

General Description

The HSS3401A is the high cell density trench P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The HSS3401A meet the RoHS and Green Product requirement with full function reliability approved.

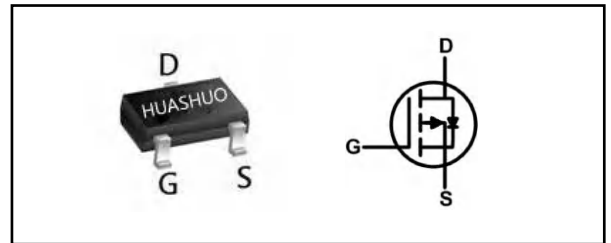
Product Summary

V_{DS}	-30	V
$R_{DS(ON),typ}$	53	m Ω
I_D	-4.0	A

Features

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

SOT-23S Pin Configurations



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D@T_A=25^{\circ}C$	Continuous Drain Current ¹	-4.0	A
$I_D@T_A=70^{\circ}C$	Continuous Drain Current ¹	-3.2	A
I_{DM}	Pulsed Drain Current ²	-12	A
$P_D@T_A=25^{\circ}C$	Total Power Dissipation ¹	0.72	W
$P_D@T_A=70^{\circ}C$	Total Power Dissipation ¹	0.46	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 ¹	---	175	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹ (t $\leq 5s$)	---	145	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	78	$^{\circ}C/W$

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board.

2.Pulse with Limited by maximum junction temperature.



Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ¹	V _{GS} =-4.5V, I _D =-4A	---	53	65	mΩ
		V _{GS} =-2.5V, I _D =-3A	---	73	85	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.5	-0.9	-1.3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V, T _J =25°C	---	---	-1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance ¹	V _{DS} =-5V, I _D =-4A	---	11	---	S
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-4A	---	8.5	---	nC
Q _{gs}	Gate-Source Charge		---	1.8	---	
Q _{gd}	Gate-Drain Charge		---	2.0	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GN} =-10V, R _G =6Ω, R _L =3.6Ω, I _D =-4A	---	7	---	ns
T _r	Rise Time		---	3	---	
T _{d(off)}	Turn-Off Delay Time		---	30	---	
T _f	Fall Time		---	12	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	776	---	pF
C _{oss}	Output Capacitance		---	70	---	
C _{rss}	Reverse Transfer Capacitance		---	61	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-4A, T _J =25°C	---	---	-1.2	V

Note :

1.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

2.Guaranteed by design, not subject to production testing



Typical Characteristics

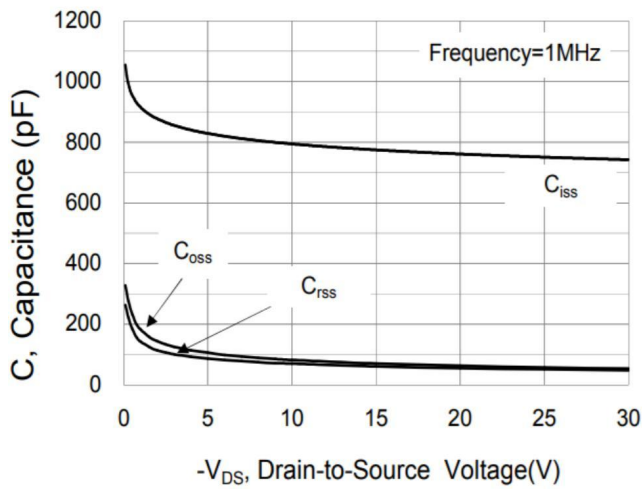


Fig.1 Capacitance Characteristic

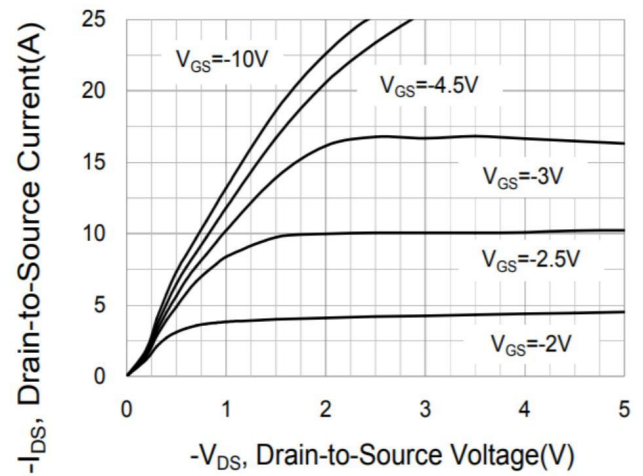


Fig.2 Output Characteristic

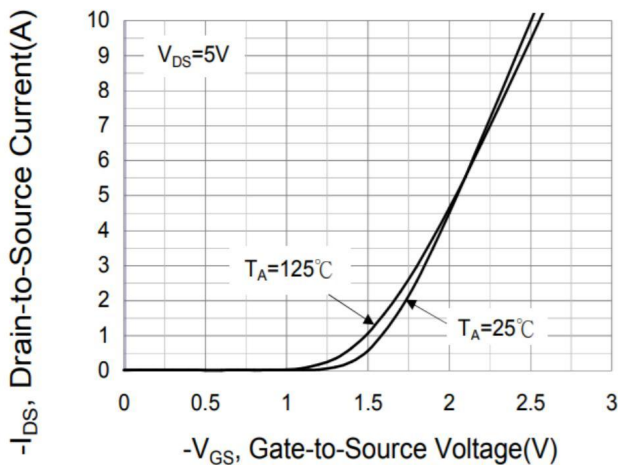


Fig.3 Transfer Characteristic

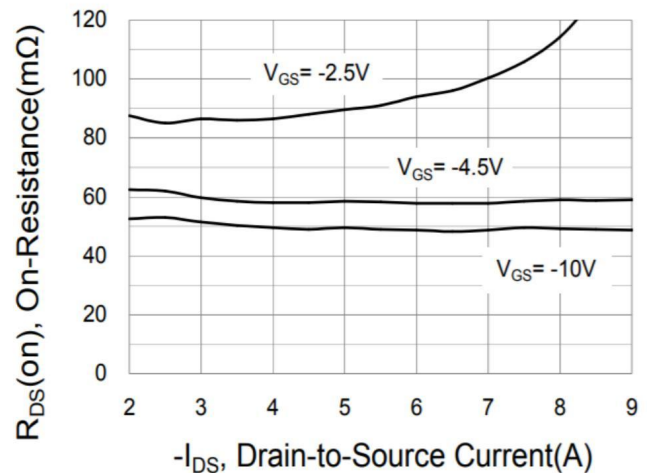


Fig.4 On-Resistance vs. Drain Current

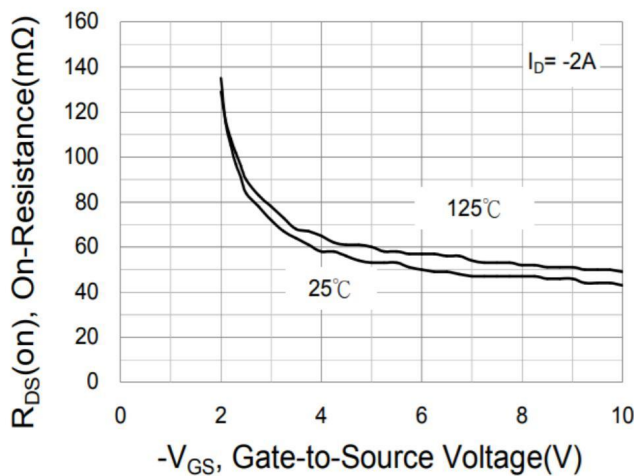


Fig.5 On-Resistance vs. VGS

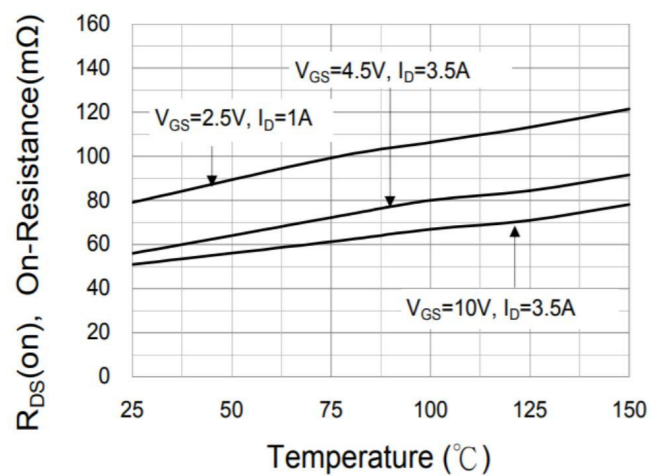


Fig.6 On-Resistance vs. Junction Temperature

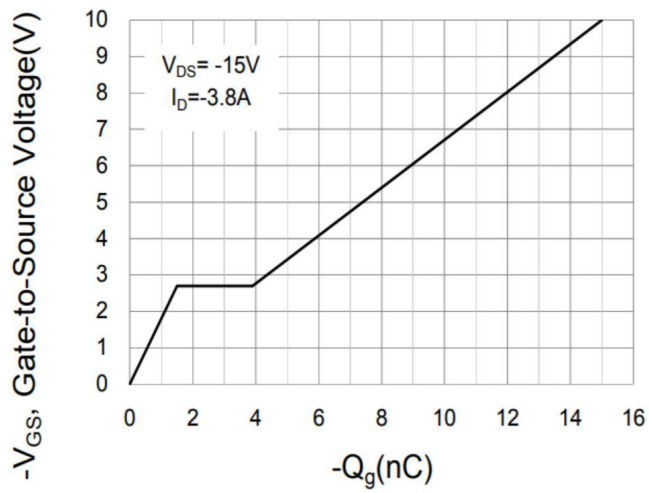


Fig.7 Gate-Charge Characteristic

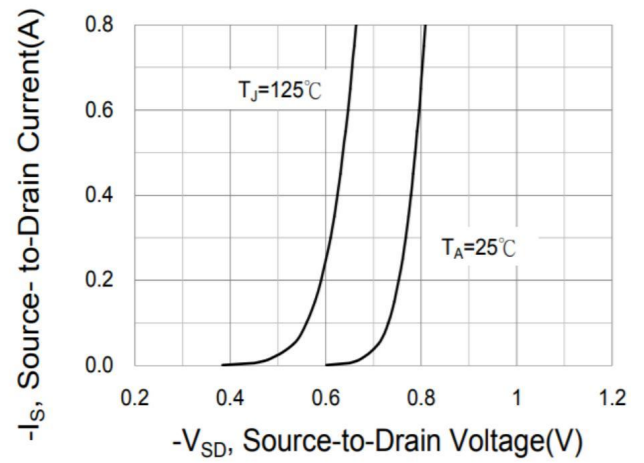


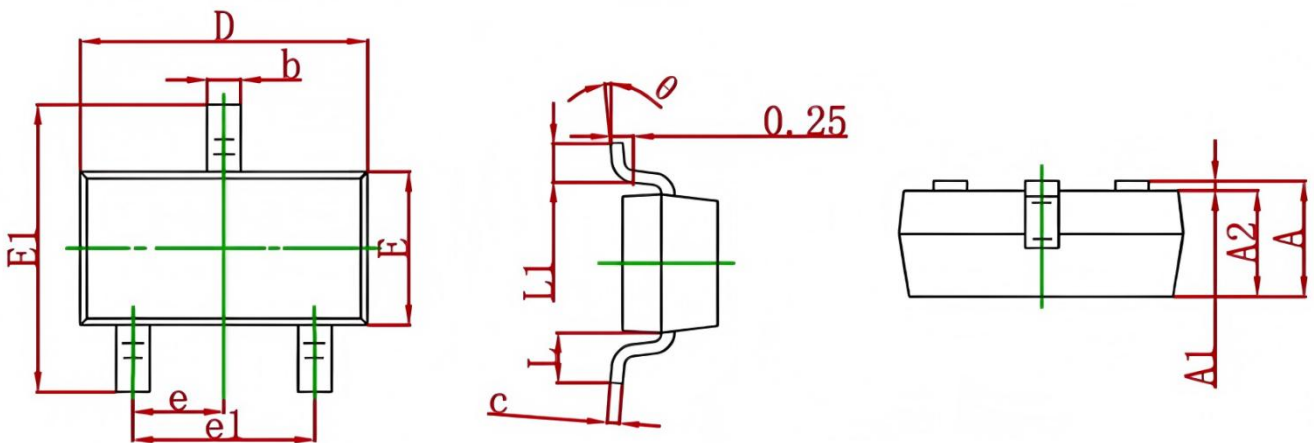
Fig.8 Body Diode Characteristic



Ordering Information

Part Number	Package code	Packaging
HSS3401A	SOT-23S	3000/Tape&Reel

SOT-23S Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



HSS3401A TOP Marking

