Dual N-Channel Enhancement Mode Field Effect Transistor

- **Features**

V_{DS} (V) = 30V

I_D = 8A

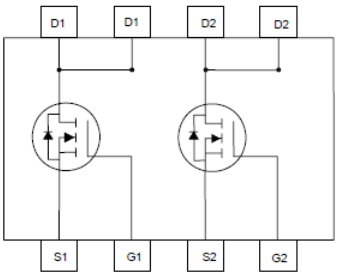
$R_{DS(ON)}$ ≤ 22mΩ (V_{GS} = 10V)

$R_{DS(ON)}$ ≤ 30mΩ(V_{GS} = 4.5V)

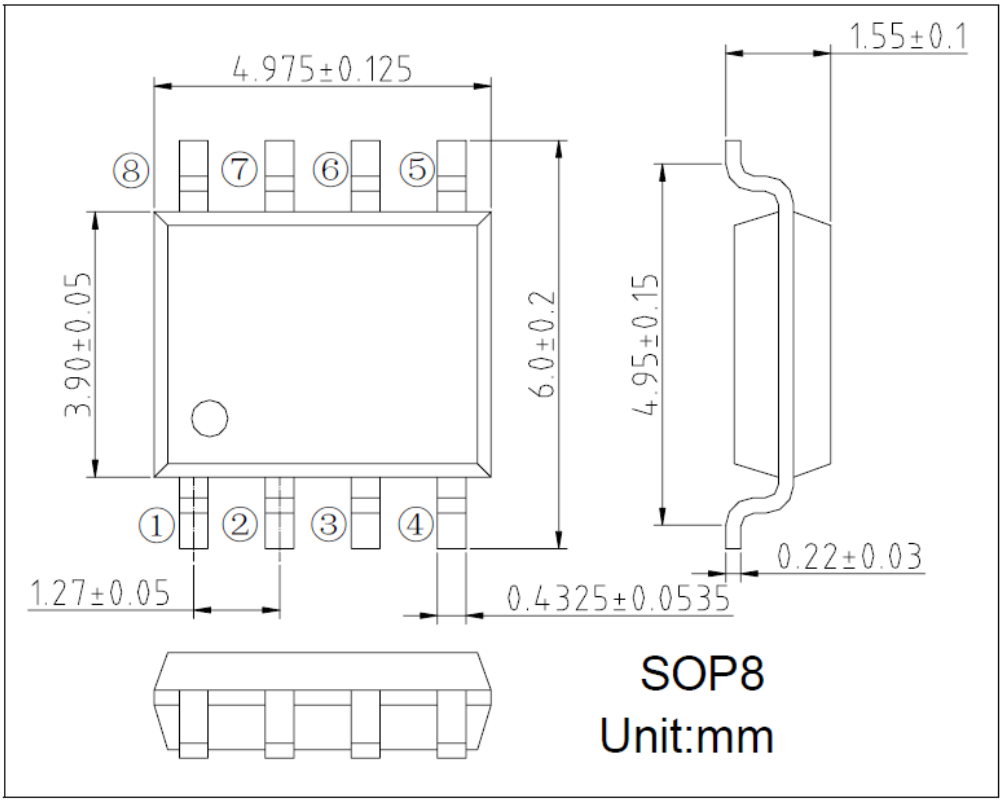
- **General Description**

The HX4812A uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

- **Pin Configurations**



- **Package Information**



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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	8	A
	T_A=70°C		6.7	
Drain Current (Pulse) *B		I_{DM}	65	A
Power Dissipation	T_A=25°C	P_D	2	W
	T_A=70°C		1.44	
Operating Temperature/ Storage Temperature		T_{J}/T_{STG}	-55~150	℃
Thermal Resistance ,Junction-to-Ambient		$R_{\theta JA}$	85	℃/W

- **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	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24 V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS} = 250μA	1	1.7	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 = 6A	--	15.5	22	mΩ
		V_{GS} = 4.5V, I_D = 5A	--	21	30	mΩ
Forward Transconductance	g_{FS}	V_{DS} = 5V, I_D=7.5A	10	--	--	S
Diode Forward Voltage	V_{SD}	I_{SD} =1A , V_{GS}=0V	--	--	1.2	V
Switching						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=7.7A	--	7.2	--	nC
Gate-Source Charge	Q_{gs}		--	1.3	--	nC
Gate-Drain Charge	Q_{gd}		--	1.7	--	nC
Turn-on Delay Time	$t_{d\ (on)}$	V_{GS}=10V, V_{DD}=15V, R_L=2Ω,R_{GEN}=3Ω	--	5	--	ns
Turn-on Rise Time	t_r		--	3	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	15	--	ns
Turn-off Fall Time	t_f		--	3	--	ns
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=15V, f=1MHz	--	380	--	pF
Output Capacitance	Coss		--	67	--	pF
Reverse Transfer Capacitance	Crss		--	41	--	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**

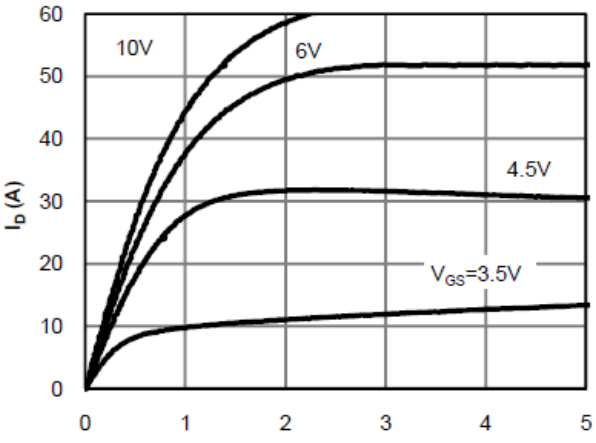


Fig 1: On-Region Characteristics

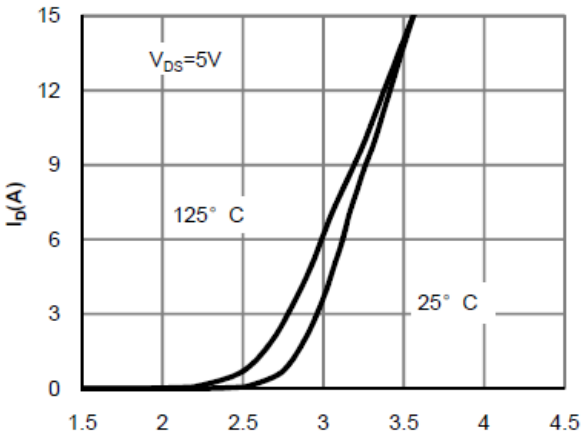


Figure 2: Transfer Characteristics

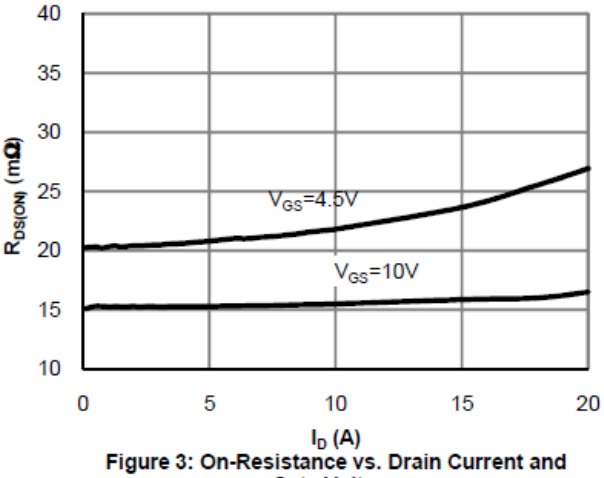


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

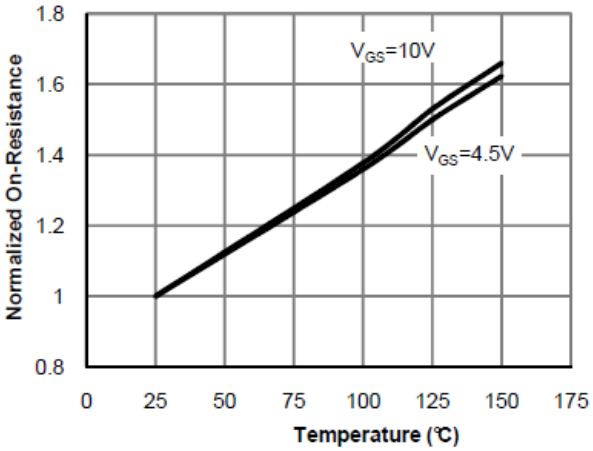


Figure 4: On-Resistance vs. Junction Temperature

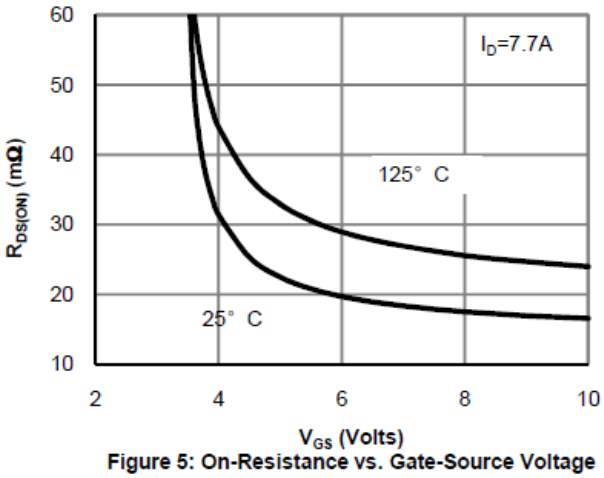


Figure 5: On-Resistance vs. Gate-Source Voltage

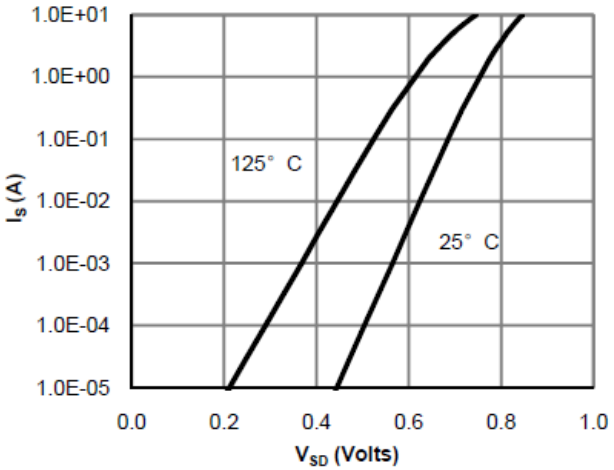


Figure 6: Body-Diode Characteristics

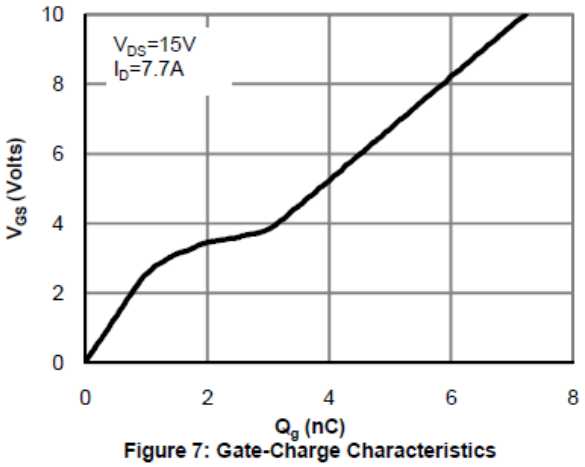


Figure 7: Gate-Charge Characteristics

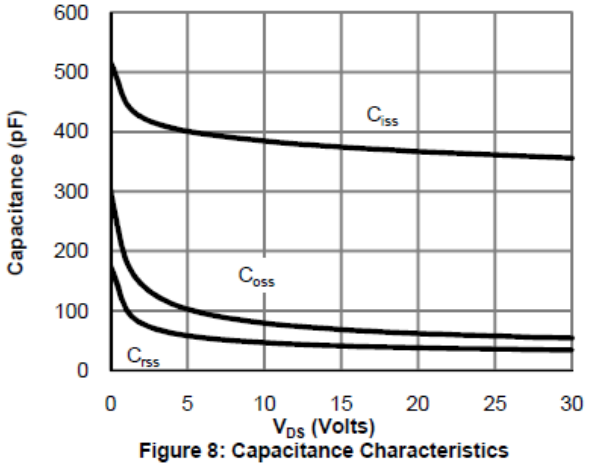


Figure 8: Capacitance Characteristics

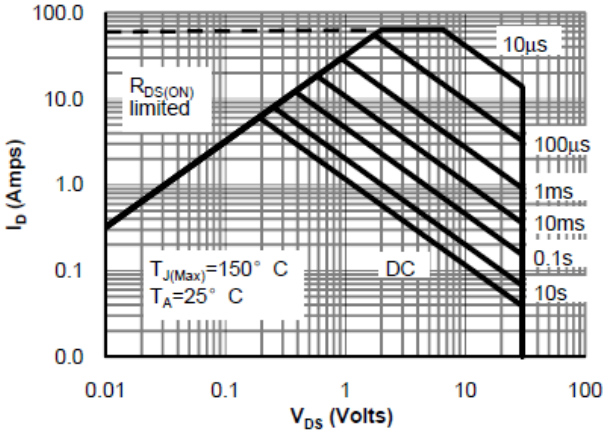


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

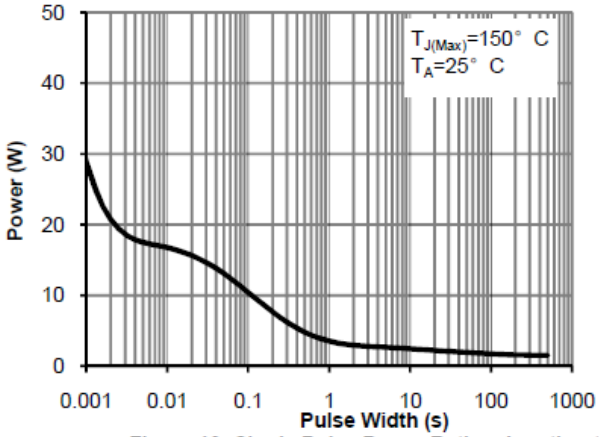


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

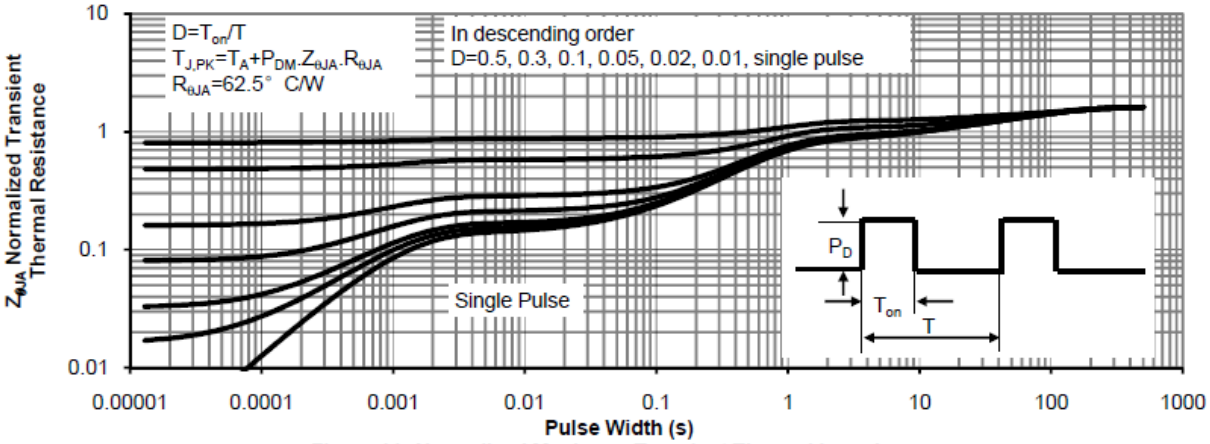


Figure 11: Normalized Maximum Transient Thermal Impedance

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