

### Description

The HSS2P10 is the high cell density trenched P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

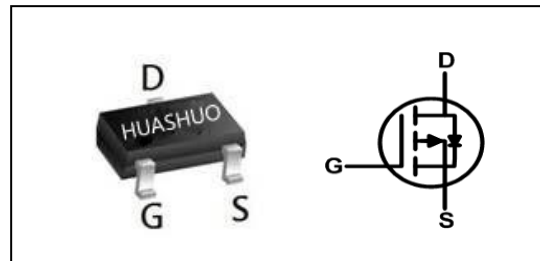
The HSS2P10 meets the RoHS and Green Product requirement with full function reliability approved.

- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available
- Advanced high cell density Trench technology

### Product Summary

$V_{DS}$	-100	V
$R_{DS(ON),typ}$	255	m $\Omega$
$I_D$	-2	A

### SOT23 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V_1$	-2	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS} @ -10V_1$	-1.5	A
$I_{DM}$	Pulsed Drain Current <sub>2</sub>	-8	A
$P_D@T_A=25^\circ C$	Total Power Dissipation <sub>3</sub>	1.4	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 <sub>1</sub>	---	125	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sub>1</sub>	---	80	$^\circ C/W$

**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	-100	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BVDSS Temperature Coefficient	Reference to 25°C, I <sub>D</sub> =-1mA	---	-0.0624	---	V/°C
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sub>2</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-2A	---	255	320	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A	---	280	340	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250uA	-1.0	-2.0	-3.0	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	4.5	---	mV/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-80V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	10	uA
		V <sub>DS</sub> =-80V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C	---	---	100	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
Q <sub>g</sub>	Total Gate Charge (-4.5V)	V <sub>DS</sub> =-50V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-2A	---	15	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	3.4	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	2.8	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =-50V, V <sub>GS</sub> =-10V, R <sub>G</sub> =3.3Ω I <sub>D</sub> =-1A	---	7.3	---	ns
T <sub>r</sub>	Rise Time		---	47	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	34	---	
T <sub>f</sub>	Fall Time		---	39	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-50V, V <sub>GS</sub> =0V, f=1MHz	---	900	---	pF
C <sub>oss</sub>	Output Capacitance		---	48	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	43	---	

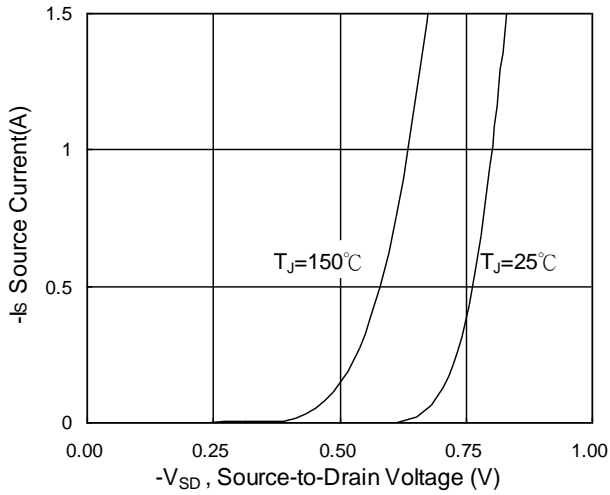
**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sub>1,4</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	-2	A
I <sub>SM</sub>	Pulsed Source Current <sub>2,4</sub>		---	---	-8	A
V <sub>SD</sub>	Diode Forward Voltage <sub>2</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1A, T <sub>J</sub> =25°C	---	---	-1.2	V

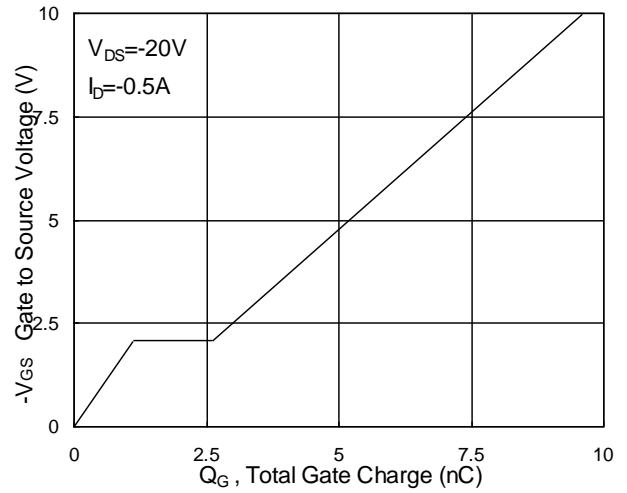
Note :

- 1.The data tested by surface mounted on a 1 inch<sub>2</sub> FR-4 board with 2OZ 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.

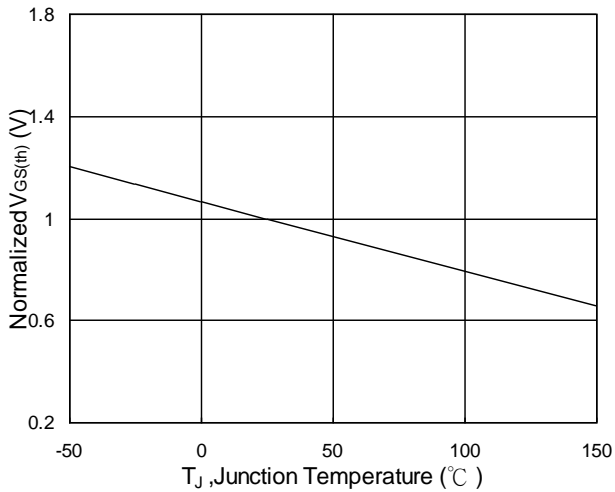
### Typical Characteristics



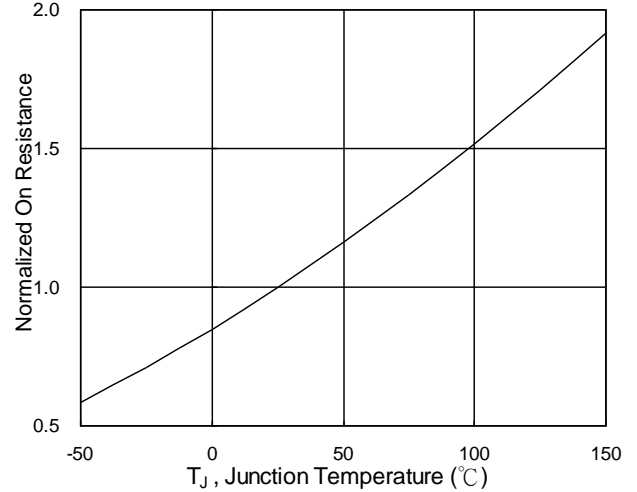
**Fig.1 Forward Characteristics Of Reverse**



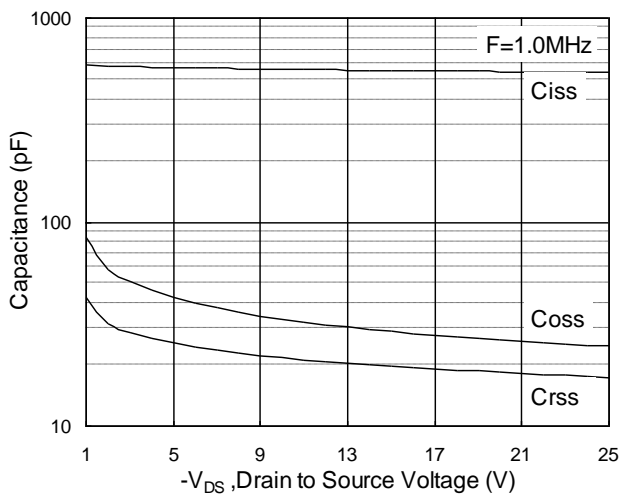
**Fig.2 Gate-Charge Characteristics**



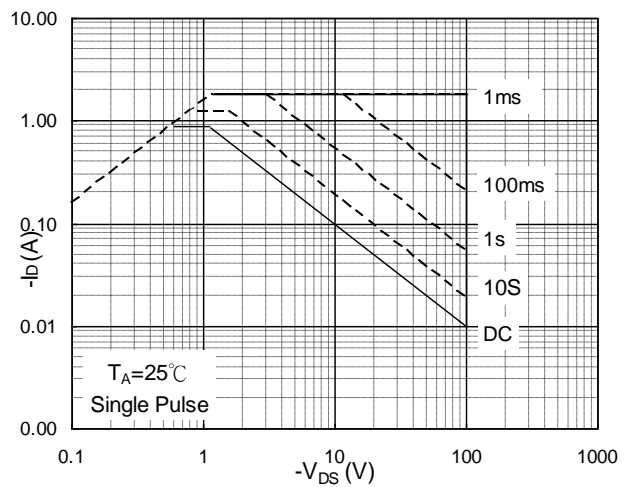
**Fig.3 Normalized  $V_{GS(th)}$  vs.  $T_J$**



**Fig.4 Normalized  $R_{DS(on)}$  vs.  $T_J$**



**Fig.5 Capacitance**



**Fig.6 Safe Operating Area**



P-Ch 100V Fast Switching MOSFETs

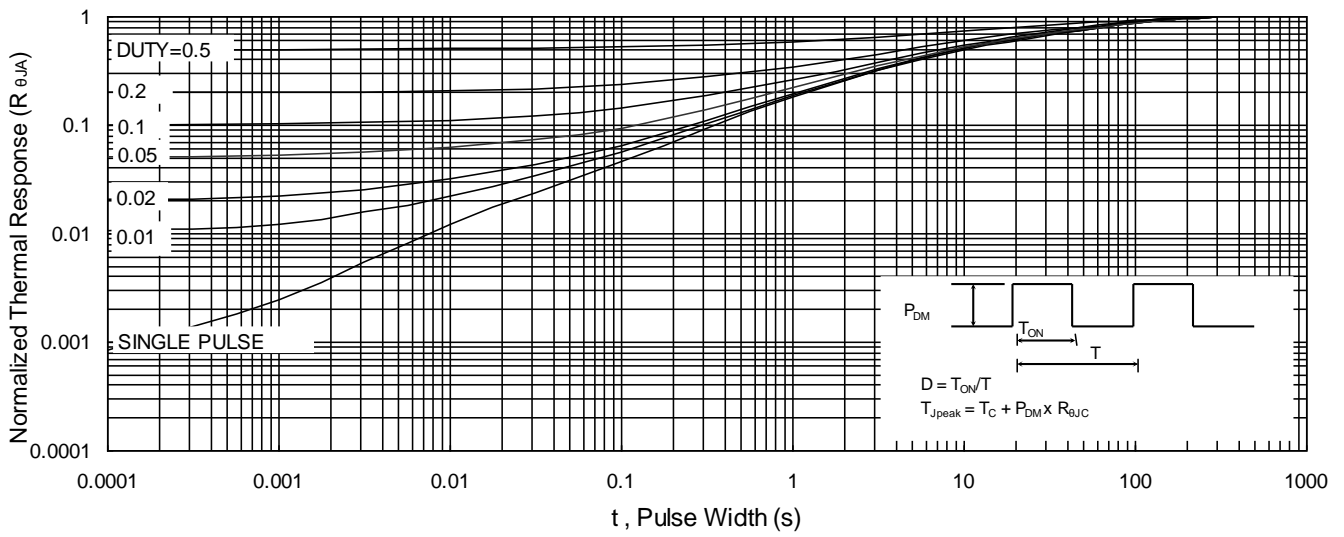


Fig.7 Normalized Maximum Transient Thermal Impedance

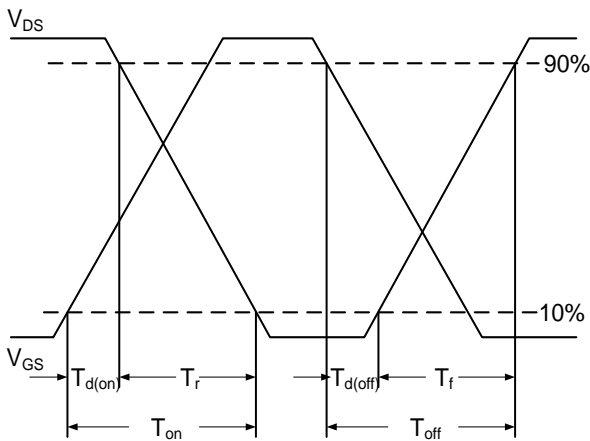


Fig.8 Switching Time Waveform

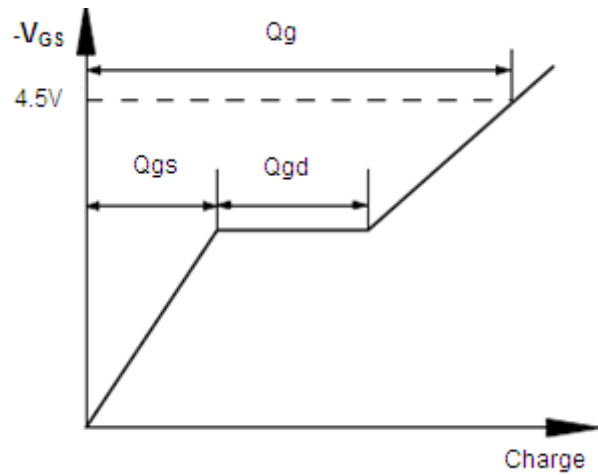
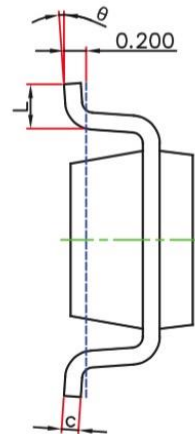
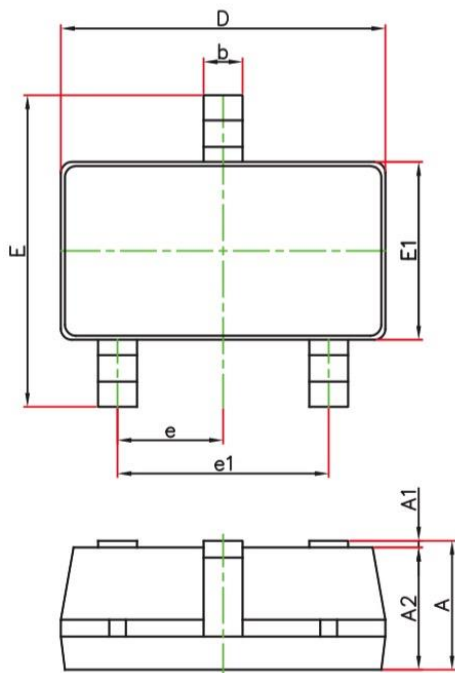


Fig.9 Gate Charge Waveform

## Ordering Information

Part Number	Package code	Packaging
HSS2P10	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
$\theta$	0°	8°	0°	8°