

ELECTRICAL CHARACTERISTICS The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$.

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Input Voltage Range		●	4.5		40	V
V_{CC} Quiescent Current	Not Switching, $INTV_{CC} = 8\text{V}$			300	345	μA
Comparator						
Turn-On Threshold	$R_S = 0\Omega$	●	-89 ⁻⁷³	-57	-45	mV
Turn-Off Threshold	$R_S = 0\Omega$	●	17	21	25	mV
			16		28	mV
Drain Voltage Latch Reset	$R_S = 0\Omega$			1.21		V
Minimum Off-Time			75	95	115	ns
Minimum On-Time			310	360	410	ns
Drain Current	Out of Pin	●	9.5	10	10.5	μA
INTV_{CC} Linear Regulator						
INTV _{CC} Quiescent Current	Not Switching, $INTV_{CC} = 8\text{V}$			100 ¹¹⁵	117 ¹³⁸	μA
INTV _{CC} Voltage Range			4.5		10	V
INTV _{CC} Regulation Voltage		●	6.8	7	7.2	V
INTV _{CC} UVLO					4.03	V
Dropout (V_{CC} to $INTV_{CC}$)	$I_{INTV_{CC}} = -10\text{mA}$, $V_{IN} = 7\text{V}$		1	1.3	1.6	V
Current Limit		●	30	42	55	mA
Gate Driver						
Turn-On Propagation Delay ($t_{D(ON)}$)	$R_S = 0\Omega$, -100mV_{OD} , V_{DS} to V_{GATE}			31	40	ns
Turn-Off Propagation Delay ($t_{D(OFF)}$)	$R_S = 0\Omega$, -100mV_{OD} , V_{DS} to V_{GATE}			26	36	ns
t_r GATE Driver Output Rise Time	$C_L = 3300\text{pF}$			21		ns
t_f GATE Driver Output Fall Time	$C_L = 3300\text{pF}$			11		ns
Pull-Up Resistance				2.7		Ω
Pull-Down Resistance				0.8		Ω

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Note 2: The LT8309E is guaranteed to meet performance specifications from 0°C to 125°C operating junction temperature. Specifications over the -40°C to 125°C operating junction temperature range are assured by design, characterization and correlation with statistical process controls. The LT8309I is guaranteed over the full -40°C to 125°C operating junction

temperature range. The LT8309H is guaranteed over the full -40°C to 150°C operating junction temperature range. High junction temperatures degrade operating lifetimes. Operating lifetime is derated at junction temperatures greater than 125°C .

Note 3: The LT8309 includes overtemperature protection that is intended to protect the device during momentary overload conditions. Junction temperature will exceed 150°C when overtemperature protection is active. Continuous operation above the specified maximum operating junction temperature may impair device reliability.