HSS2607

P-Ch 20V Fast Switching MOSFETs

Description

The HSS2607 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 HSS2607 meet the RoHS and Green Product requirement with full function reliability approved.

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

Product Summary

V_{DS}	-20	V
$R_{DS(ON),typ}$	25	mΩ
I_D	-5	A

SOT23 Pin Configuration
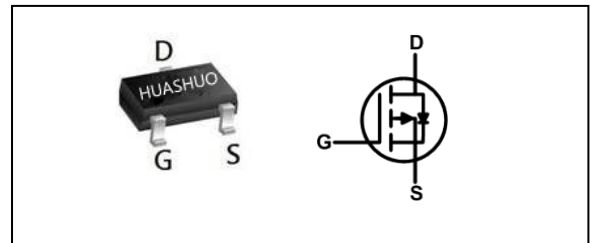
Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D@T_A=25°C$	Continuous Drain Current, V_{GS} @ -4.5V[1]	-5	A
$I_D@T_A=70°C$	Continuous Drain Current, V_{GS} @ -4.5V[1]	-3.8	A
I_{DM}	Pulsed Drain Current[2]	-18.8	A
$P_D@T_A=25°C$	Total Power Dissipation[3]	1	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	125	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	80	°C/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	-20	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.01	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance2	V_{GS}=-4.5V , I_D=-4A	---	25	32	mΩ
		V_{GS}=-2.5V , I_D=-2A	---	32	40	
		V_{GS}=-1.8V , I_D=-1.5A		42	55	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-0.3	-0.5	-1.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	2.96	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-16V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-16V , V_{GS}=0V , T_J=55℃	---	---	-5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-4A	---	21	---	S
Q_g	Total Gate Charge (-4.5V)	V_{DS}=-15V , V_{GS}=-4.5V , I_D=-4A	---	27.3	38.2	nC
Q_{gs}	Gate-Source Charge		---	3.6	5.0	
Q_{gd}	Gate-Drain Charge		---	6.5	9.1	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-10V , V_{GS}=-4.5V , R_G=3.3Ω I_D=-4A	---	9.2	18.4	ns
T_r	Rise Time		---	59	106	
$T_{d(off)}$	Turn-Off Delay Time		---	99	198	
T_f	Fall Time		---	71	142	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , f=1MHz	---	2280	3192	pF
C_{oss}	Output Capacitance		---	220	308	
C_{rss}	Reverse Transfer Capacitance		---	187	262	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current1,4	V_G=V_D=0V , Force Current	---	---	-4.7	A
I_{SM}	Pulsed Source Current2,4		---	---	-18.8	A
V_{SD}	Diode Forward Voltage2	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1	V
t_{rr}	Reverse Recovery Time	I_F=-4A , dI/dt=100A/μs , T_J=25℃	---	52	---	nS
Q_{rr}	Reverse Recovery Charge		---	28	---	nC

Note :
1.The data tested by surface mounted on a 1 inch2 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℃ junction temperature
4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.
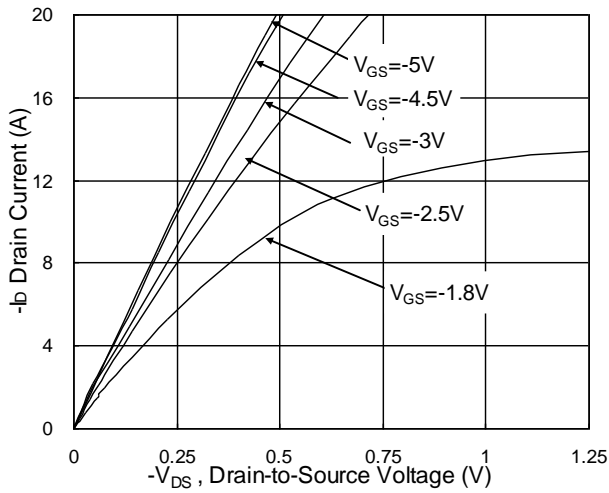
HUASHUO SEMICONDUCTOR
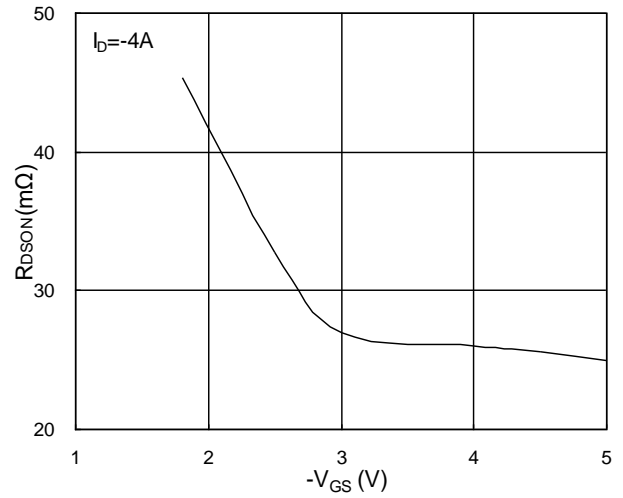

Fig.1 Typical Output Characteristics

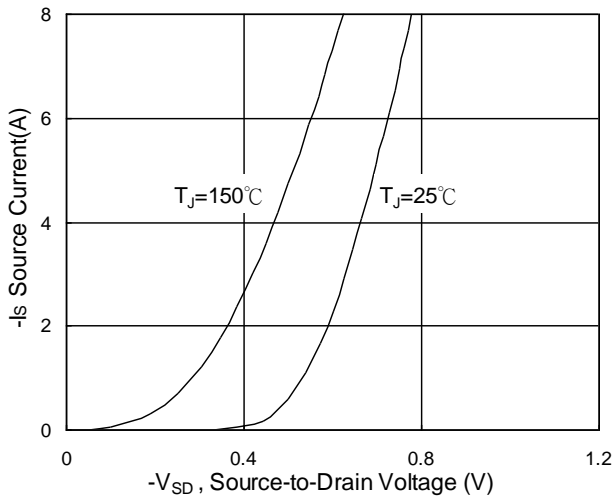**Fig.2 On-Resistance vs. Gate-Source**

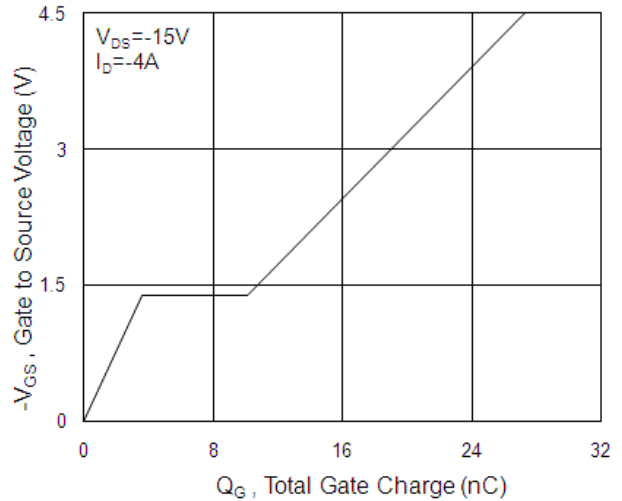
Fig.3 Forward Characteristics Of Reverse

Fig.4 Gate-Charge Characteristics
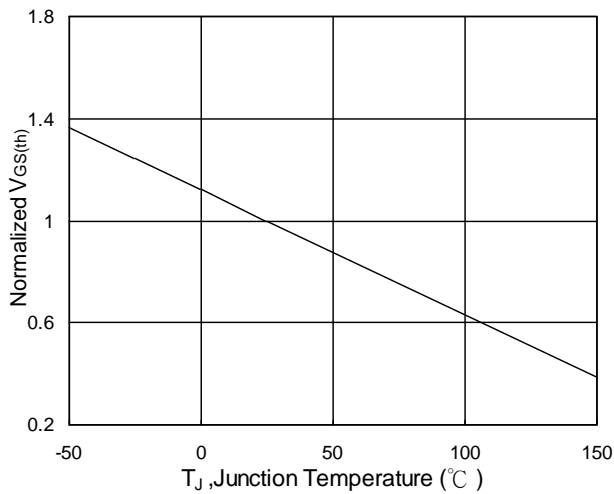
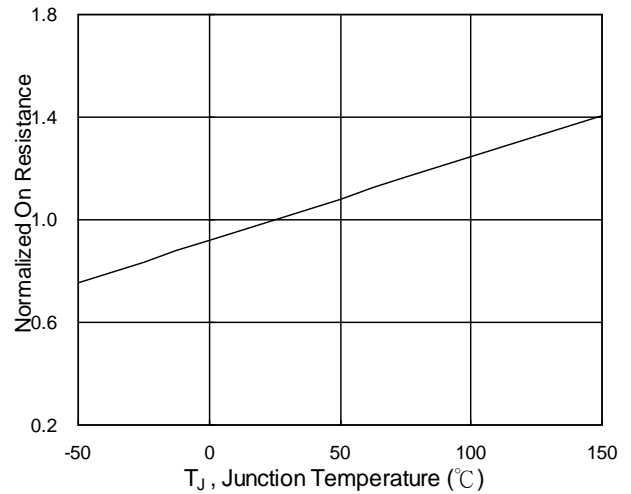**Fig.5 Normalized V$_{GS(th)}$ vs. T$_J$**

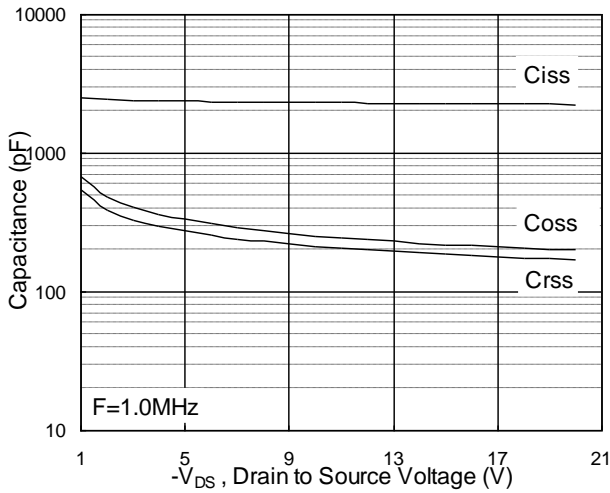**Fig.6 Normalized R$_{DSON}$ vs. T$_J$**

Fig.7 Capacitance
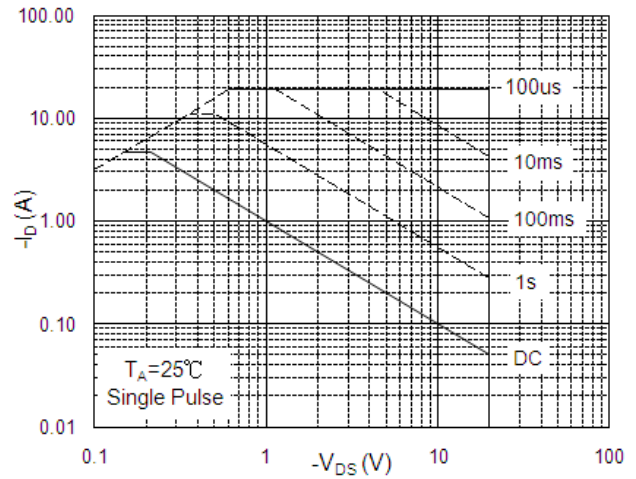
Fig.8 Safe Operating Area
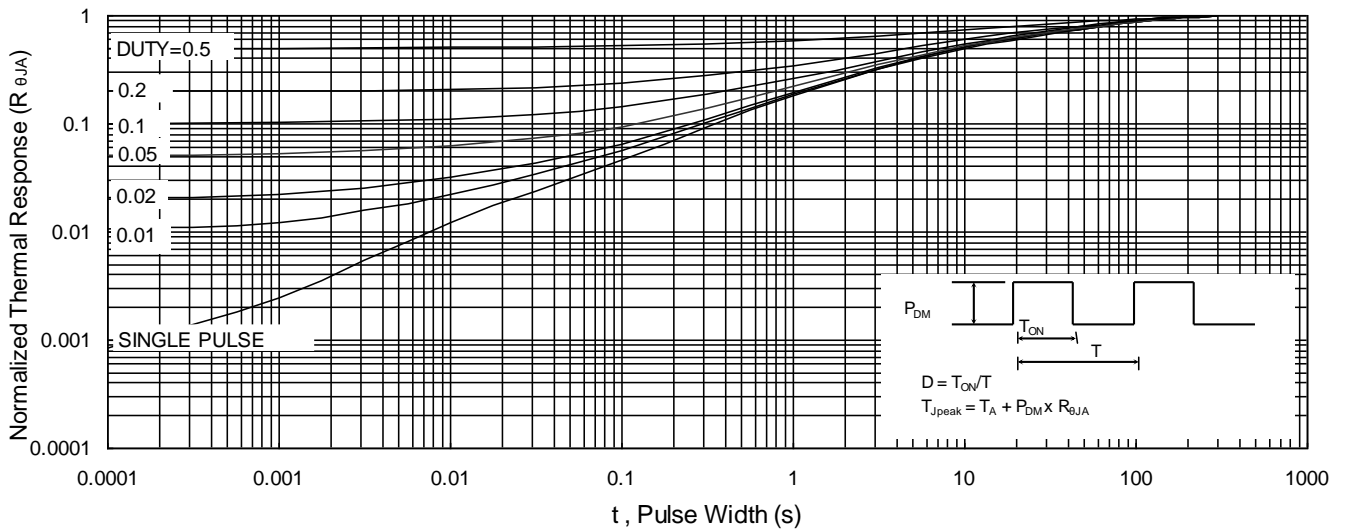
Fig.9 Normalized Maximum Transient Thermal Impedance

$D = T_{ON}/T$

$T_{Jpeak} = T_A + P_{DM} \times R_{\theta JA}$
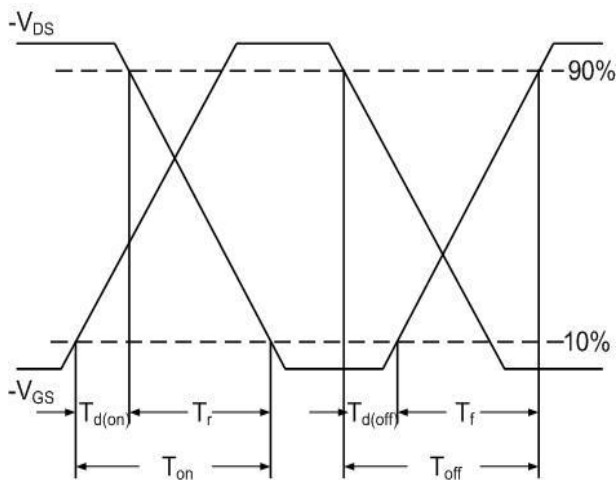
Fig.10 Switching Time Waveform
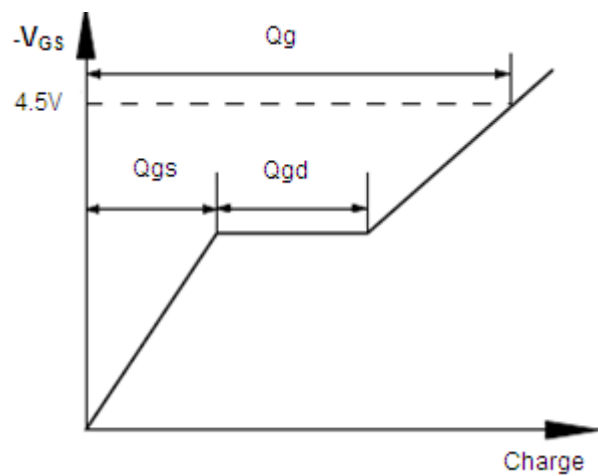
Fig.11 Gate Charge Waveform

Ordering Information

Part Number	Package code	Packaging
HSS2607	SOT-23L	3000/Tape&Reel
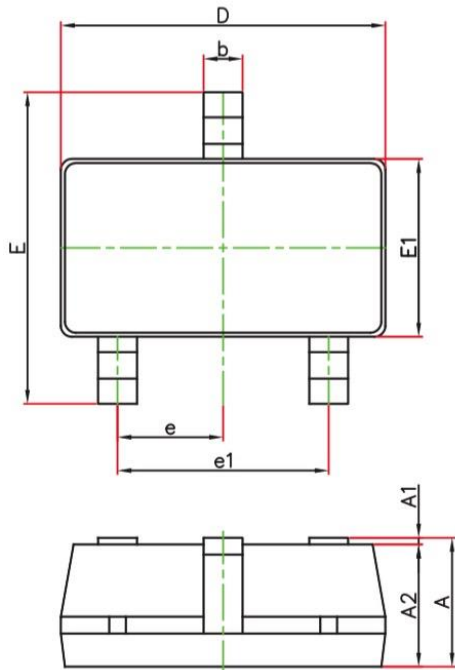
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		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°