HONGXIN TIME
Electronic Technology Co., Ltd

HX4805

Dual P-Channel Enhancement Mode MOSFET

Features

- -30V/-8.9A,
  $R_{DS(ON)}$=21mΩ(max.) @ V_{GS}=-10V
  $R_{DS(ON)}$=30mΩ(max.) @ V_{GS}=-4.5V
- Reliable and Rugged
- Lead Free and Green Devices Available
  (RoHS Compliant)

Applications

- Power Management in Notebook Computer,
  Portable Equipment and Battery Powered
  Systems.

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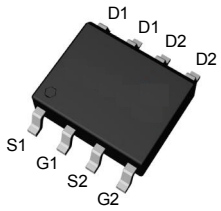
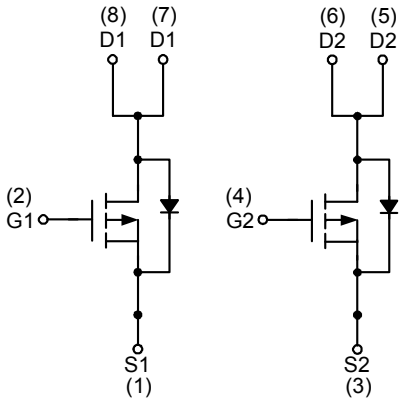
Pin Description



Top View of SOP–8



P-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_A=25°C	-1	A
I_D	Continuous Drain Current	T_A=25°C	-8.9	
		T_A=70°C	-7.1	
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	-35	
P_D	Maximum Power Dissipation	T_A=25°C	2.5	W
		T_A=70°C	1.6	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	t ≤ 10s	50	°C/W
		Steady State	90	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	Steady State	20	
I_{AS} [b]	Avalanche Current, Single pulse	L=0.1mH	24	A
		L=0.5mH	14	
E_{AS} [b]	Avalanche Energy, Single pulse	L=0.1mH	29	mJ
		L=0.5mH	49	

Note a：Pulse width is limited by maximum junction temperature.

Note b：UIS tested and pulse width are limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

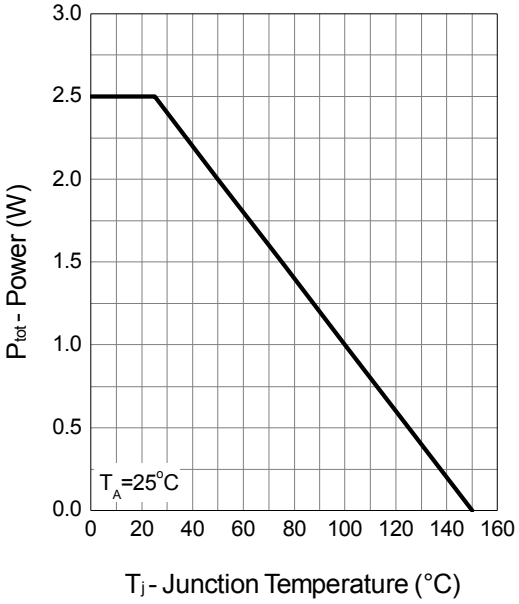
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1.3	-1.8	-2.3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [c]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-8.9A	-	15	21	mΩ
		V_{GS}=-4.5V, I_{DS}=-5.6A	-	22	30	
Diode Characteristics						
V_{SD} [c]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1	V
t_{rr} [d]	Reverse Recovery Time	I_{SD}=-8.9A, dI_{SD}/dt=100A/μs	-	18	-	ns
Q_{rr} [d]	Reverse Recovery Charge		-	9	-	nC
Dynamic Characteristics [d]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	3.6	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz	-	1004	-	pF
C_{oss}	Output Capacitance		-	204	-	
C_{rss}	Reverse Transfer Capacitance		-	154	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-15V, R_L=15Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	8.8	-	ns
t_r	Turn-on Rise Time		-	10.4	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	35.2	-	
t_f	Turn-off Fall Time		-	46.8	-	
Gate Charge Characteristics [d]						
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V, I_{DS}=-8.9A	-	20	-	nC
	Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_{DS}=-8.9A	-	10	-	
Q_{gs}	Gate-Source Charge		-	3.8	-	
Q_{gd}	Gate-Drain Charge		-	5.7	-	
Q_{gth}	Threshold Gate Charge		-	1	-	

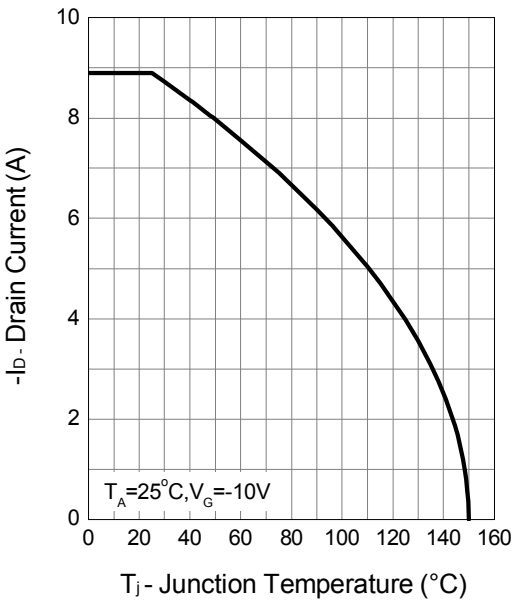
Note c：Pulse test; pulse width≤300μs, duty cycle≤2%.
Note d：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

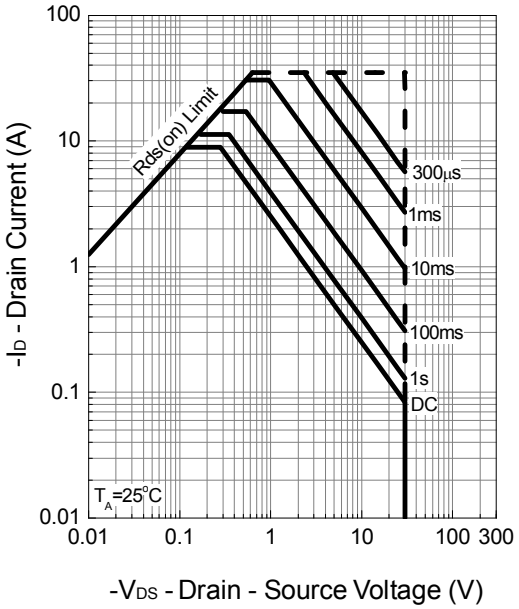
Power Dissipation



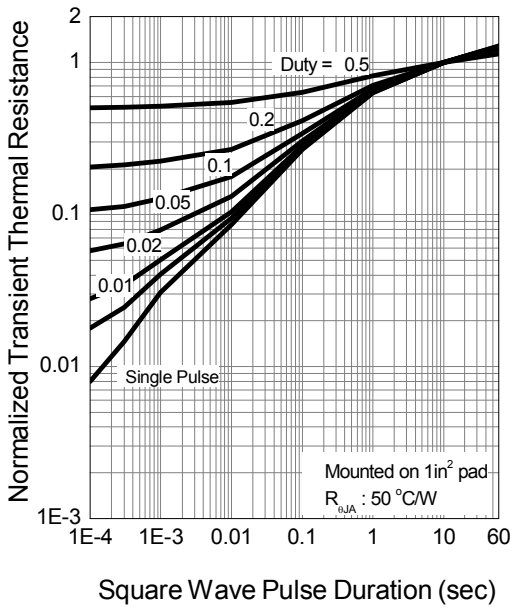
Drain Current



Safe Operation Area

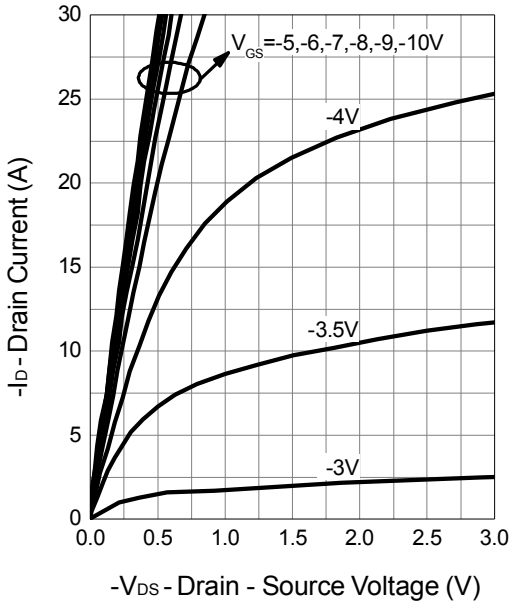


Thermal Transient Impedance

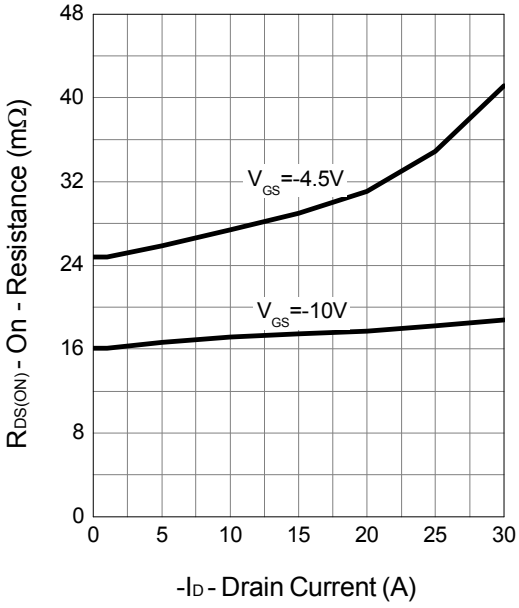


Typical Operating Characteristics (Cont.)

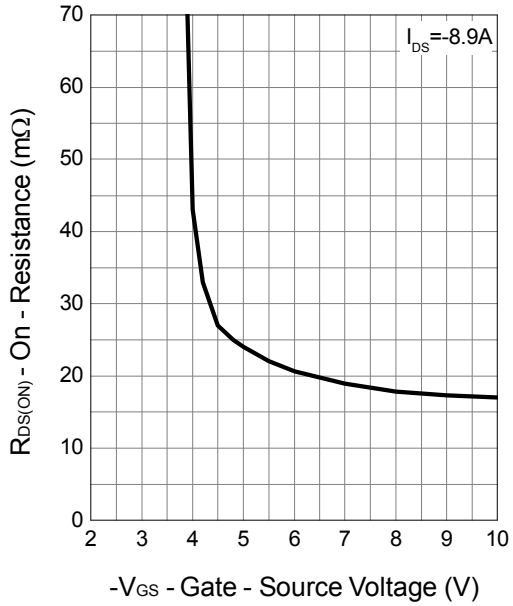
Output Characteristics



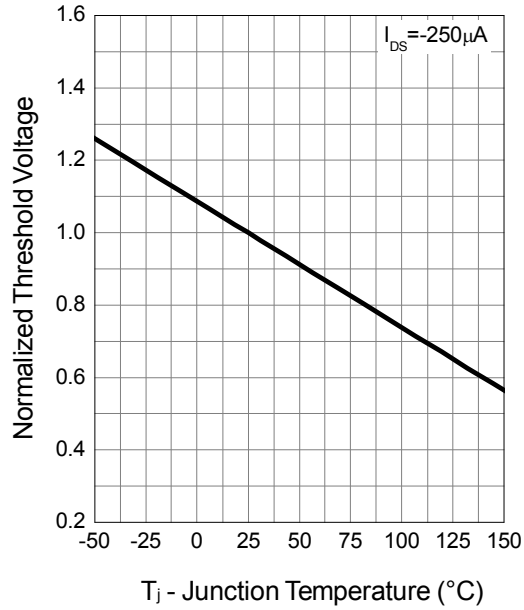
Drain-Source On Resistance



Gate-Source On Resistance

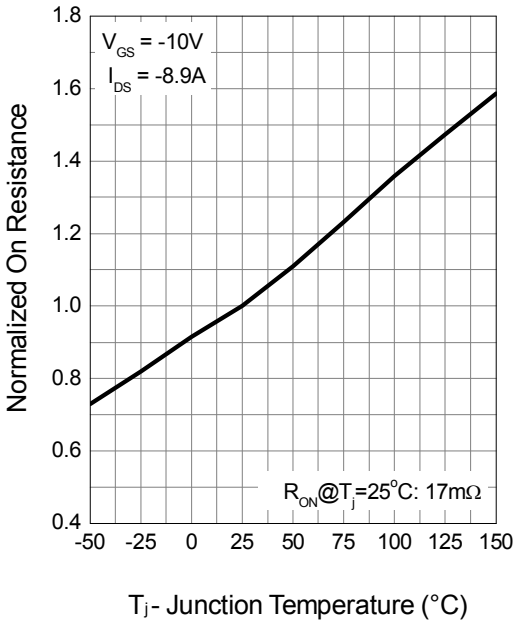


Gate Threshold Voltage



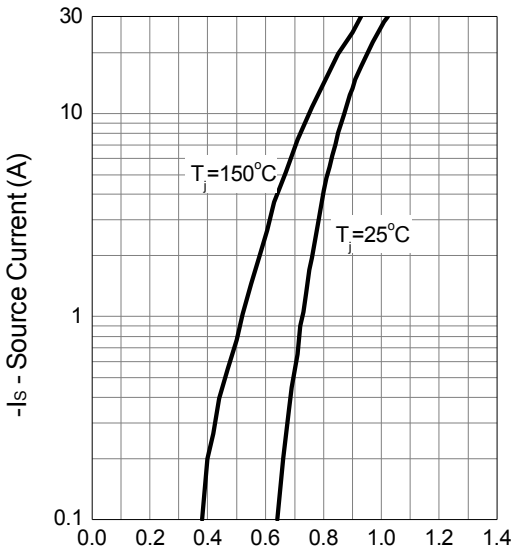
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance



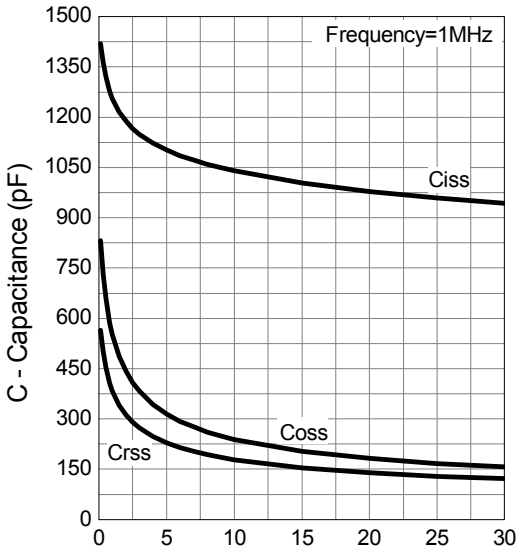
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



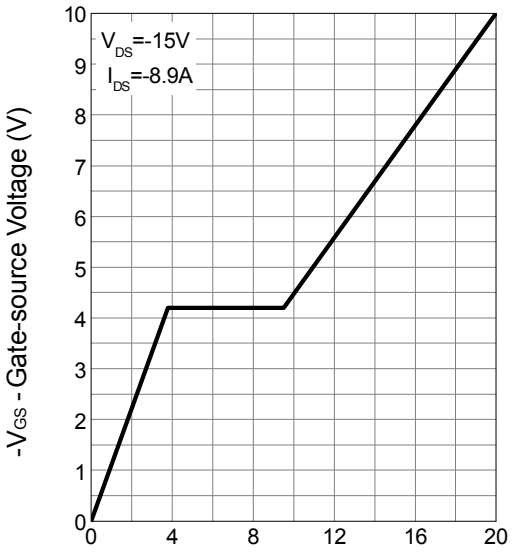
$-V_{SD}$ - Source-Drain Voltage (V)

Capacitance



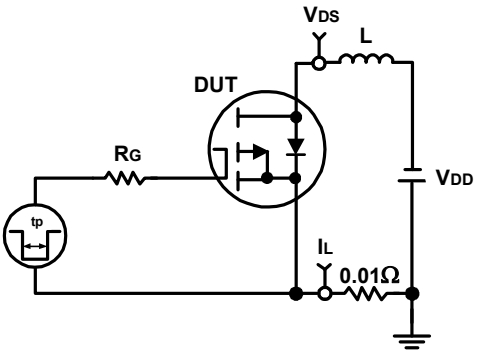
$-V_{DS}$ - Drain-Source Voltage (V)

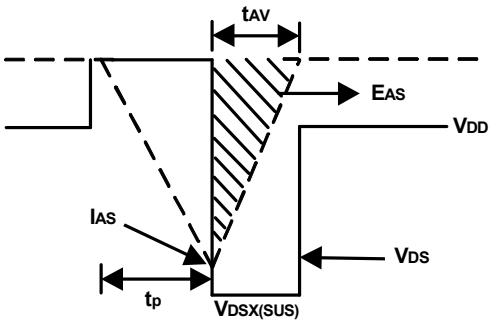
Gate Charge



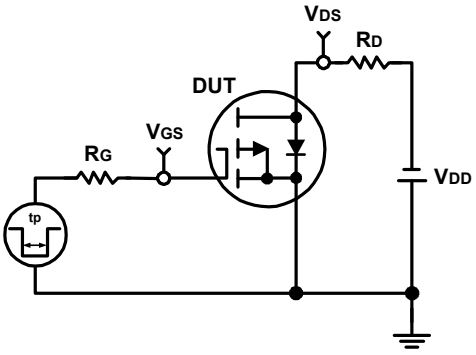
Q_G - Gate Charge (nC)

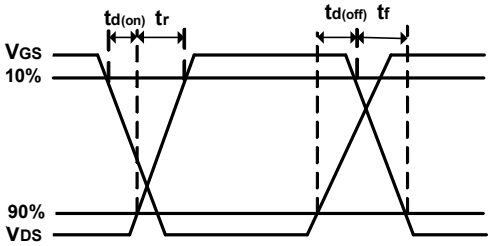
Avalanche Test Circuit and Waveforms





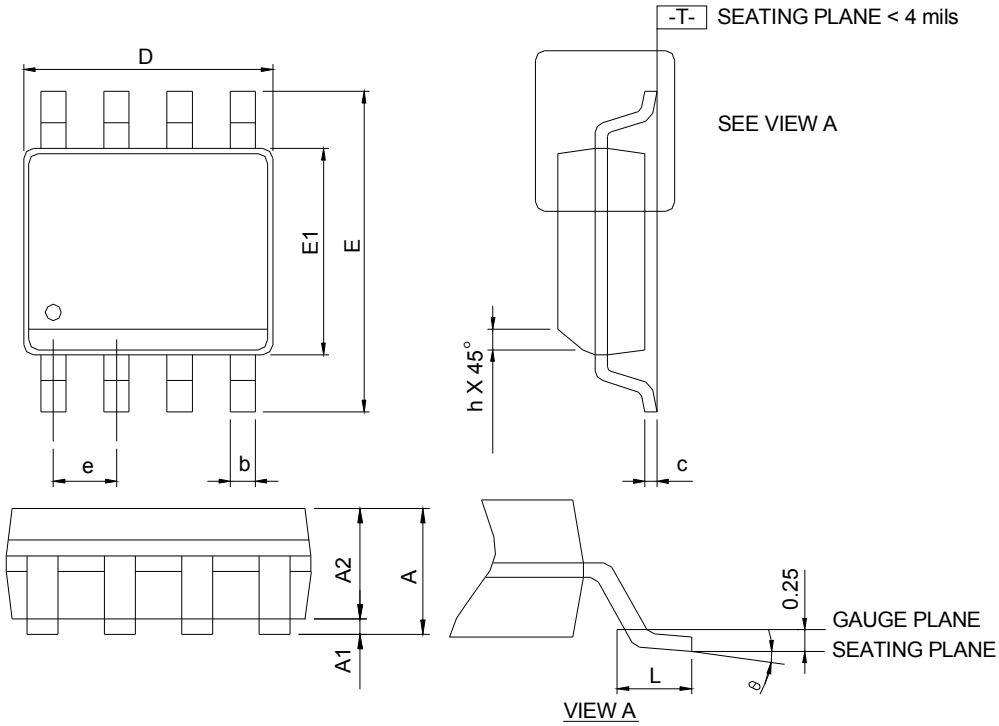
Switching Time Test Circuit and Waveforms





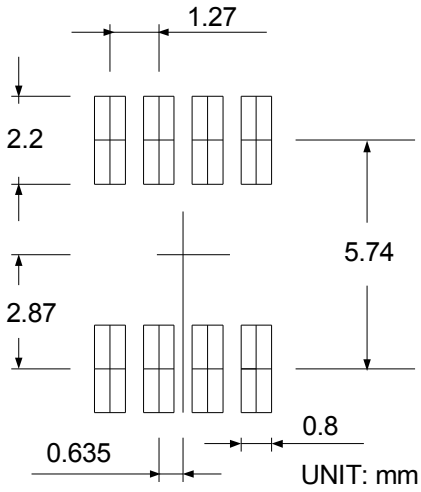
Package Information

SOP-8



SYMBOL	SOP-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.75		0.069
A1	0.10	0.25	0.004	0.010
A2	1.25		0.049	
b	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

RECOMMENDED LAND PATTERN



Note: 1. Follow JEDEC MS-012 AA.
2. Dimension “D” does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side.
3. Dimension “E” does not include inter-lead flash or protrusions. Inter-lead flash and protrusions shall not exceed 10 mil per side.