VIH Min. or VIL Max.
		-4.5V	—	—	-1610		
		-5.5V	—	—	-1610		
VIH	Input HIGH Voltage	-4.2V	-1150	—	-870	mV	Guaranteed Input Voltage HIGH for All Inputs
		-4.5V	-1165	—	-880		
		-5.5V	-1165	—	-880		
VIL	Input LOW Voltage	-4.2V	-1810	—	-1475	mV	Guaranteed Input Voltage LOW for All Inputs
		-4.5V	-1810	—	-1475		
		-5.5V	-1830	—	-1490		
IIL	Input LOW Current	-4.5V	+0.5	—	—	μA	VIN = VIL Min.

NOTE:

1. 100K circuits are designed to meet the DC specifications shown in the table where transverse airflow greater than 500lfpm is maintained.

10H ECL DC ELECTRICAL (1),(2)

$V_{CC} = 5.0V \pm 10\%$; $V_{EE} = -5.2V \pm 5\%$

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
I _{IH}	Input HIGH Current	—	225	—	145	—	145	μA	—
I _{IL}	Input LOW Current	—	1.5	—	1.0	—	1.0	mA	—
V _{IH}	Input HIGH Voltage	-1170	-840	-1130	-810	-1060	-720	mV	—
V _{IL}	Input LOW Voltage	-1950	-1480	-1950	-1480	-1950	-1445	mV	—
V _{OH}	Output HIGH Voltage	-1020	-840	-980	-810	-910	-720	mV	50Ω to -2.0V
V _{OL}	Output LOW Voltage	-1950	-1630	-1950	-1630	-1950	-1595	mV	50Ω to -2.0V

NOTE:

- 10H circuits are designed to meet the DC specifications shown in the table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500lfm is maintained.
- Individual product specifications over-ride general specifications.

100H ECL DC ELECTRICAL (1), (2)

$V_{CC} = 5.0V \pm 10\%$; $V_{EE} = -4.5V \pm 0.3V$

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
I _{IH}	Input HIGH Current	—	225	—	145	—	145	μA	—
I _{IL}	Input LOW Current	—	1.5	—	1.0	—	1.0	mA	—
V _{IH}	Input HIGH Voltage	-1165	-880	-1165	-880	-1165	-880	mV	—
V _{IL}	Input LOW Voltage	-1810	-1475	-1810	-1475	-1810	-1475	mV	—
V _{OH}	Output HIGH Voltage	-1025	-880	-1025	-880	-1025	-880	mV	50Ω to -2.0V
V _{OL}	Output LOW Voltage	-1810	-1620	-1810	-1620	-1810	-1620	mV	50Ω to -2.0V

NOTE:

- 100H circuits are designed to meet the DC specifications shown in the table where transverse airflow greater than 500lfm is maintained.
- Individual product specifications over-ride general specifications.

TTL DC ELECTRICAL CHARACTERISTICS

$V_{CC} = 5.0V \pm 10\%$; $V_{EE} = -5.2V \pm 5\%$ (10H Version); $V_{EE} = -4.5V \pm 0.3V$ (100H Version)

Symbol	Parameter	TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.		
V _{IH}	Input HIGH Voltage	2.0	—	2.0	—	2.0	—	V	—
V _{IL}	Input LOW Voltage	—	0.8	—	0.8	—	0.8	V	—
I _{IH}	Input HIGH Current	—	20 100	—	20 100	—	20 100	μA	V _{IN} = 2.7V V _{IN} = 7.0V
I _{IL}	Input LOW Current	—	-0.6	—	-0.6	—	-0.6	mA	V _{IN} = 0.5V
V _{IK}	Input Clamp Voltage	—	-1.2	—	-1.2	—	-1.2	V	I _{IN} = -18mA
V _{OH}	Output HIGH Voltage	2.5 2.0	—	2.5 2.0	—	2.5 2.0	—	V	I _{OH} = -3.0mA I _{OH} = -15mA
V _{OL}	Output LOW Voltage	—	0.55	—	0.55	—	0.55	V	I _{OL} = 48mA

NOTE:

- Individual product specifications over-ride general specifications.