N-Channel Enhancement Mode Power MOSFET

- **Features**

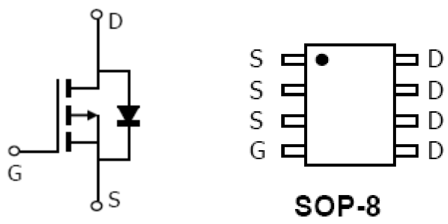
V_{DS} (V) = 40V

I_D = 9 A (V_{GS} = 10V)

$R_{DS(ON)}$ < 16mΩ (V_{GS} = 10V)

$R_{DS(ON)}$ < 24mΩ (V_{GS} = 4.5V)

- **Pin Configurations**



- **General Description**

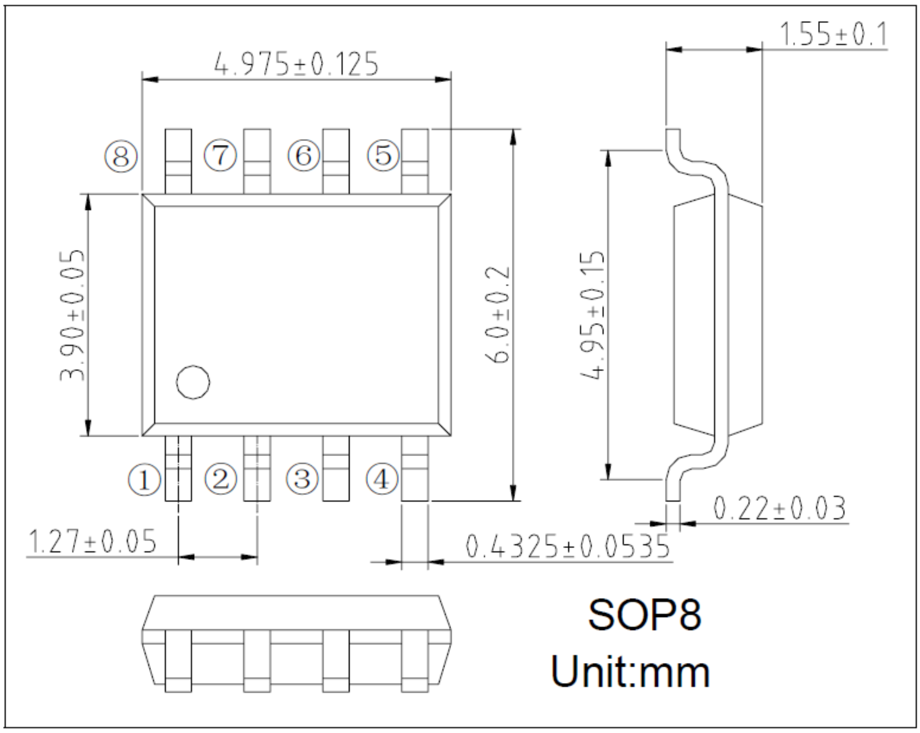
The HX4418SQ/L uses advanced trench technology to provide excellent RDS(ON) and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

HX4418SQ and HX4418SQL are electrically identical.

-RoHS Compliant

-HX4418SQL is Halogen Free

- **Package Information**



- **Absolute Maximum Ratings** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	40	V

Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	9	A
	T_A=70°C		7.8	
Drain Current (Pulse) *B		I_{DM}	40	A
Power Dissipation	T_A=25°C	P_D	2	W
	T_A=70°C		1.8	
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= 250 μA	40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 40 V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250 μA	1.0	1.5	2	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	--	--	100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 8A	--	12.9	16	mΩ
		V_{GS} = 4.5V, I_D = 4A	--	18.9	24	mΩ
Forward Transconductance	g_{FS}	V_{GS} = 5V, I_D = 8A	33	--	--	S
Diode Forward Voltage	V_{SD}	I_{SD}= 9A , V_{GS}=0V	--	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S		--	--	9	A
Switching						
Total Gate Charge	Q_g	V_{GS}= 10V, V_{DS}= 20V, I_D= 8A	--	12	--	nC
Gate-Source Charge	Q_{gs}		--	3.2	--	nC
Gate-Drain Charge	Q_{gd}		--	3.1	--	nC
Turn-on Delay Time	$t_{d\ (on)}$	V_{GS}= 10V, V_{DS}= 20V, R_L=2.5Ω, R_{GEN}=3Ω	--	4	--	nC
Turn-on Rise Time	t_r		--	3	--	nC
Turn-off Delay Time	$t_{d(off)}$		--	15	--	nC
Turn-off Fall Time	t_f		--	2	--	nC
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}= 20V, f=1MHz	--	415.7	--	pF
Output Capacitance	Coss		--	112.33	--	pF
Reverse Transfer Capacitance	Crss		--	11.72	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

- **TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**

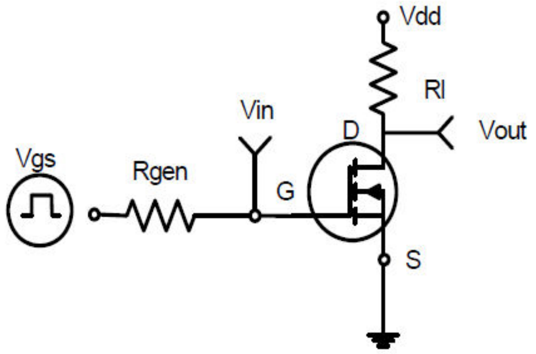


Figure 1:Switching Test Circuit

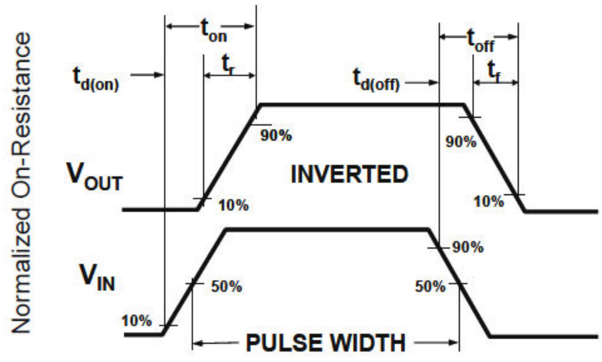


Figure 2:Switching Waveforms

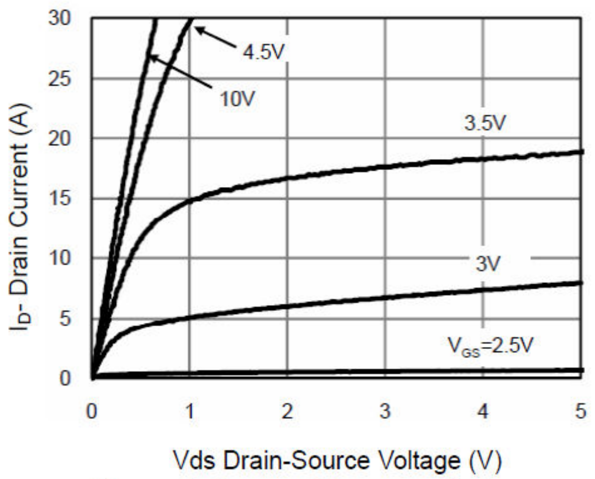


Figure 3 Output Characteristics

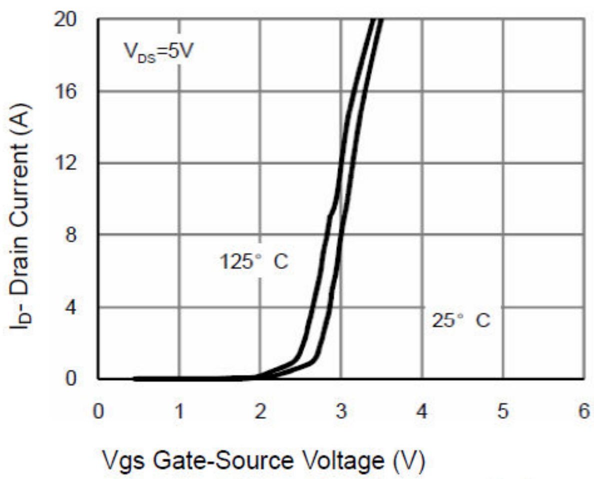


Figure 4 Transfer Characteristics

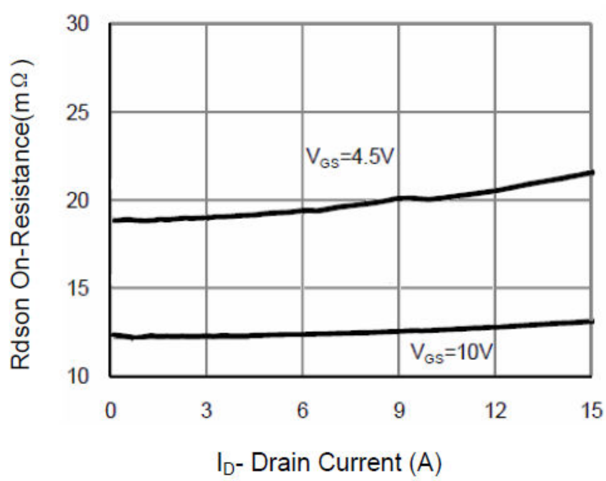


Figure 5 Drain-Source On-Resistance

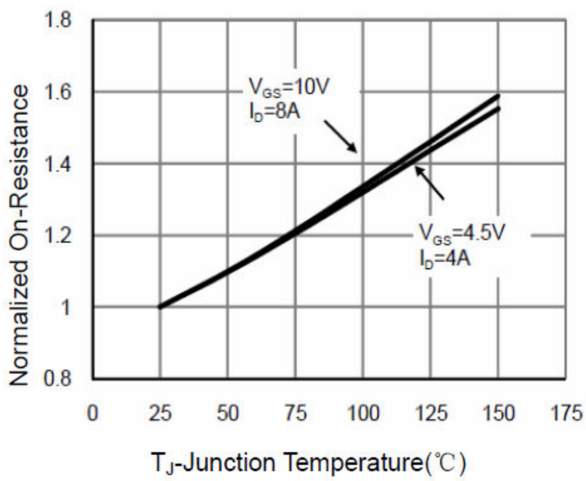


Figure 6 Drain-Source On-Resistance

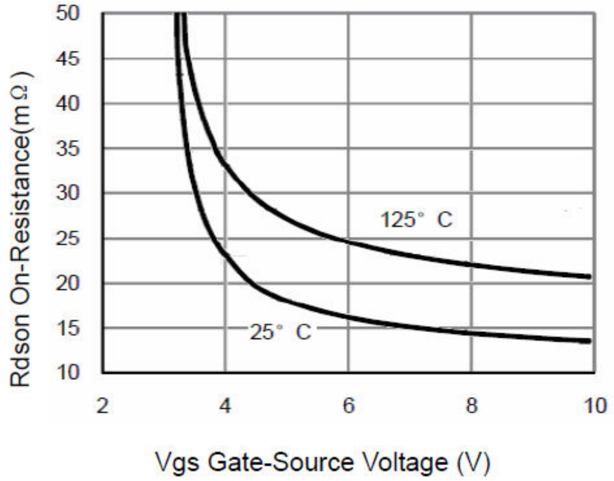


Figure7 Rdson vs Vgs

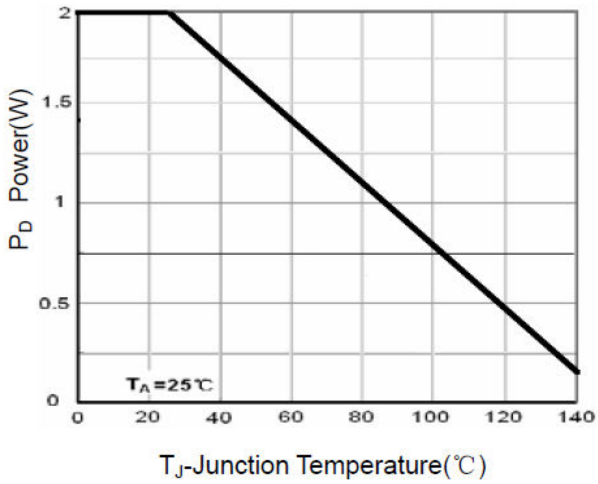


Figure 8 Power Dissipation

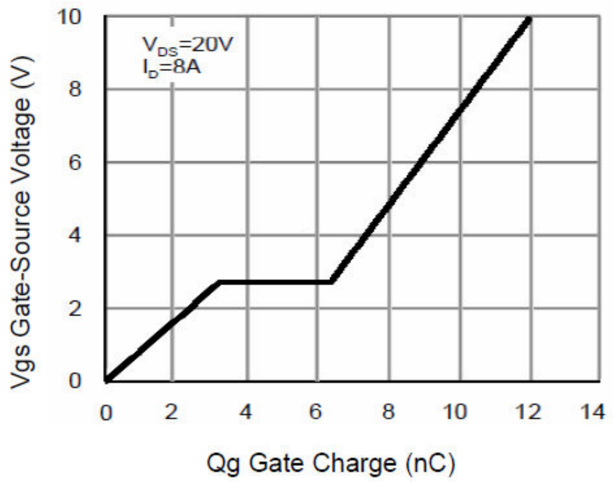


Figure 9 Gate Charge

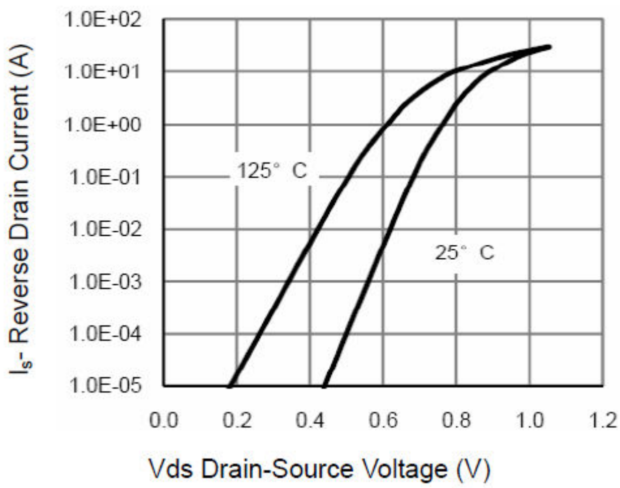


Figure 10 Source- Drain Diode Forward

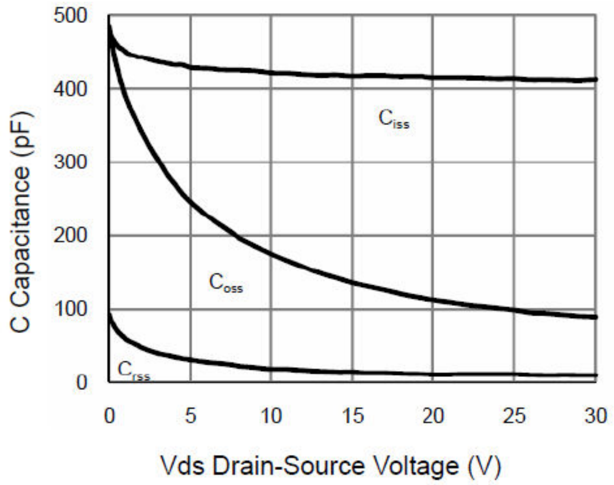


Figure 11 Capacitance vs Vds

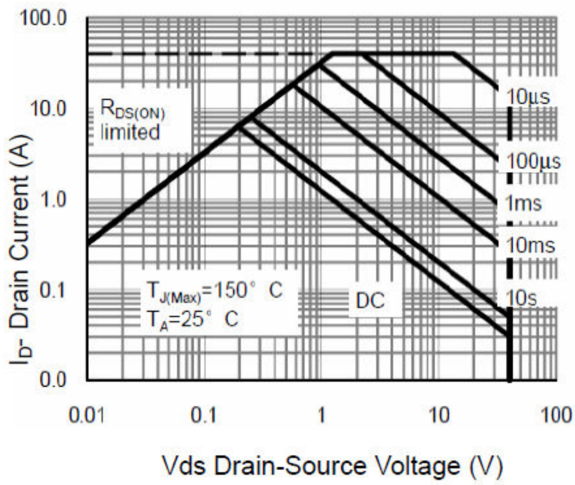


Figure 12 Safe Operation Area

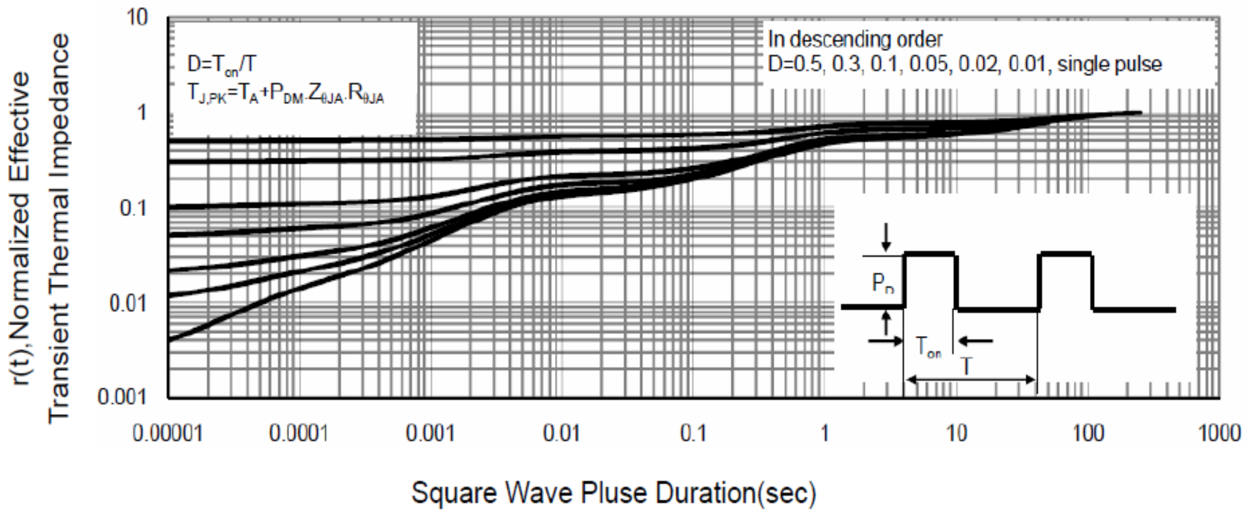


Figure 13 Normalized Maximum Transient Thermal Impedance

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