

CHILINK P-Channel Enhancement Mode Power MOSFET

Description

The LX9435H combines advanced trench technology to provide excellent $R_{DS(ON)}$. It is tailored to minimize conduction loss, and provide superior switching performance.

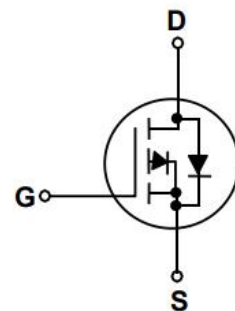
Features

- $V_{DS} = -30V$, $I_D = -5.1A$
 $R_{DS(ON)typ.} = 39.5m\Omega @ V_{GS} = -10V$
 $R_{DS(ON)typ.} = 59m\Omega @ V_{GS} = -4.5V$
- Fast Switching
- High Power and Current Handling Capability
- Termination is Lead-free and RoHS Compliant

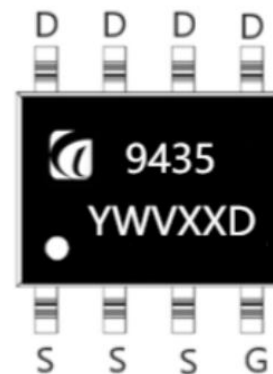


Applications

- PWM Applications
- Load Switch
- Power Management



Schematic Diagram



SOP8 Package

Maximum Ratings

($T_A = 25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	MAX	UNIT
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D(T_C = 25^\circ C)$	-5.1	A
Pulsed Drain Current ^B	I_{DM}	-20	A
Maximum Power Dissipation ^A	P_D	2.5	W
Single Pulse Avalanche Energy	E_{AS}	101	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Characteristic

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

($T_A = 25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate-Threshold Voltage	$V_{th(GS)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.1	-1.6	-2.1	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -4.2A$		39.5	53	m Ω
		$V_{GS} = -4.5V, I_D = -3A$		59	78	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = -15V, I_D = -5.1A$	4	7		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, F = 1MHz$		980		pF
Output Capacitance	C_{oss}			390		
Reverse Transfer Capacitance	C_{rss}			135		
Switching Capacitance						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -1A$ $V_{GS} = -10V, R_{GEN} = 6\Omega$		14		ns
Turn-On Rise Time	t_r			12		ns
Turn-Off Delay Time	$t_{d(off)}$			56		ns
Turn-Off Fall Time	t_f			20		ns
Total Gate Charge	Q_g	$V_{DS} = -15V, I_D = -5.1A, V_{GS} = -10V$		11		nC
Gate-Source Charge	Q_{gs}			20		nC
Gate-Drain Charge	Q_{gd}			28		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_D = -5.1A$			-1.2	V

Notes:

- The Power dissipation P_D is based on $T_{J(MAX)} = 150^{\circ}\text{C}$, using $\leq 10\text{s}$ junction-to ambient thermal resistance.
- Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^{\circ}\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J = 25^{\circ}\text{C}$.
- The Static characteristics in Figures are obtained using $< 300\mu\text{s}$ pulses, duty cycle 2% max.

Typical Electrical and Thermal Characteristics

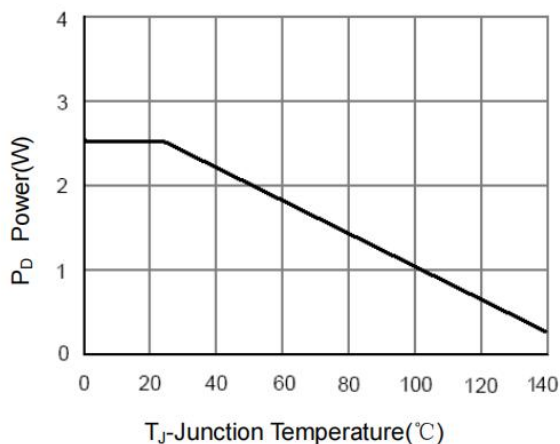


Figure 1. Power Dissipation

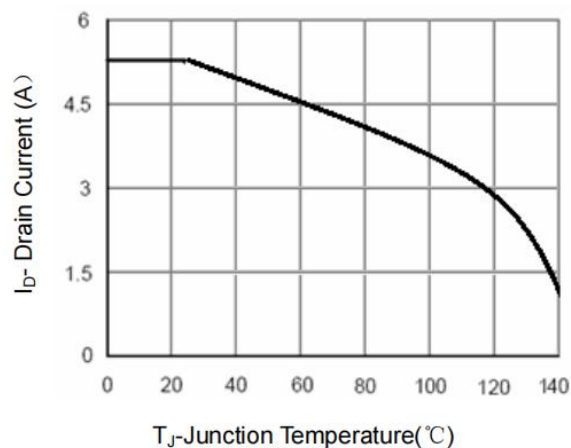


Figure 2. Drain Current

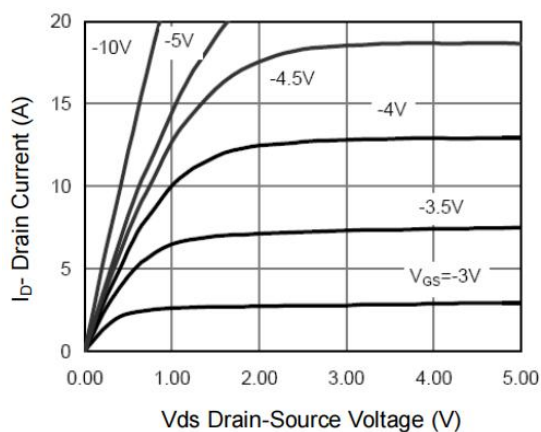


Figure 3. Output Characteristics

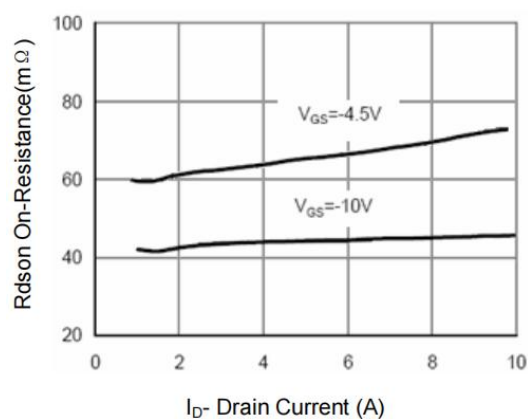


Figure 4. Drain-Source On-Resistance

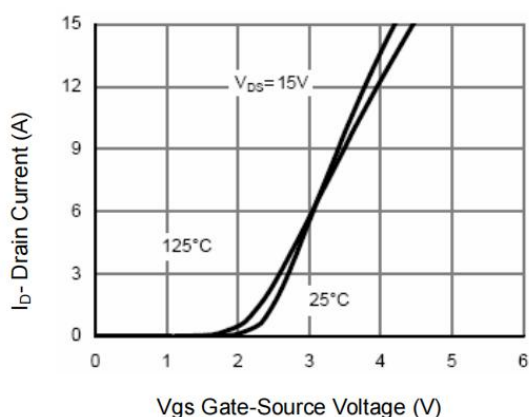


Figure 5. Transfer Characteristics

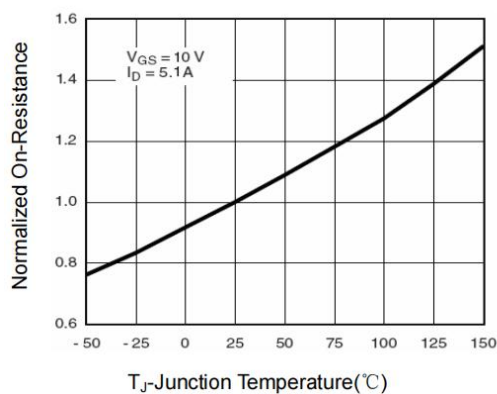


Figure 6. Drain-Source On-Resistance

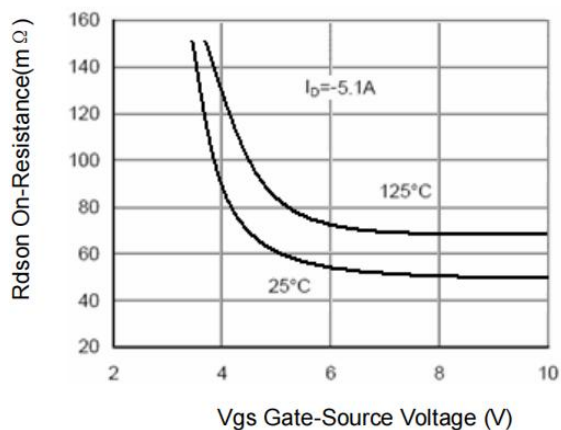


Figure 7. Rdson vs. Vgs

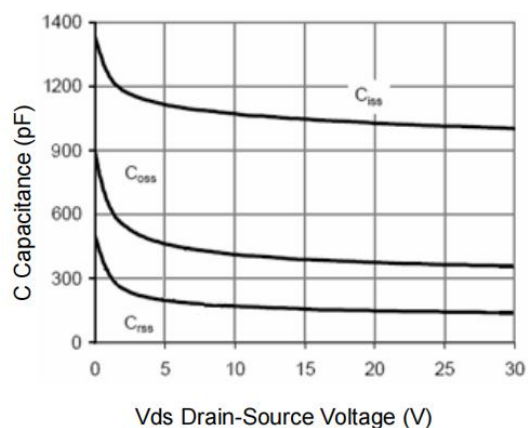


Figure 8. Capacitance vs. Vds

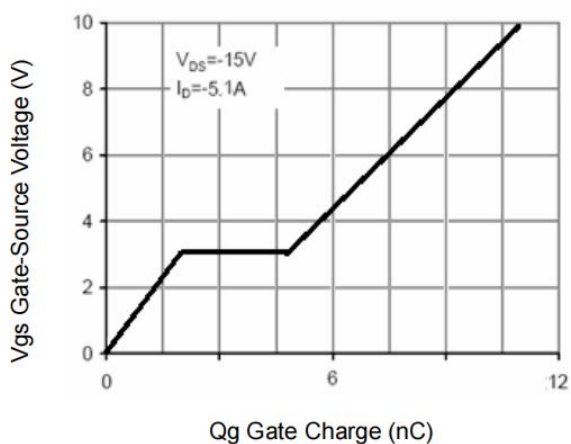


Figure 9. Rdson vs. Vgs

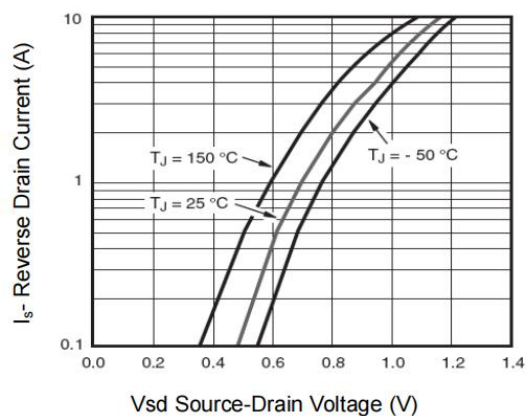


Figure 10. Capacitance vs. Vds

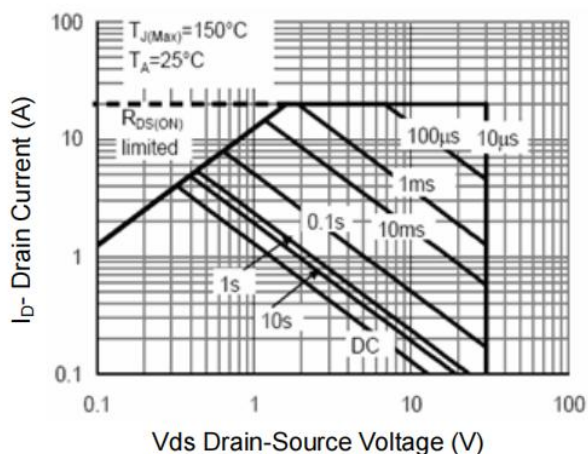


Figure 11. Safe Operation Area

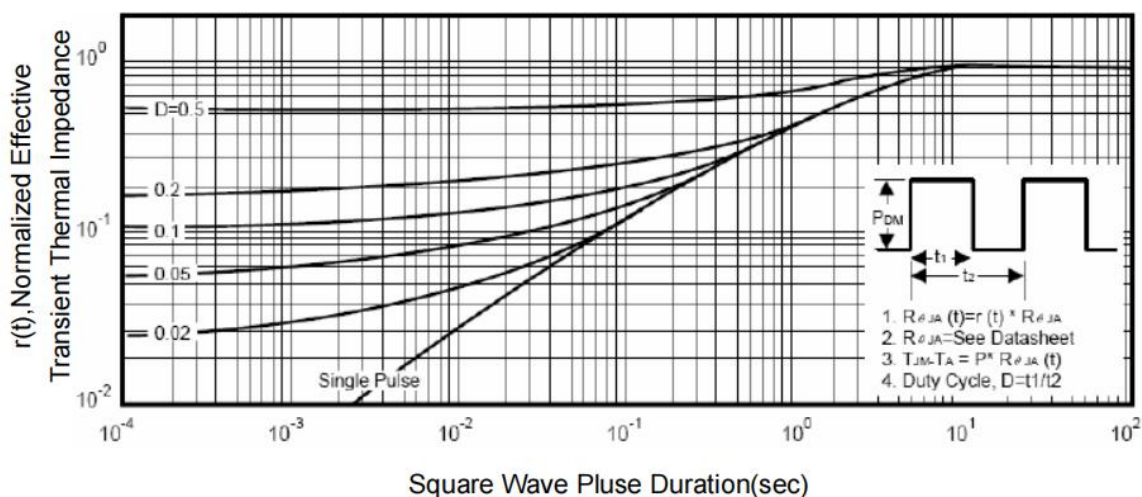


Figure 12. Normalized Maximum Transient Thermal Impedance

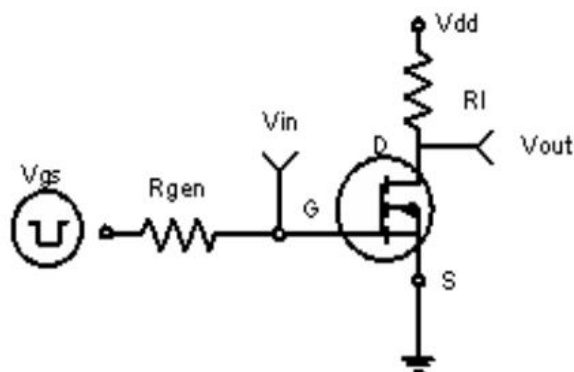


Figure 13. Switching Test Circuit

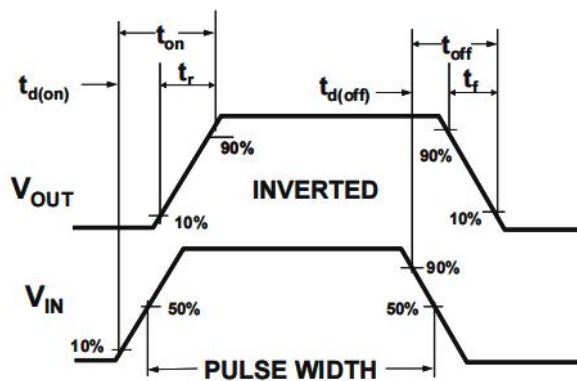
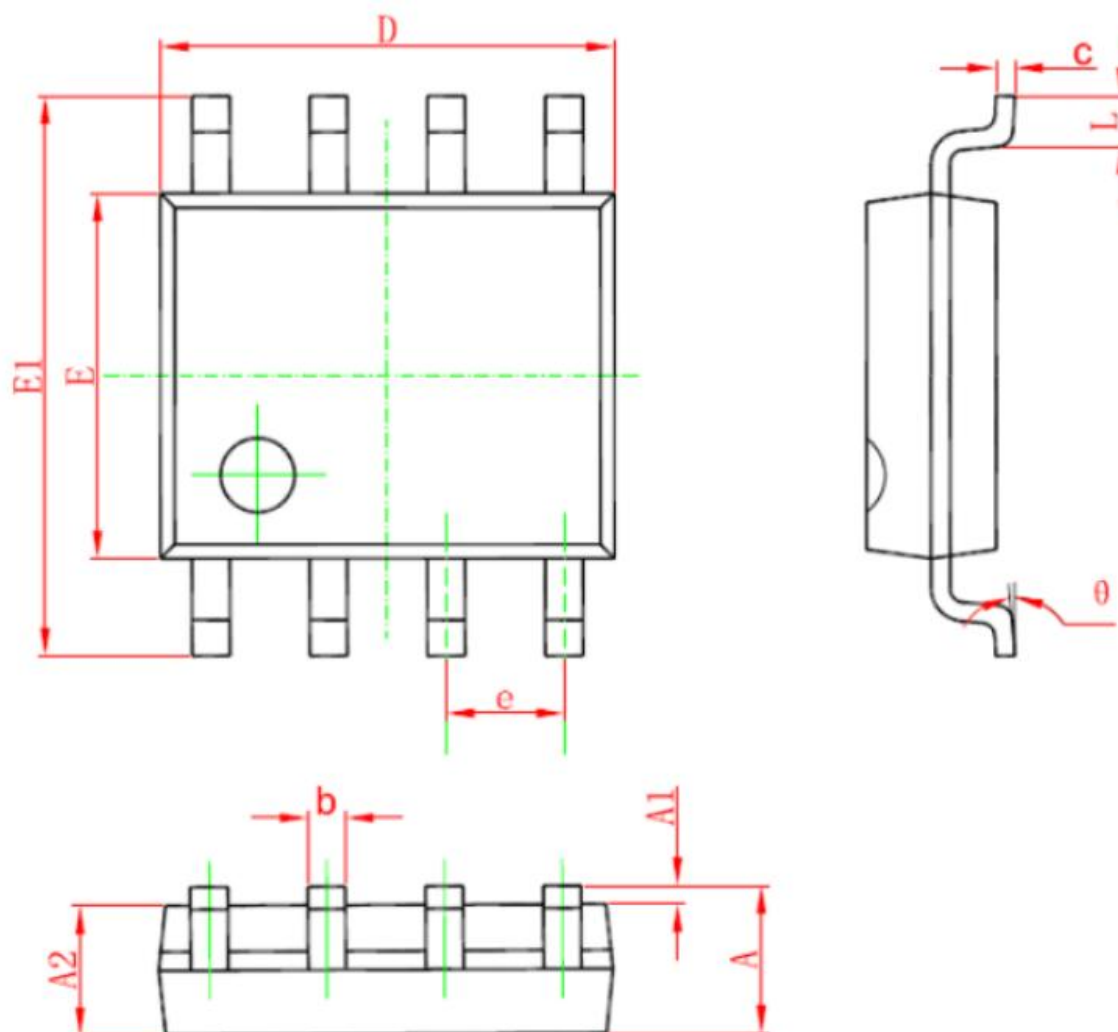


Figure 14. Switching Waveforms

SOP8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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