

Description

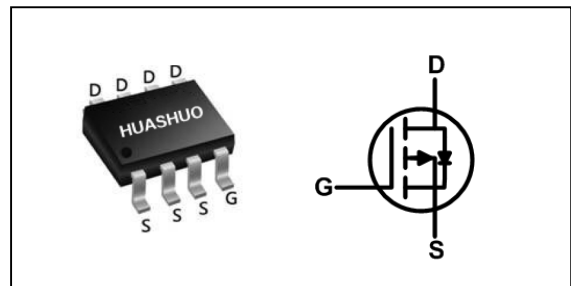
The HSM2627 is the high cell density trenched P-ch MOSFETs, which provide excellent R_{DS(ON)} and gate charge for most of the synchronous buck converter applications.

The HSM2627 meet the RoHS and Green Product requirement with full function reliability approved.

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

Product Summary

V _{DS}	-20	V
R _{DS(ON),max}	9	mΩ
I _D	-10.7	A

SOP8 Pin Configuration

Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		10s	Steady State	
V _{DS}	Drain-Source Voltage	-20		V
V _{GS}	Gate-Source Voltage	±8		V
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ -4.5V ¹	-14	-10.7	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ -4.5V ¹	-11.2	-8.6	A
I _{DM}	Pulsed Drain Current ²	-60		A
P _D @T _A =25°C	Total Power Dissipation ³	2.5	1.5	W
P _D @T _A =70°C	Total Power Dissipation ³	1.6	0.94	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 _{θJA}	Thermal Resistance Junction-Ambient ¹	---	85	°C/W
R _{θJA}	Thermal Resistance Junction-Ambient ¹ (t ≤ 10s)	---	50	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	24	°C/W



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	-20	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.012	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-4.5V, I _D =-10A	---	---	9	mΩ
		V _{GS} =-2.5V, I _D =-8A	---	---	11.5	
		V _{GS} =-1.8V, I _D =-6A	---	---	17	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.3	---	-1.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	2.94	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-20V, V _{GS} =0V, T _J =25°C	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±8V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-10A	---	43	---	S
Q _g	Total Gate Charge (-4.5V)	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-10A	---	63	---	nC
Q _{gs}	Gate-Source Charge		---	9.1	---	
Q _{gd}	Gate-Drain Charge		---	13	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-10V, V _{GS} =-4.5V, R _G =3.3Ω, I _D =-10A	---	15.8	---	ns
T _r	Rise Time		---	76.8	---	
T _{d(off)}	Turn-Off Delay Time		---	193	---	
T _f	Fall Time		---	186.4	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	5783	---	pF
C _{oss}	Output Capacitance		---	509	---	
C _{rss}	Reverse Transfer Capacitance		---	431	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	-10.7	A
I _{SM}	Pulsed Source Current ^{2,4}		---	---	-60	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-10A, dI/dt=100A/μs, T _J =25°C	---	27	---	nS
Q _{rr}	Reverse Recovery Charge		---	17.8	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² 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_D and I_{DM}, in real applications, should be limited by total power dissipation.



Typical Characteristics

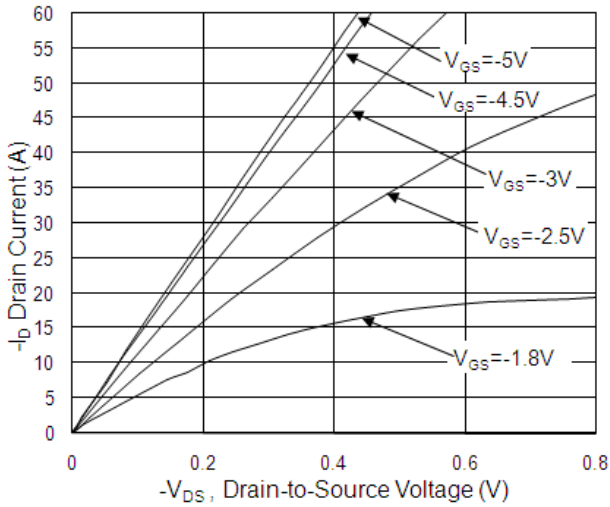


Fig.1 Typical Output Characteristics

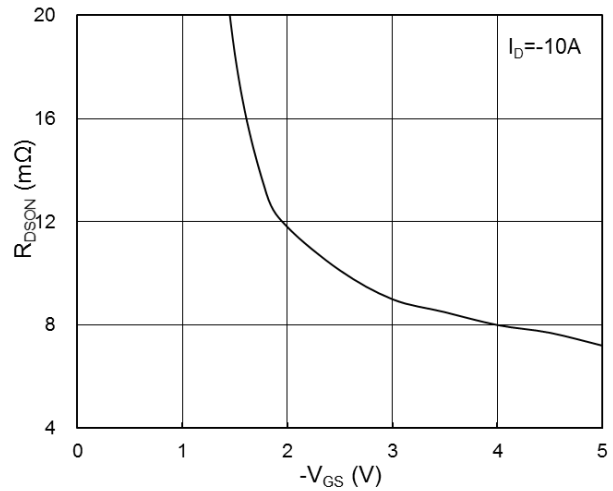


Fig.2 On-Resistance vs. G-S Voltage

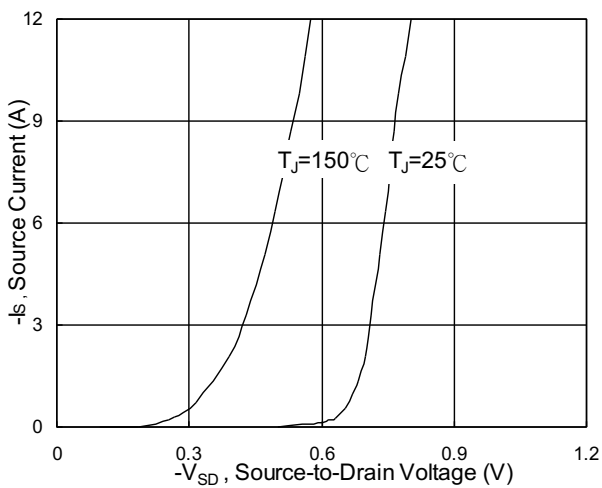


Fig.3 Source Drain Forward Characteristics

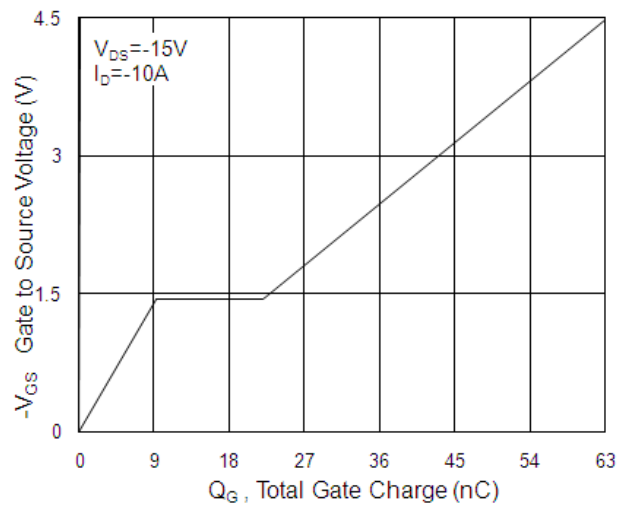


Fig.4 Gate-charge Characteristics

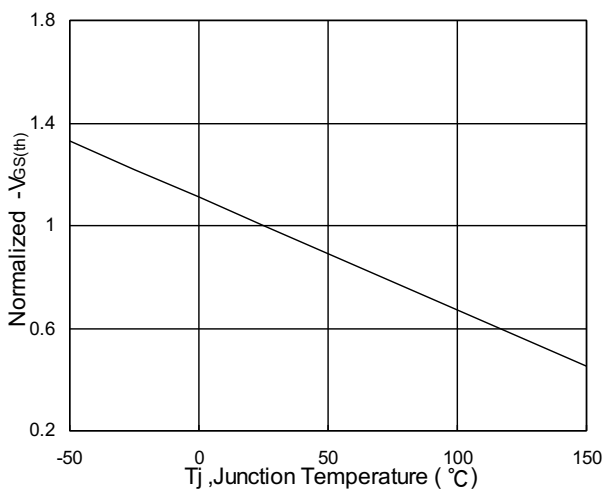


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

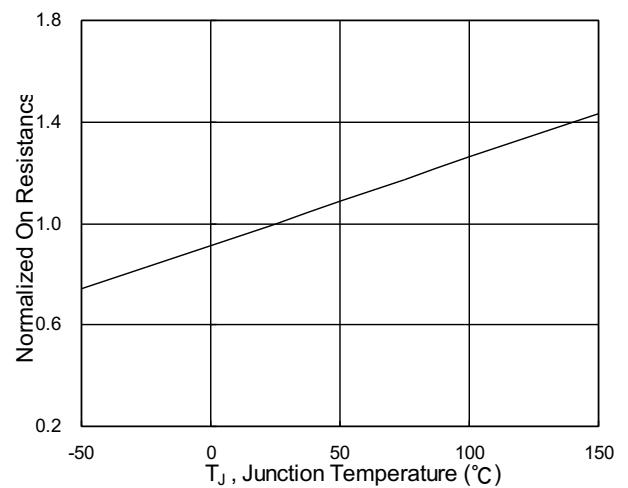


Fig.6 Normalized $R_{DS(on)}$ vs. T_J



P-Ch 20V Fast Switching MOSFETs

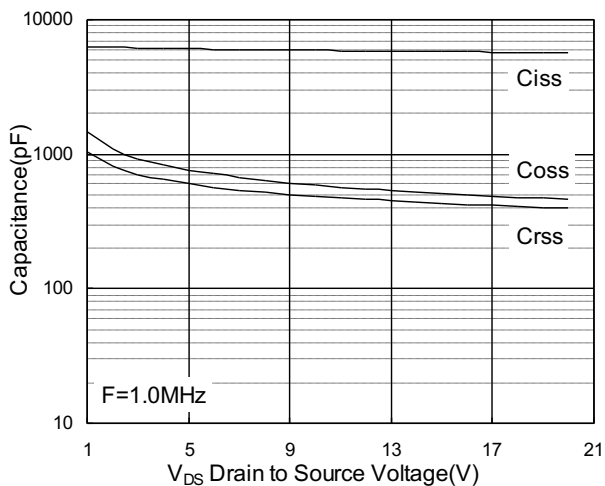


Fig.7 Capacitance

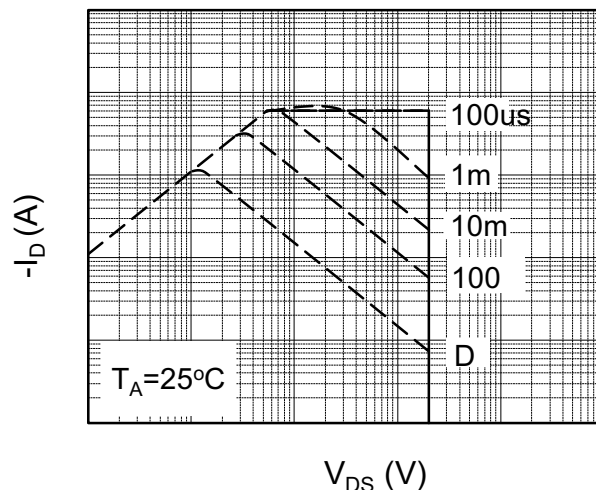


Fig.8 Safe Operating Area

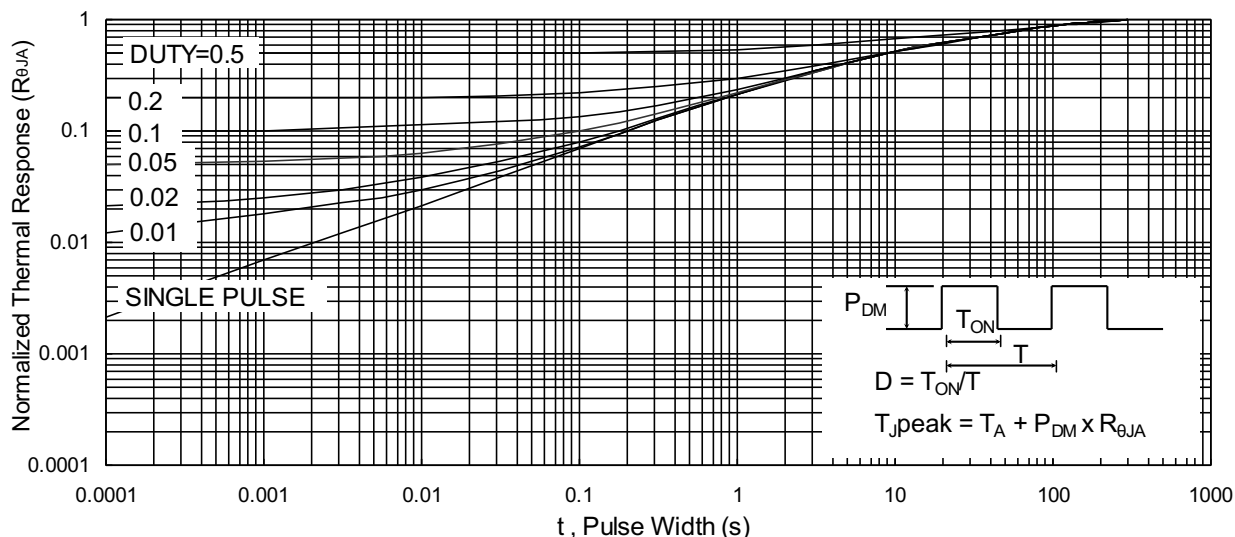


Fig.9 Normalized Maximum Transient Thermal Impedance

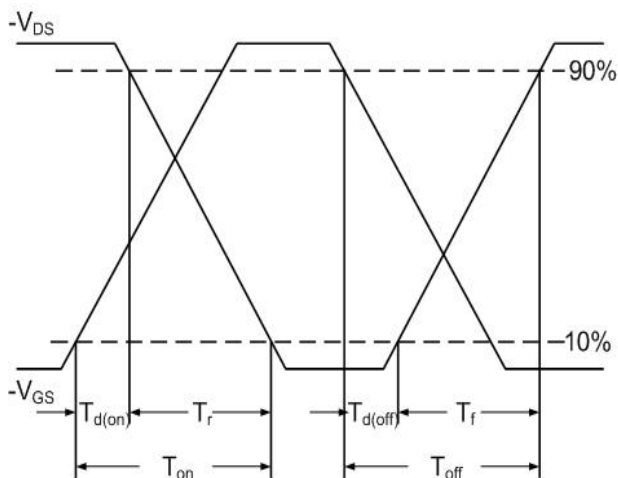


Fig.10 Switching Time Waveform

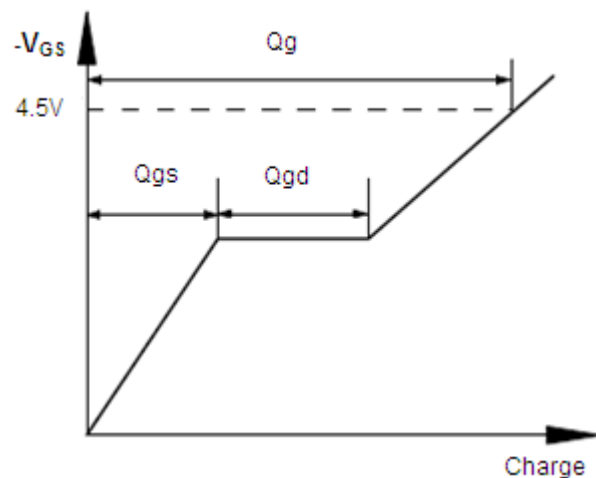


Fig.11 Gate Charge Waveform



Ordering Information

Part Number	Package code	Packaging
HSM2627	SOP-8	2500/Tape&Reel

