P-Channel Enhancement Mode Field Effect Transistor

- **Features**

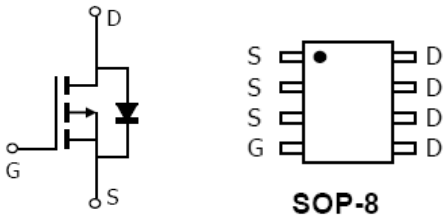
V_{DS} (V) = -40V

I_D = -6 A (V_{GS} = -10V)

$R_{DS(ON)}$ < 40mΩ (V_{GS} = -10V)

$R_{DS(ON)}$ < 80mΩ (V_{GS} = -4.5V)

- **Pin Configurations**



SOP-8

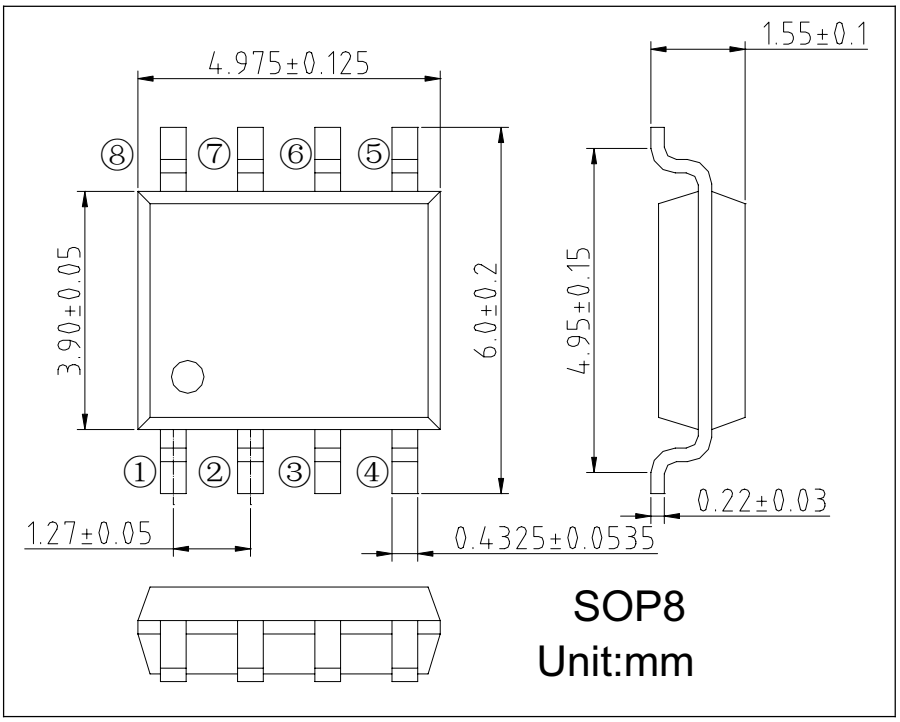
- **General Description**

The HX4443SQ/L uses advanced trench technology to provide excellent $R_{DS(ON)}$, and ultra-low low gate charge. This device is suitable for use as a load switch or in PWM applications.HX4443SQ and HX4443SQL are electrically identical.

-RoHS Compliant

-HX4443SQL 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	-6	A
	T_A=70°C		-4.8	
Drain Current (Pulse) *B		I_{DM}	-18	A
Power Dissipation	T_A=25°C	P_D	3	W
	T_A=70°C		2.1	
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= -250μA	-40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -32 V, V_{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= -250μA	-1.0	-2	-2.5	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 = -5.5A	--	33	40	mΩ
		V_{GS} = -4.5V, I_D = -4.5A	--	64	80	mΩ
Forward Transconductance	g_{FS}	V_{GS} = -10V, I_D = -5.5A	--	11	--	S
Diode Forward Voltage	V_{SD}	I_{SD}= -1A , V_{GS}=0V	--	-0.75	-1.0	V
Maximum Body-Diode Continuous Current	I_S		--	--	-5	A
Switching						
Total Gate Charge	Q_g	V_{GS}= -10V, V_{DS}= -20V, I_D= -5.5A	--	14	--	nC
Gate-Source Charge	Q_{gs}		--	2.2	--	nC
Gate-Drain Charge	Q_{gd}		--	1.9	--	nC
Turn-on Delay Time	$t_{d\ (on)}$	V_{GS}= -10V, V_{DS}= -20V, R_L=3.7Ω, R_{GEN}=3Ω	--	7.7	15.4	ns
Turn-on Rise Time	t_r		--	8	16	ns
Turn-off Delay Time	$t_{d(off)}$		--	26.5	53	ns
Turn-off Fall Time	t_f		--	11.5	23	ns
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}= -20V, f=1MHz	--	690	--	pF
Output Capacitance	Coss		--	310	--	pF
Reverse Transfer Capacitance	Crss		--	75	--	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

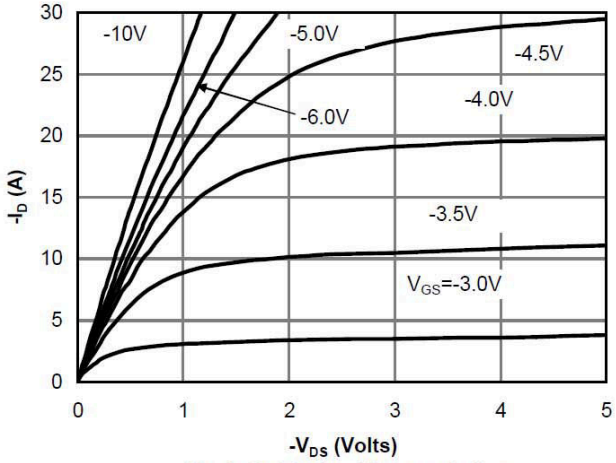


Fig 1: On-Region Characteristics

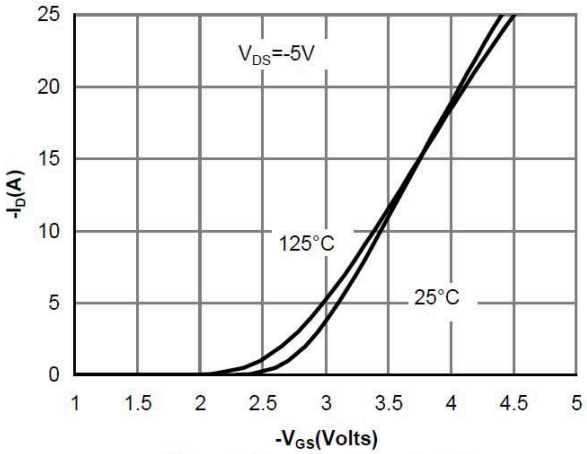


Figure 2: Transfer Characteristics

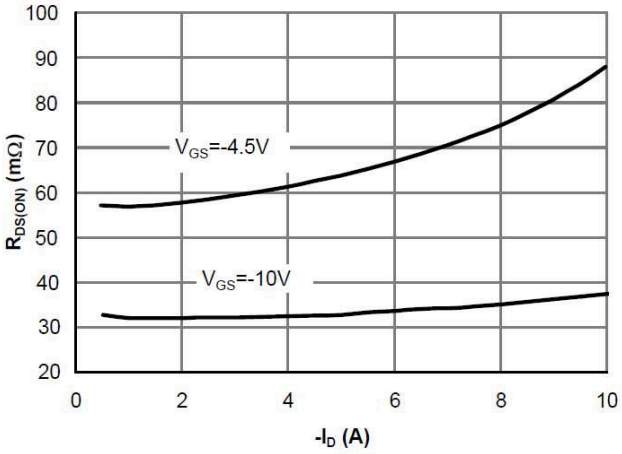


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

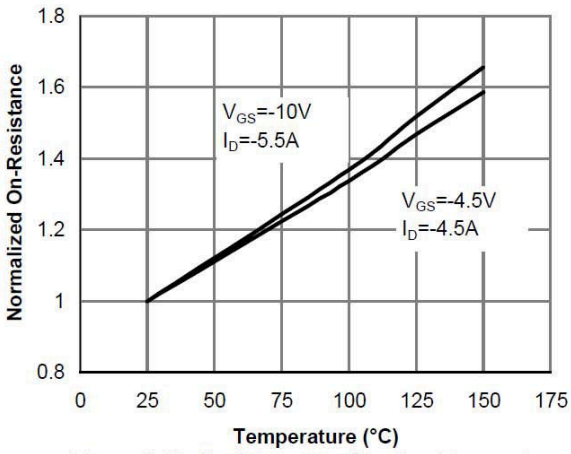


Figure 4: On-Resistance vs. Junction Temperature

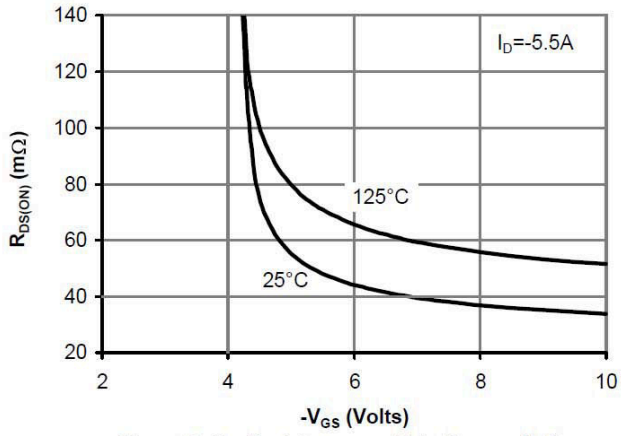


Figure 5: On-Resistance vs. Gate-Source Voltage

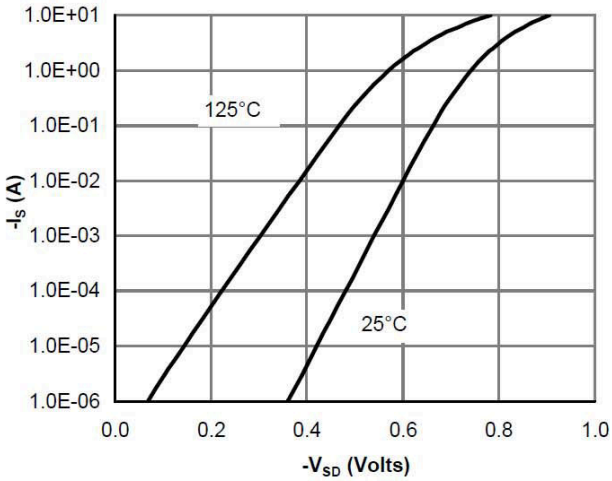


Figure 6: Body-Diode Characteristics

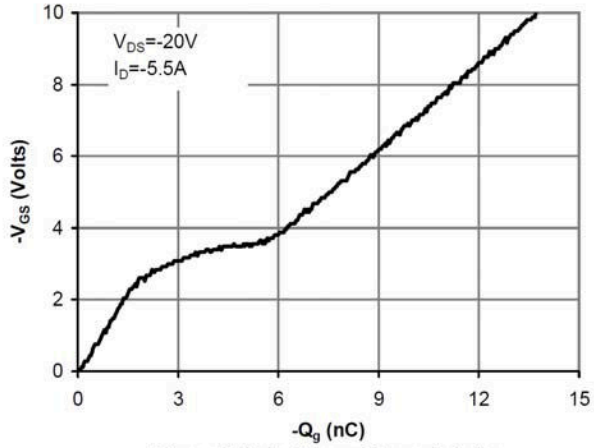


Figure 7: Gate-Charge Characteristics

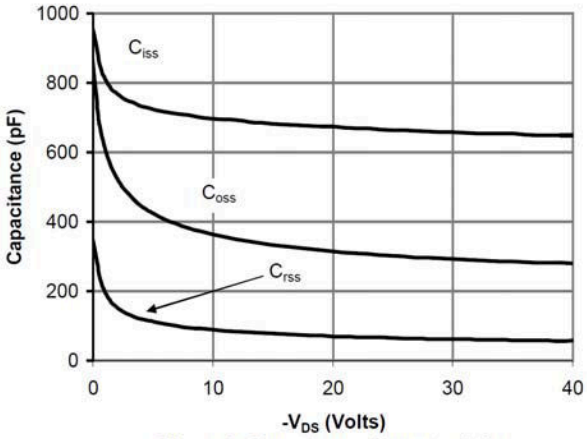


Figure 8: Capacitance Characteristics

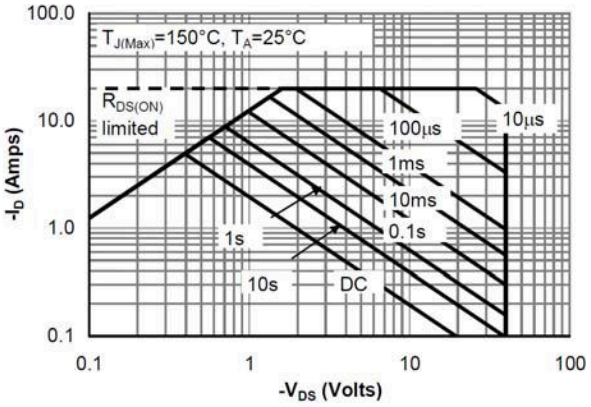


Figure 9: Maximum Forward Biased Safe Operating Area

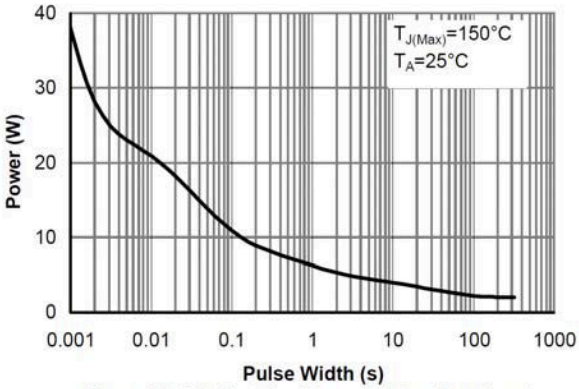


Figure 10: Single Pulse Power Rating Junction-to-Ambient

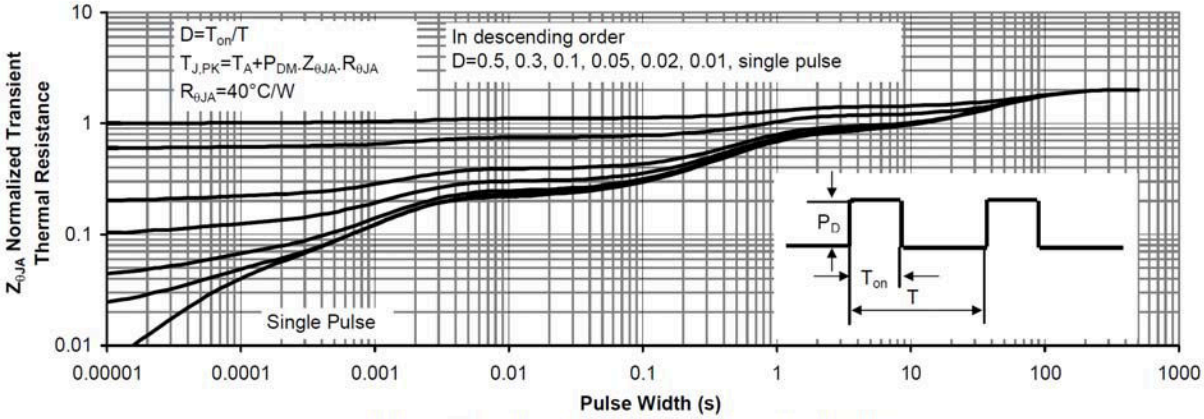


Figure 11: Normalized Maximum Transient Thermal Impedance

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