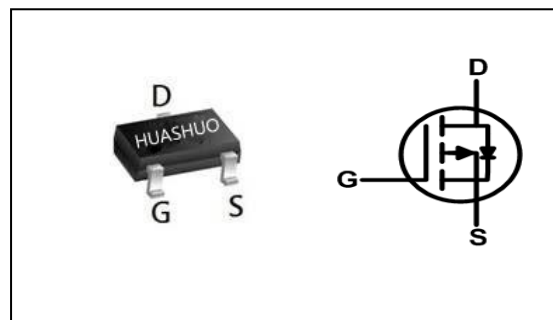


**P-Ch 150V Fast Switching MOSFETs**
**Applications**

- Load Switch.
  - Power Management.
  - LED Backlighting.
  - Networking application.
- 
- 100% EAS Guaranteed
  - Green Device Available
  - Super Low Gate Charge
  - Excellent CdV/dt effect decline
  - Advanced high cell density Trench technology

**Product Summary**

$V_{DS}$	-150	V
$R_{DS(ON),max}$	780	m $\Omega$
$I_D$	-2	A

**SOT-23L Pin Configuration**

**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-150	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1</sup>	-2	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1</sup>	-1.3	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	-7.5	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	12.5	mJ
$I_{AS}$	Avalanche Current	-5	A
$P_D@T_A=25^\circ C$	Total Power Dissipation <sup>4</sup>	2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	---	125	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	40	$^\circ C/W$

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-150	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-1A	---	650	780	mΩ
		V <sub>GS</sub> =-6V, I <sub>D</sub> =-0.5A	---	700	980	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250uA	-2.0	-3.0	-4.0	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	5.42	---	mV/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-120V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =-120V, V <sub>GS</sub> =0V, T <sub>J</sub> =150°C	---	---	30	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	---	12	---	Ω
Q <sub>g</sub>	Total Gate Charge (-4.5V)	V <sub>DS</sub> =-75V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-1A	---	10.5	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	3.2	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	2.3	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =-30V, V <sub>GS</sub> =-10V, R <sub>G</sub> =6Ω, I <sub>D</sub> =-1A	---	21	---	ns
T <sub>r</sub>	Rise Time		---	17	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	40	---	
T <sub>f</sub>	Fall Time		---	18	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-75V, V <sub>GS</sub> =0V, F=1MHz	---	715	---	pF
C <sub>oss</sub>	Output Capacitance		---	21	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	14	---	

**Diode Characteristics**

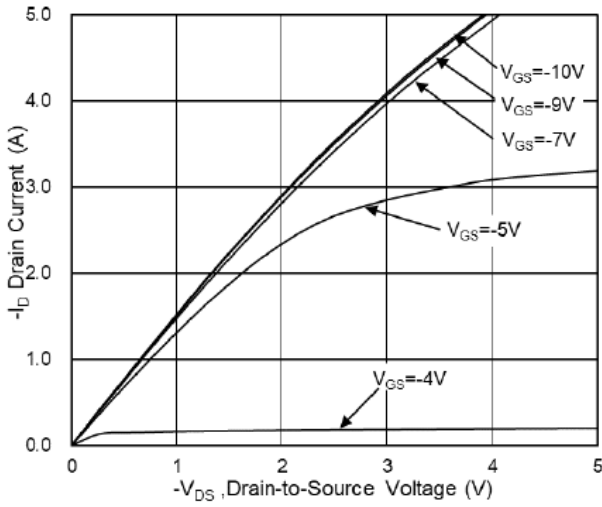
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1,6</sup>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	-1	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1A, T <sub>J</sub> =25°C	---	---	-1.2	V

Note :

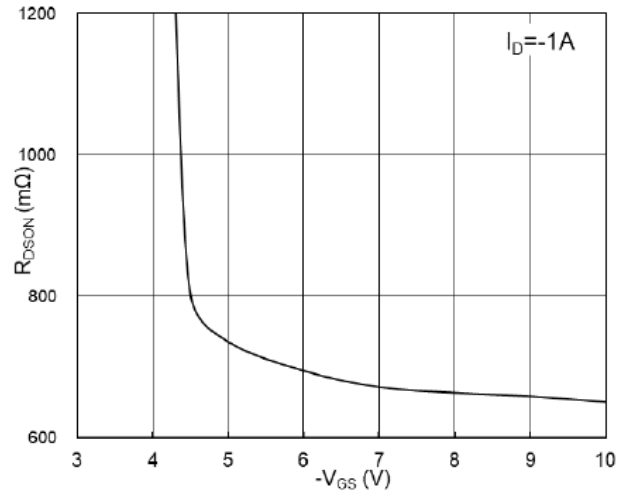
- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

**P-Ch 150V Fast Switching MOSFETs**

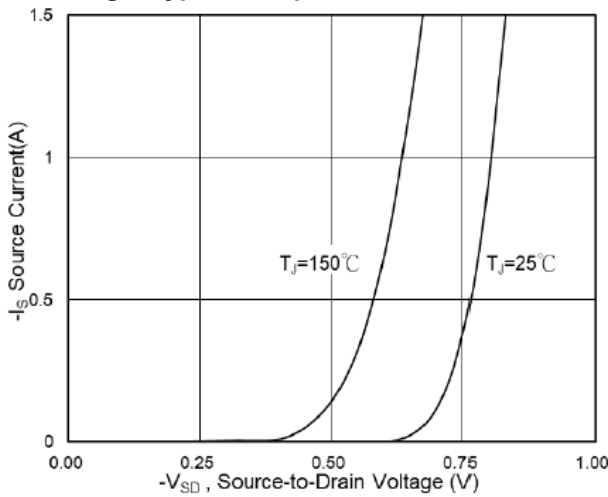
**P-Channel Typical Characteristics**



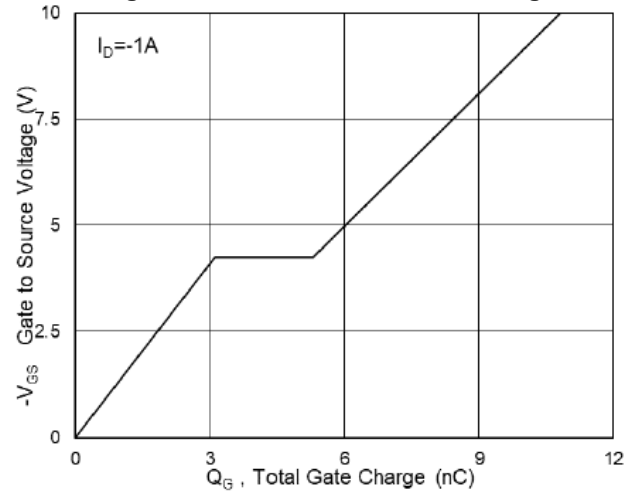
**Fig.1 Typical Output Characteristics**



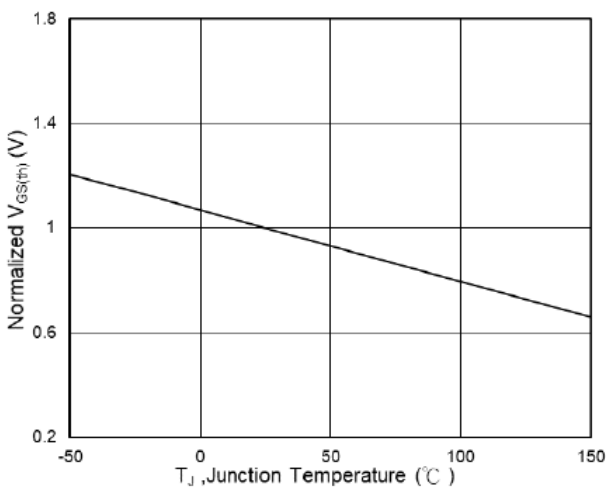
**Fig.2 On-Resistance vs. G-S Voltage**



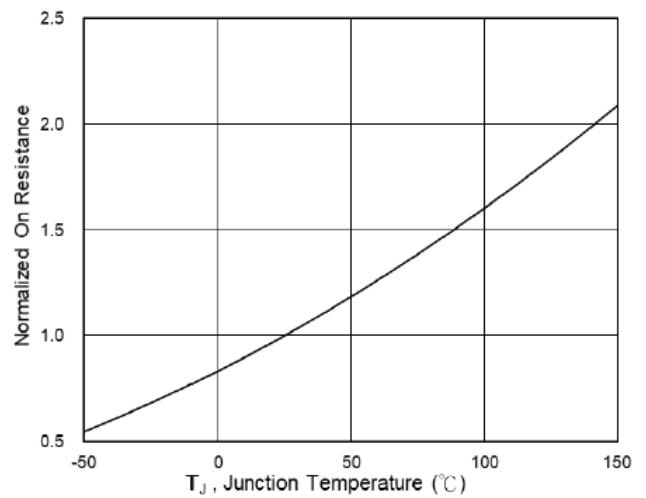
**Fig.3 Forward Characteristics Of Reverse**



**Fig.4 Gate-Charge Characteristics**

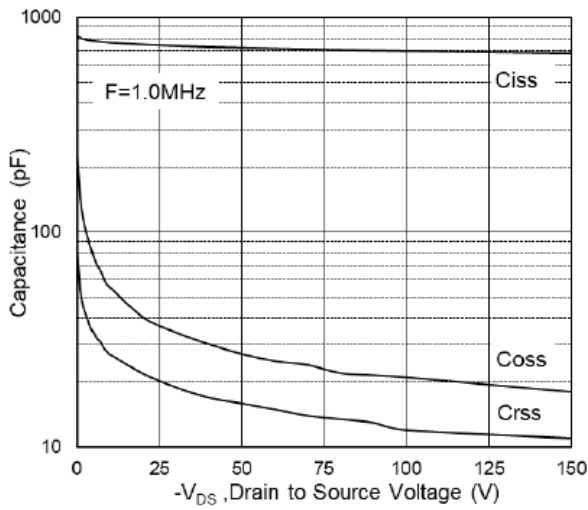


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

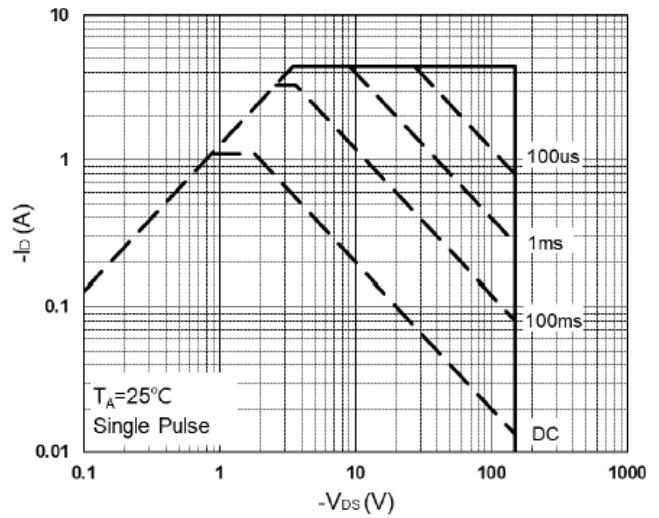


**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

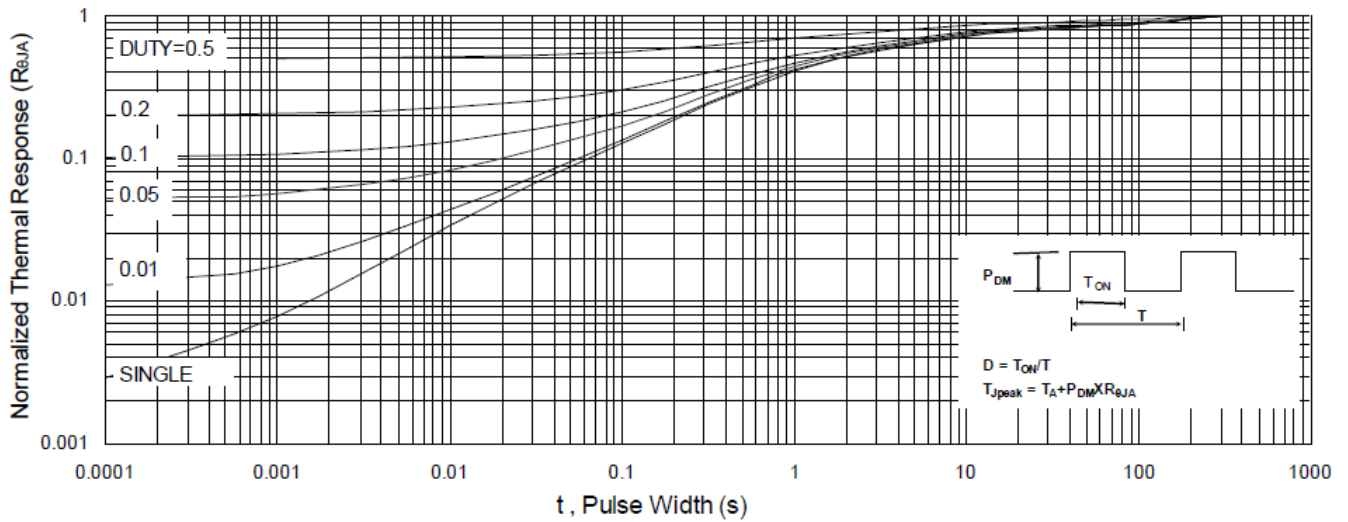
**P-Ch 150V Fast Switching MOSFETs**



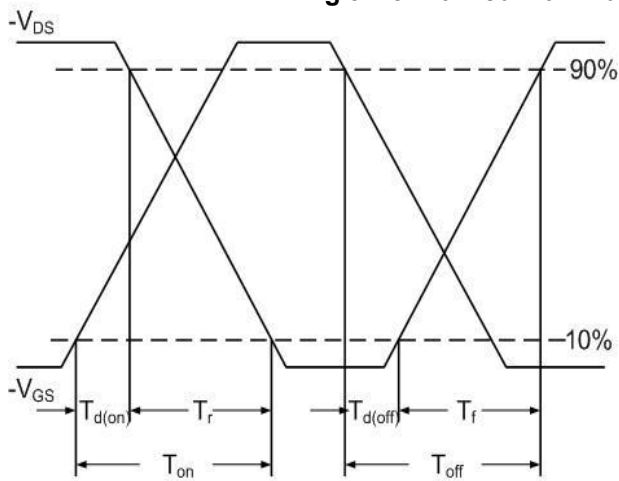
**Fig.7 Capacitance**



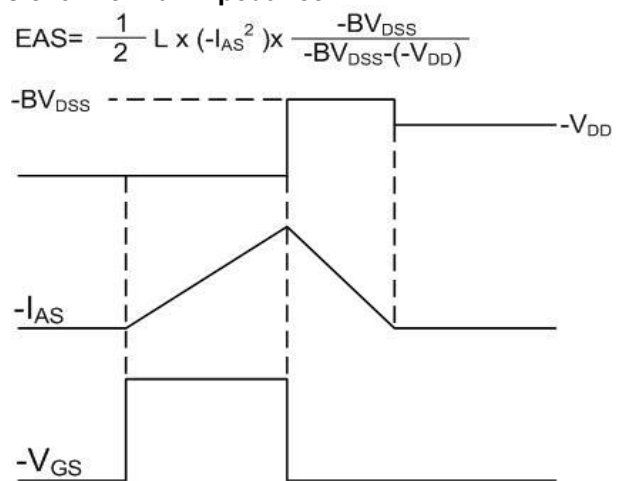
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



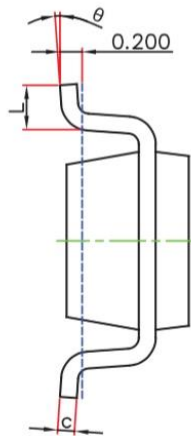
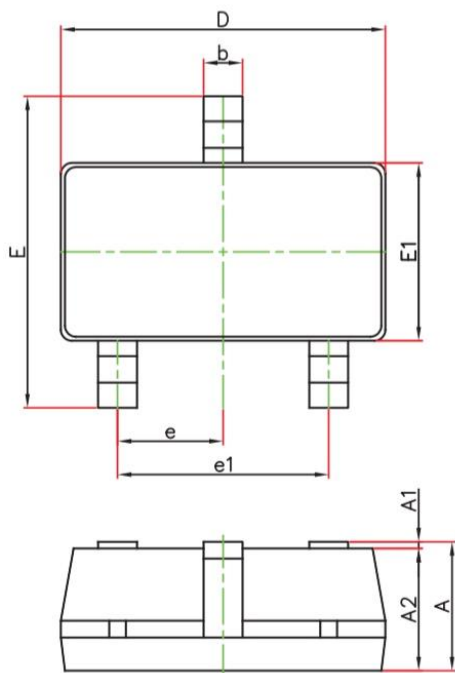
**Fig.10 Switching Time Waveform**



**Fig.11 Unclamped Inductive Waveform**

## Ordering Information

Part Number	Package code	Packaging
HSS2P15	SOT-23L	3000/Tape&Reel



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°