HUASHUO SEMICONDUCTOR

HSM01P15

P-Ch 150V Fast Switching MOSFETs

Applications

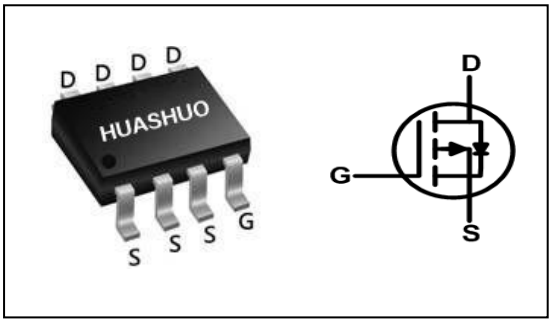
- Load Switch.
- Power Management.
- LED Backlighting.
- Networking application.

Product Summary

V_{DS}	-150	V
$R_{DS(ON),max}$	780	mΩ
I_D	-1.3	A

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

SOP8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	-1.3	A
I_D@T_A=70℃	Continuous Drain Current, V_{GS} @ 10V[1]	-0.89	A
I_{DM}	Pulsed Drain Current[2]	-4.4	A
EAS	Single Pulse Avalanche Energy[3]	12.5	mJ
I_{AS}	Avalanche Current	-5	A
P_D@T_A=25℃	Total Power Dissipation[4]	2	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	40	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-1A	---	650	780	mΩ
		V_{GS}=-6V , I_D=-0.5A	---	700	980	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-2.0	-3.0	-4.0	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	5.42	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-120V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=-120V , V_{GS}=0V , T_J=150℃	---	---	30	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Rg	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	12	---	Ω
Q_g	Total Gate Charge (-4.5V)	V_{DS}=-75V , V_{GS}=-10V , I_D=-1A	---	10.5	---	nC
Q_{gs}	Gate-Source Charge		---	3.2	---	
Q_{gd}	Gate-Drain Charge		---	2.3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-30V , V_{GS}=-10V , R_G=6Ω, I_D=-1A	---	21	---	ns
T_r	Rise Time		---	17	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
T_f	Fall Time		---	18	---	
C_{iss}	Input Capacitance	V_{DS}=-75V , V_{GS}=0V , F=1MHz	---	715	---	pF
C_{oss}	Output Capacitance		---	21	---	
C_{rss}	Reverse Transfer Capacitance		---	14	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,6]	V_G=V_D=0V , Force Current	---	---	-1	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=-50V,V_{GS}=-10V,L=1mH,I_{AS}=-5A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

P-Channel Typical Characteristics

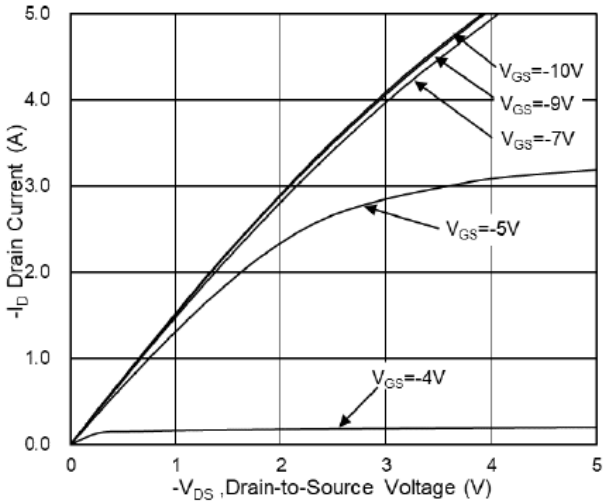


Fig.1 Typical Output Characteristics

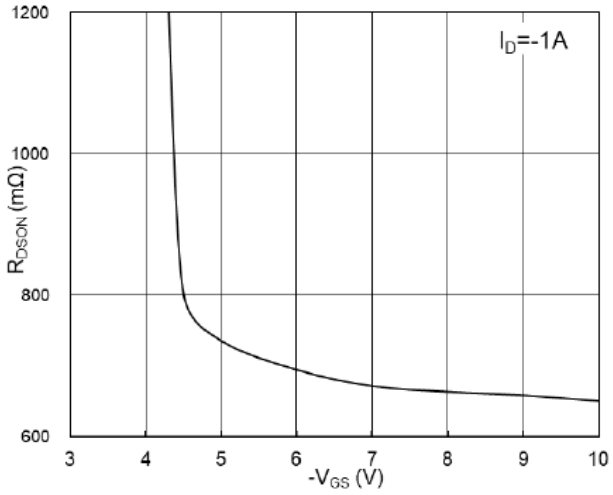


Fig.2 On-Resistance vs. G-S Voltage

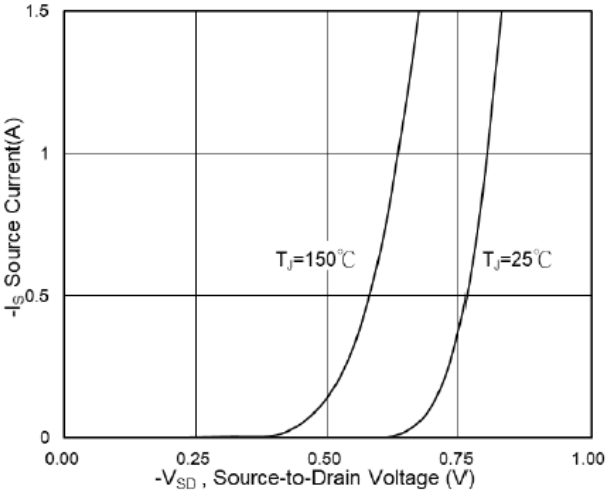


Fig.3 Forward Characteristics Of Reverse

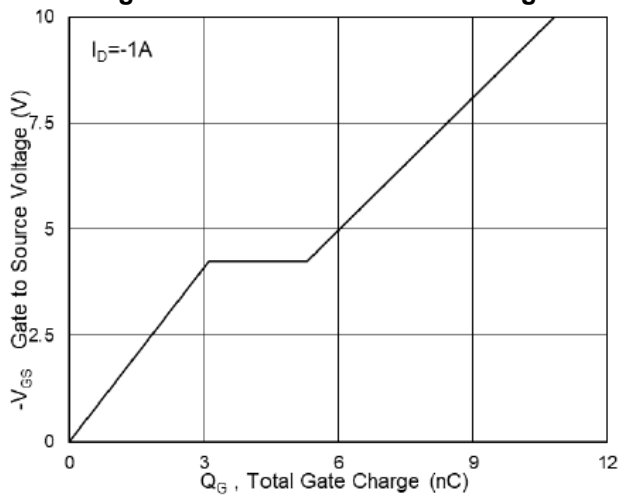


Fig.4 Gate-Charge Characteristics

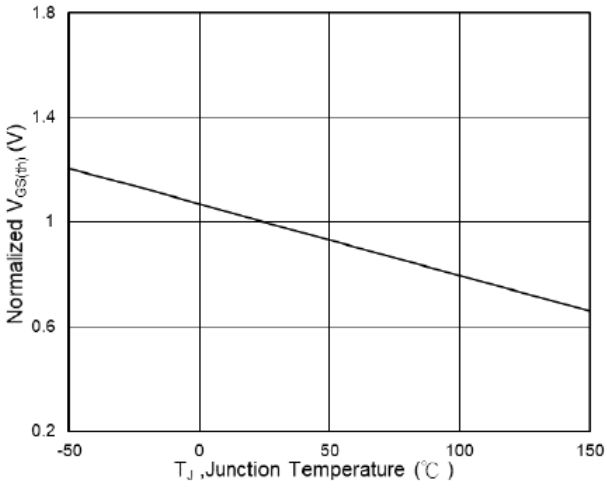


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

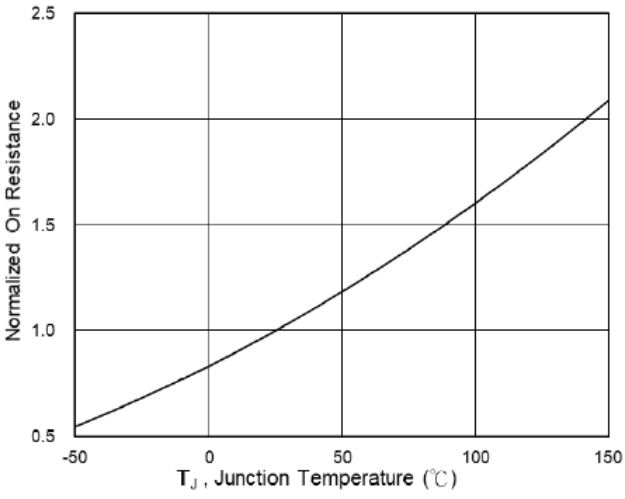


Fig.6 Normalized R_{DSON} vs. T_J

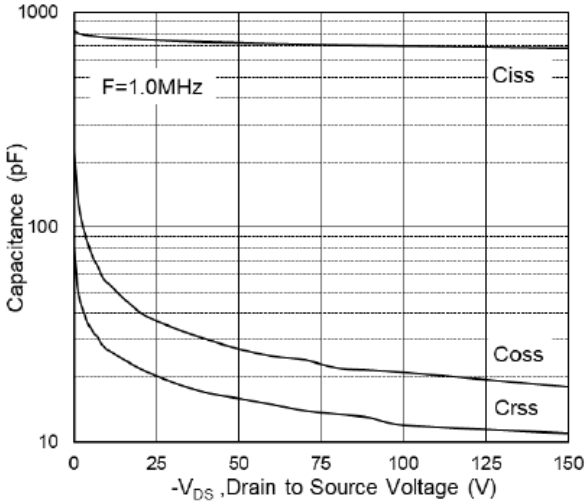


Fig.7 Capacitance

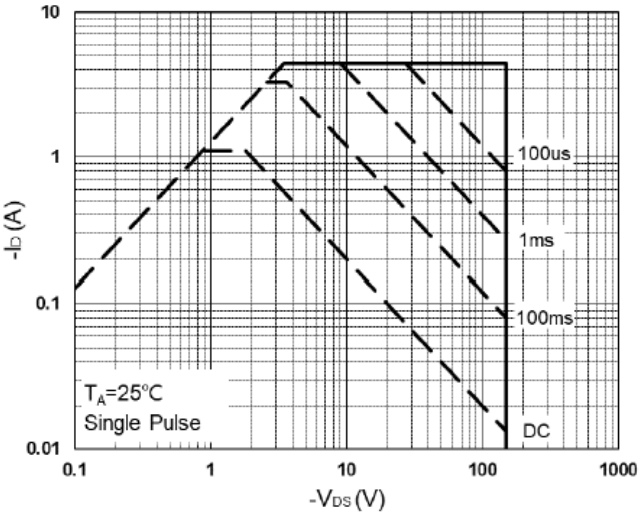


Fig.8 Safe Operating Area

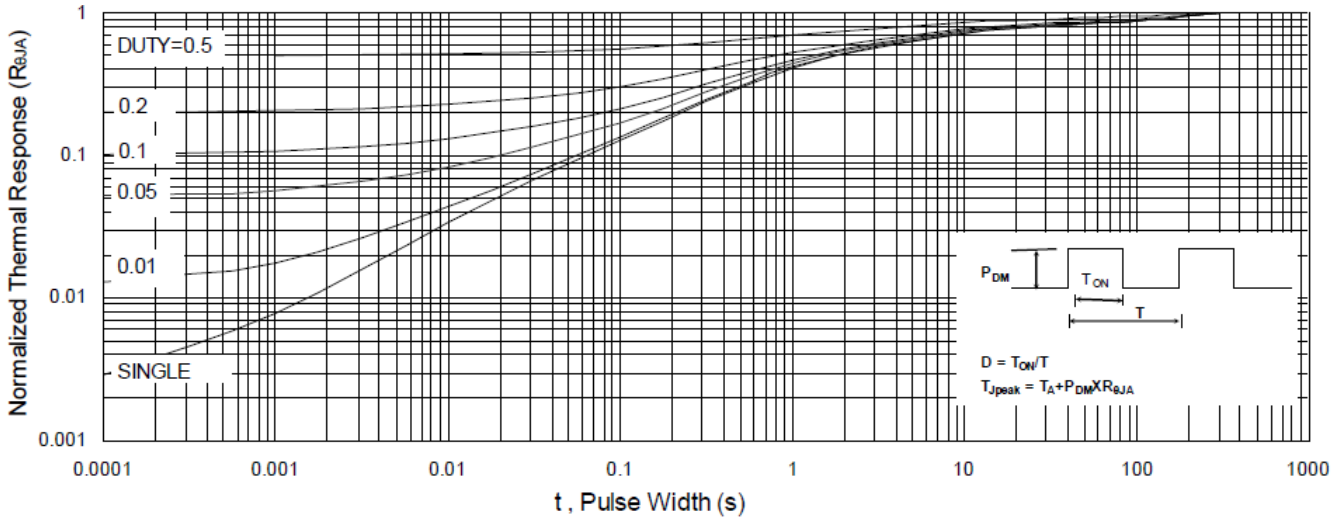


Fig.9 Normalized Maximum Transient Thermal Impedance

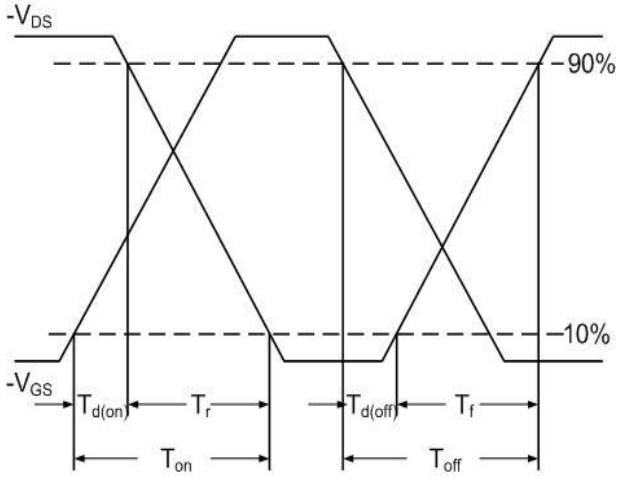


Fig.10 Switching Time Waveform

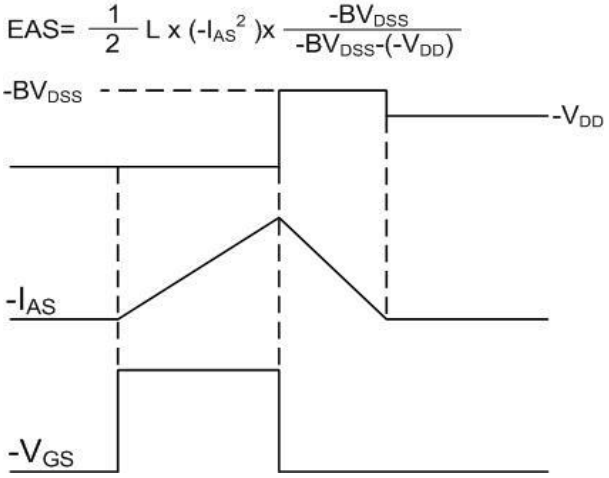
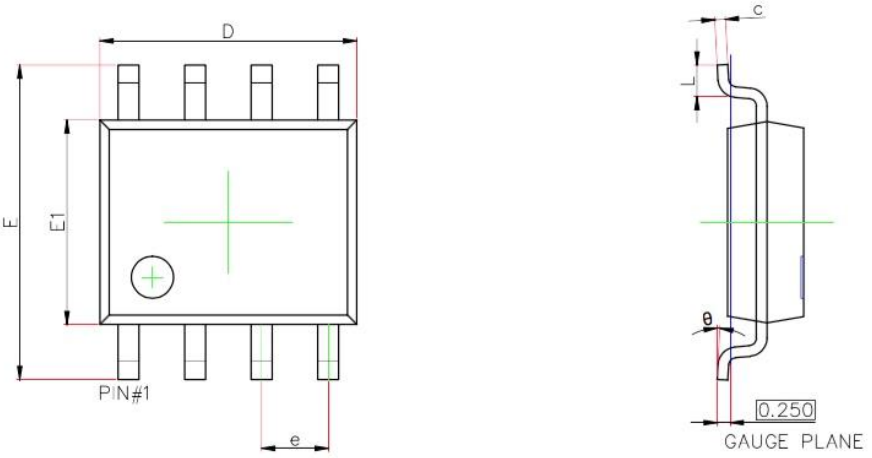


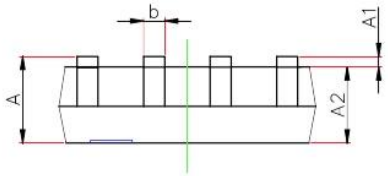
Fig.11 Unclamped Inductive Waveform

Ordering Information

Part Number	Package code	Packaging
HSM01P15	SOP-8	2500/Tape&Reel

SOP8PACKAGE OUTLINE DIMENSIONS





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 （BSC）		0.050 （BSC）	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°