N-Channel Enhancement Mode Field Effect Transistor

- **Features**

V_{DS} (V) = 40V

I_D = 15A (V_{GS} = 10V)

$R_{DS(ON)}$ < 9.5mΩ (V_{GS} = 10V)

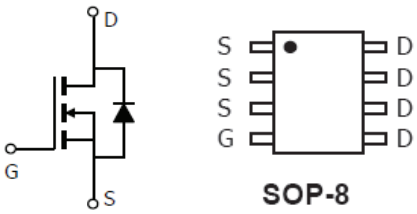
$R_{DS(ON)}$ < 15.5mΩ (V_{GS} = 4.5V)

- **General Description**

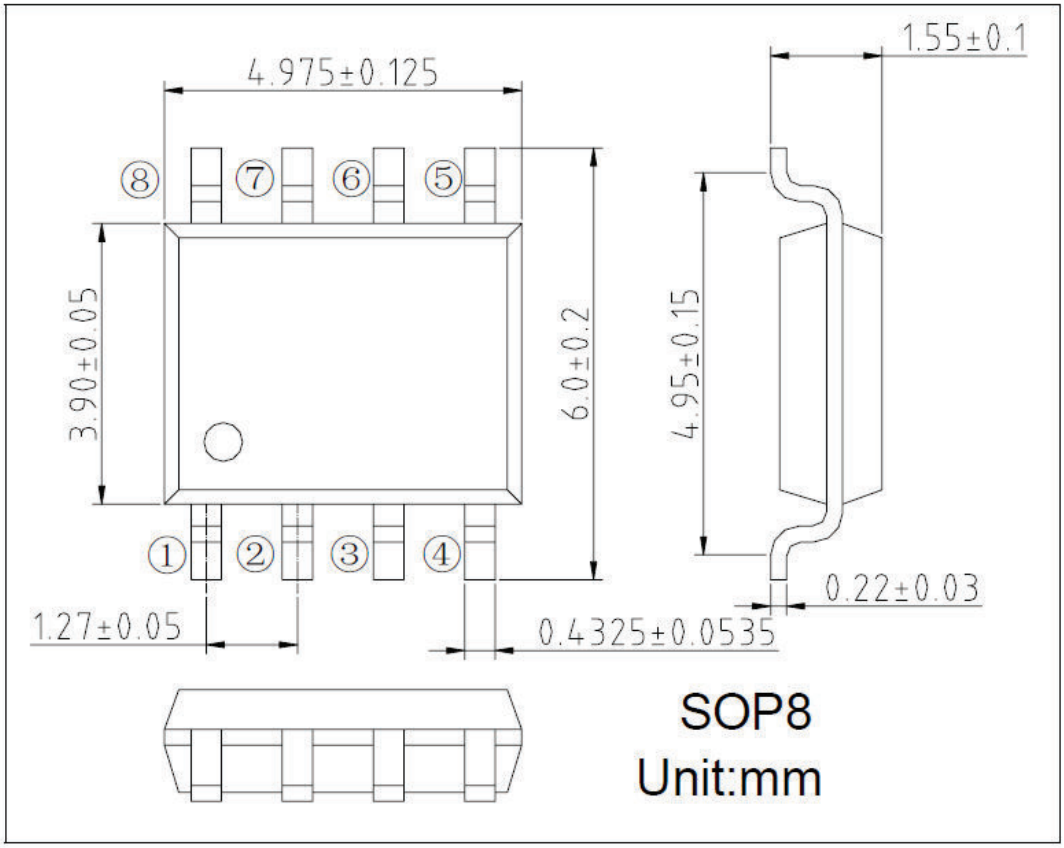
The HX4480SQ uses advanced trench technology and designto provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications.

-RoHS Compliant
-Halogen Free

- **Pin Configurations**



- **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	15	A
	T_A=70°C		12	
Drain Current (Pulse) *B		I_{DM}	40	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} = 40 V , V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS} , I_{DS}=250μA	1	1.8	3	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 = 15A	--	7.3	9.5	mΩ
		V_{GS} =4.5V , I_D = 11A	--	11	15.5	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=15A	--	45	--	S
Diode Forward Voltage	V_{SD}	I_{SD}=1A , V_{GS}=0V	--	0.71	1.0	V
Maximum Body-Diode Continuous Current	I_S		--	--	5	A
Switching						
Total Gate Charge	Q_g	V_{GS}=5V, V_{DS}=15V, I_D=14A	--	16	20.8	nC
Gate-Source Charge	Q_{gs}		--	5	6.5	nC
Gate-Drain Charge	Q_{gd}		--	3	3.9	nC
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=15Ω,R_{GEN}=6Ω	--	17	34	ns
Turn-on Rise Time	t_r		--	5	10	ns
Turn-off Delay Time	$t_{d(off)}$		--	50	100	ns
Turn-off Fall Time	t_f		--	10	20	ns
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=15V, f=1MHz	--	2470	--	pF
Output Capacitance	Coss		--	325	--	pF
Reverse Transfer Capacitance	Crss		--	185	--	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**

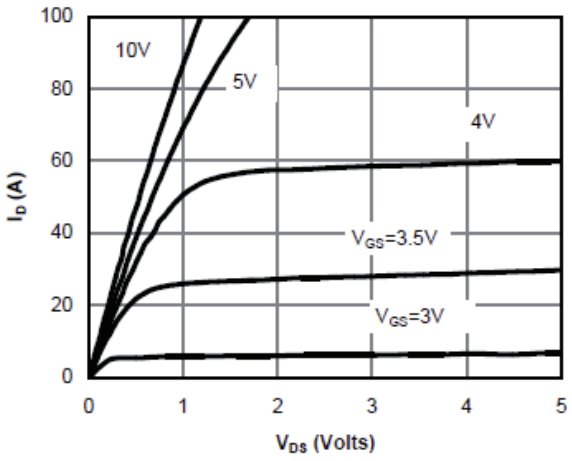


Figure 1: On-Region Characteristics

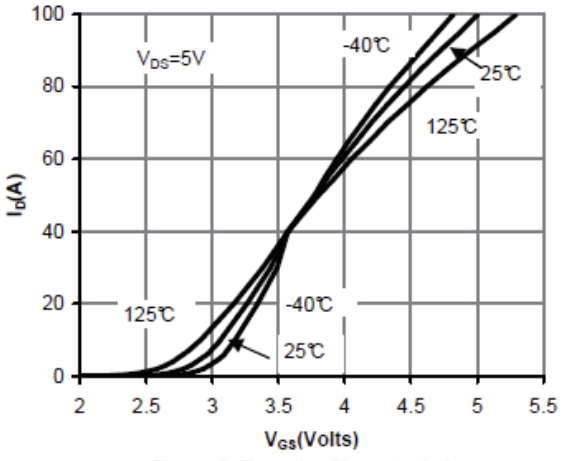


Figure 2: Transfer Characteristics

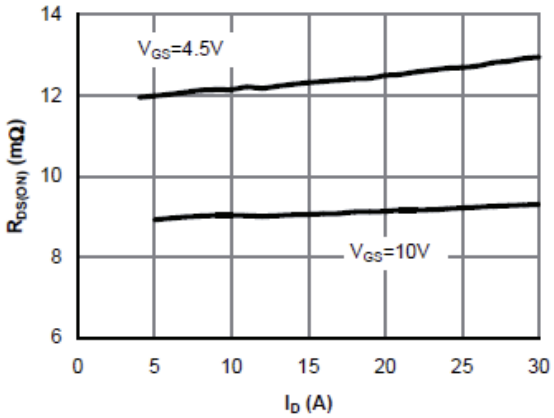


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

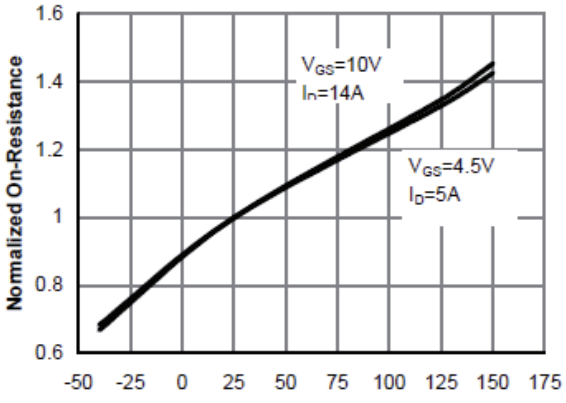


Figure 4: On-Resistance vs. Junction Temperature

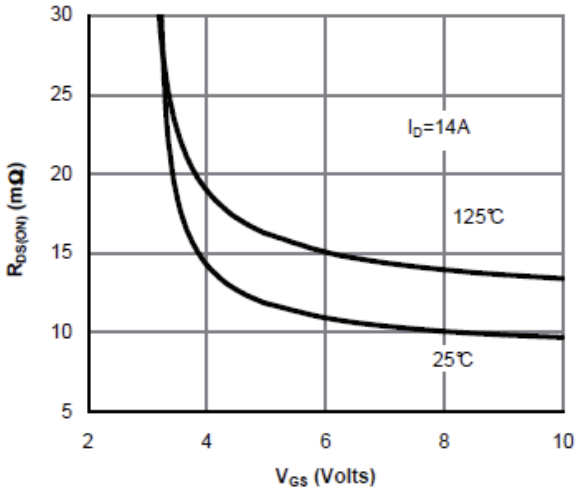


Figure 5: On-Resistance vs. Gate-Source Voltage

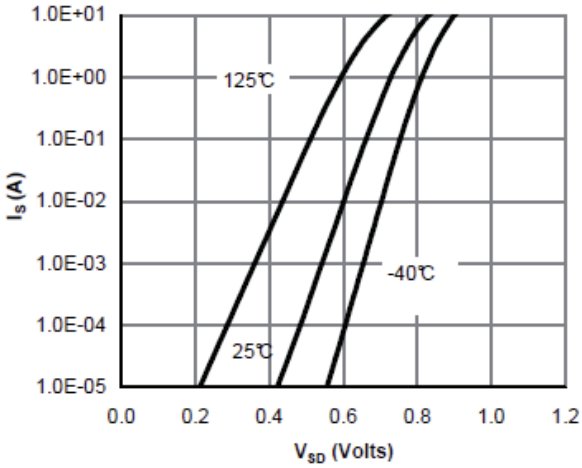


Figure 6: Body-Diode Characteristics

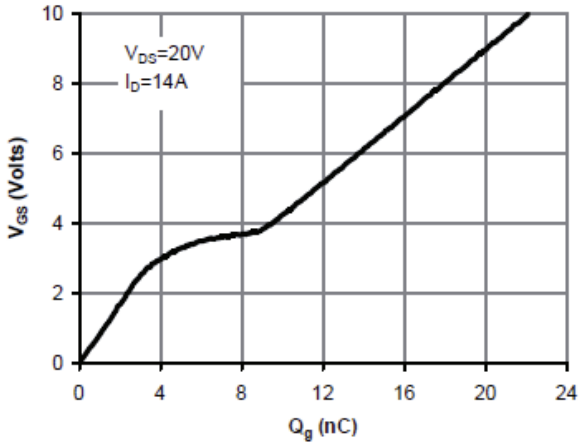


Figure 7: Gate-Charge Characteristics

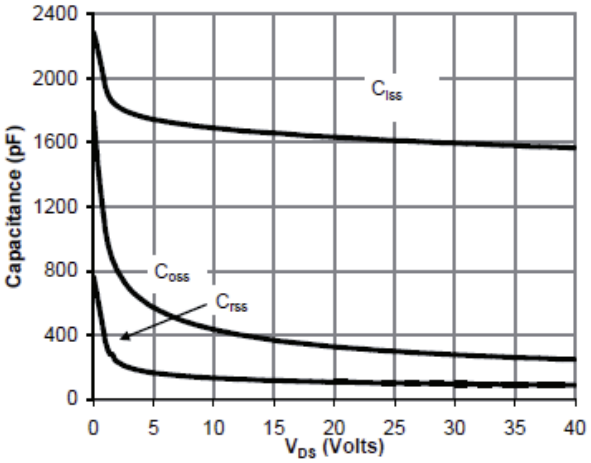


Figure 8: Capacitance Characteristics

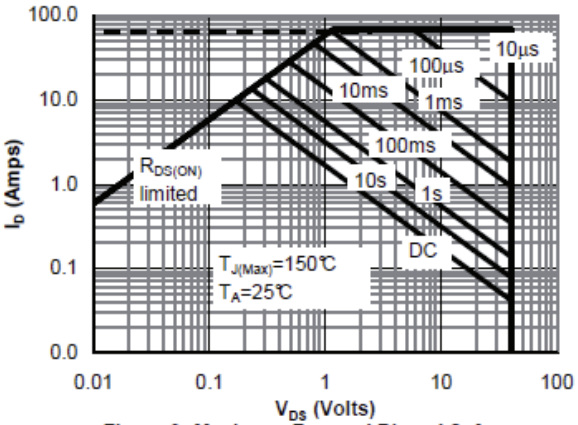


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

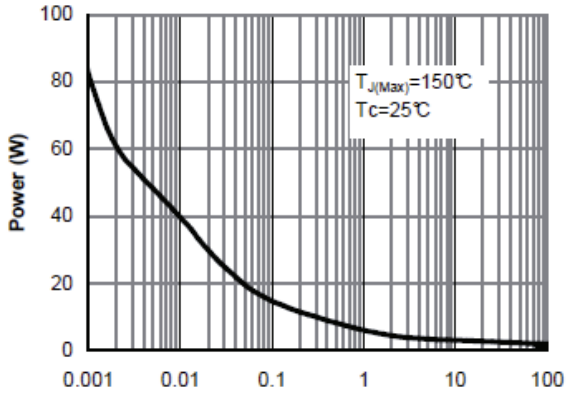


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

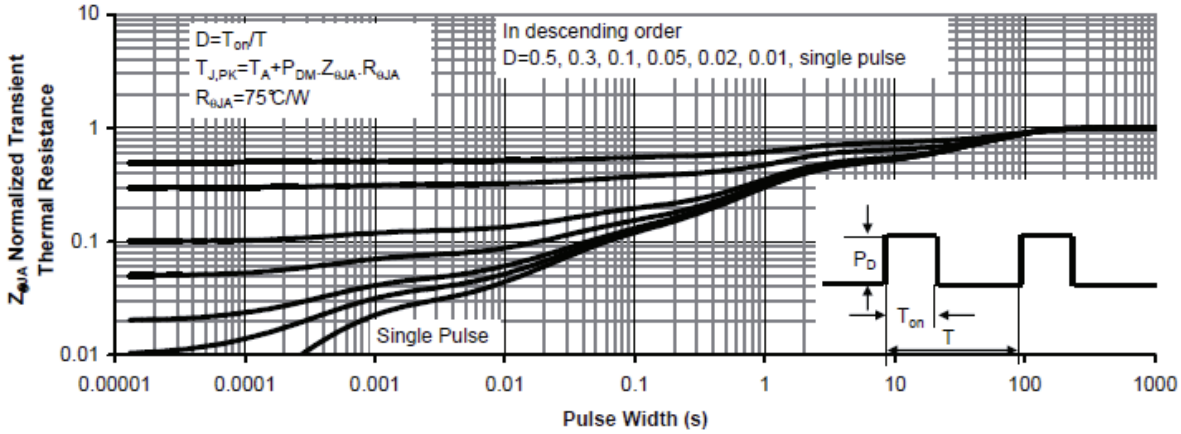


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)