

Dual P-Ch 30V Fast Switching MOSFETs
Description

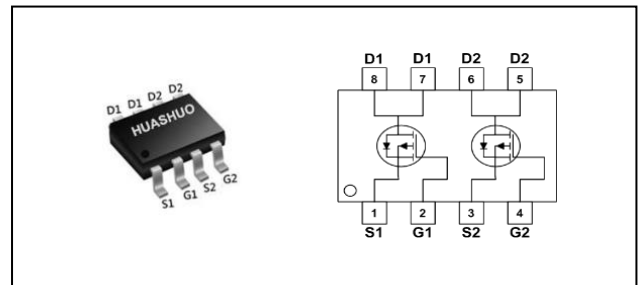
The HSM3305 is the high cell density trenched P-ch MOSFETs, which provide excellent RDS(ON) and gate charge for most of the synchronous buck converter applications.

The HSM3305 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

- 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}	-30	V
R _{DS(ON),typ}	42	mΩ
I _D	-5	A

SOP8 Pin Configuration

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _A =25°C	Continuous Drain Current, -V _{GS} @ -10V ¹	-5	A
I _D @T _A =70°C	Continuous Drain Current, -V _{GS} @ -10V ¹	-3.9	A
I _{DM}	Pulsed Drain Current ²	-20	A
EAS	Single Pulse Avalanche Energy ³	50	mJ
I _{AS}	Avalanche Current	-28	A
P _D @T _A =25°C	Total Power Dissipation ⁴	1.5	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	---	78	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	25	°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	-30	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.022	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-4A	---	42	60	mΩ
		V _{GS} =-4.5V, I _D =-2A	---	62	90	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	1.5	-3	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.6	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-24V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-24V, V _{GS} =0V, T _J =55°C	---	---	-5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-15V, I _D =-5.3A	---	11	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	13	---	Ω
Q _g	Total Gate Charge (-4.5V)	V _{DS} =-15V, V _{GS} =-10V, I _D =-3A	---	17	---	nC
Q _{gs}	Gate-Source Charge		---	3	---	
Q _{gd}	Gate-Drain Charge		---	3.5	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GS} =-10V, R _L =5Ω, I _D =-1A, R _{GEN} =6Ω	---	10	---	ns
T _r	Rise Time		---	6	---	
T _{d(off)}	Turn-Off Delay Time		---	46	---	
T _f	Fall Time		---	23	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	840	---	pF
C _{oss}	Output Capacitance		---	175	---	
C _{rss}	Reverse Transfer Capacitance		---	125	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	-5	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	-20	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 =-6A, dI/dt=100A/μs, T _J =25°C	---	16.3	---	nS
Q _{rr}	Reverse Recovery Charge		---	5.9	---	nC

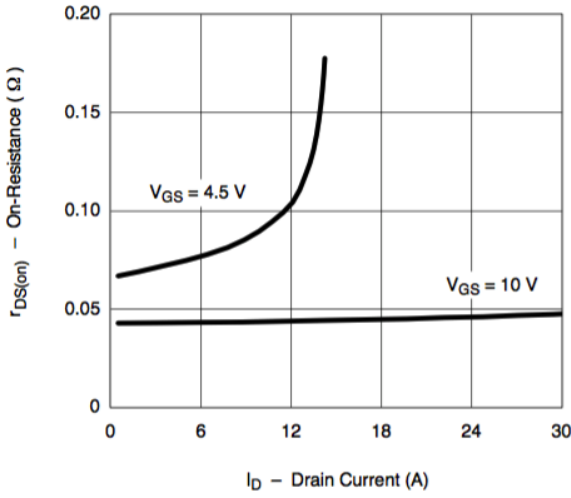
Note :

- 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 EAS data shows Max. rating. The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-20A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

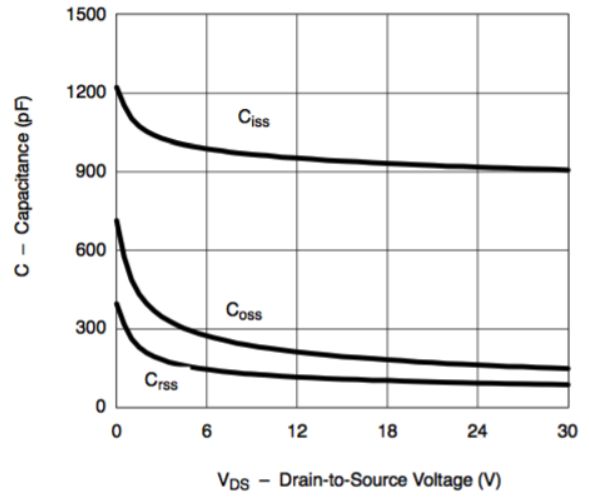


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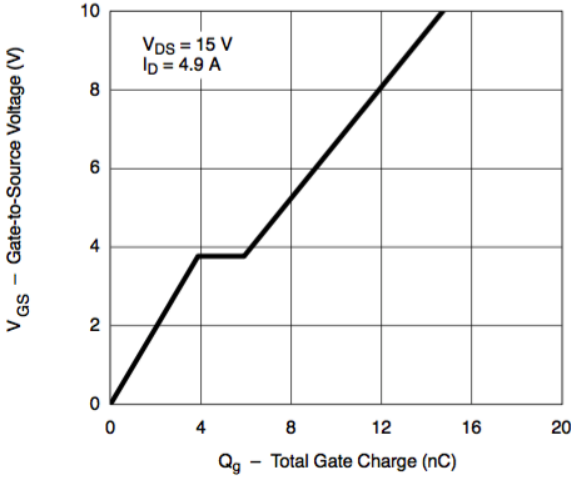
On-Resistance vs. Drain Current



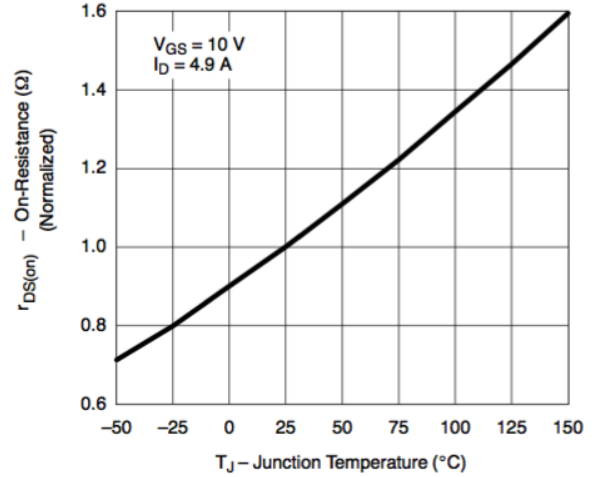
Capacitance



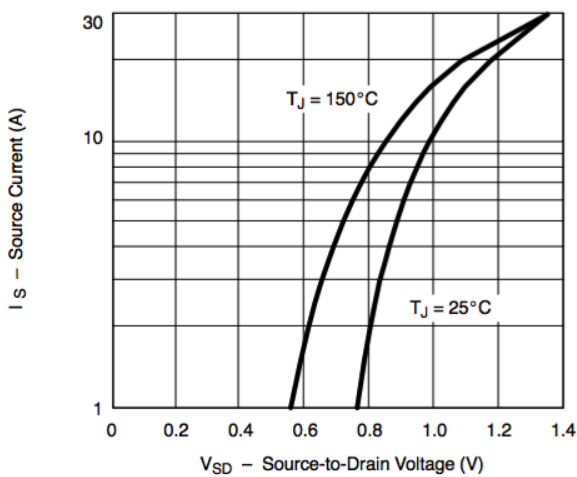
Gate Charge



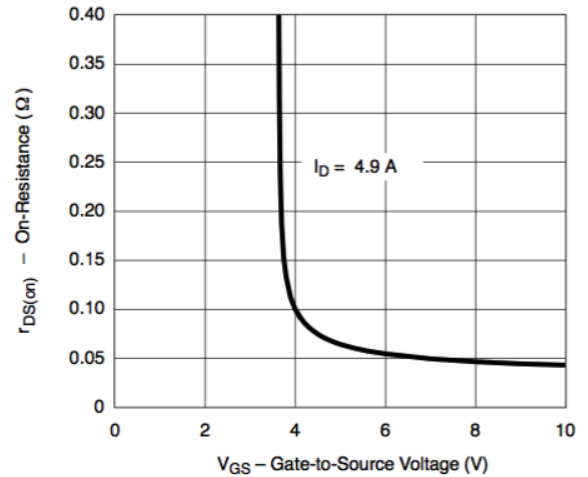
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



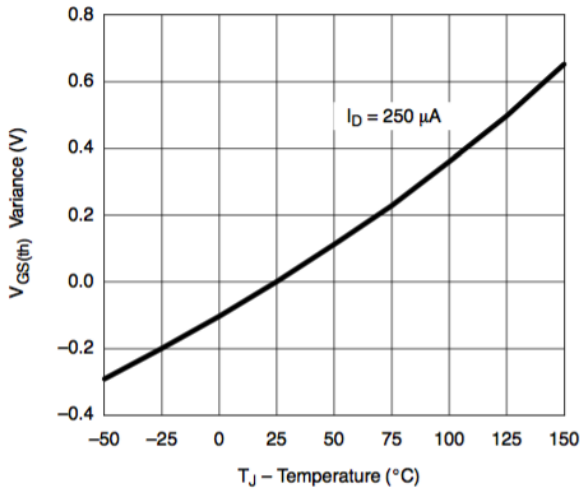
On-Resistance vs. Gate-to-Source Voltage



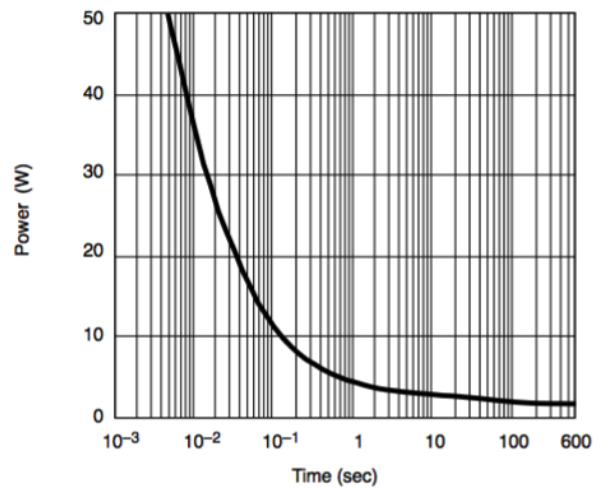


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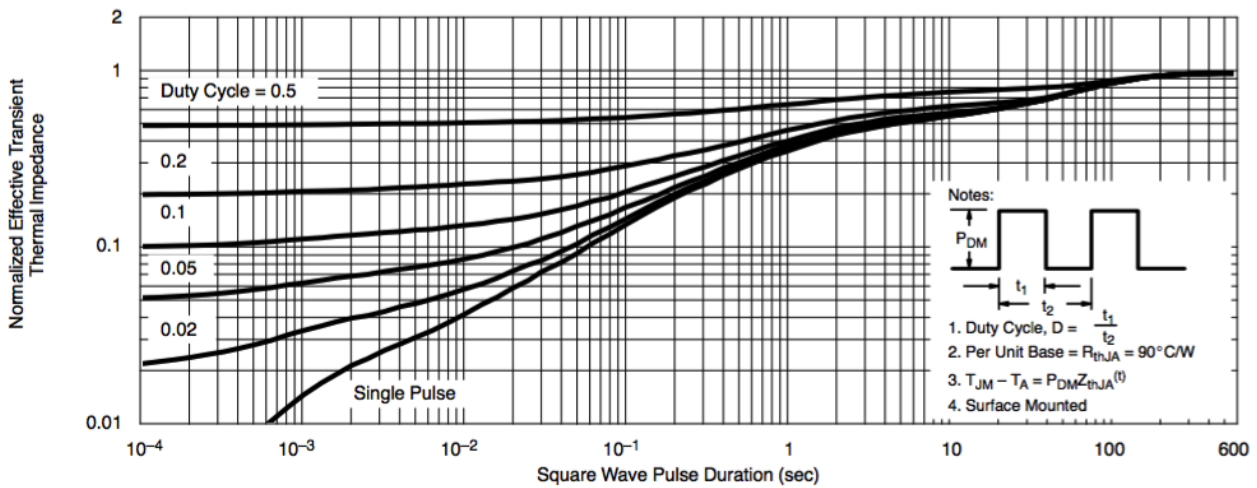
Threshold Voltage



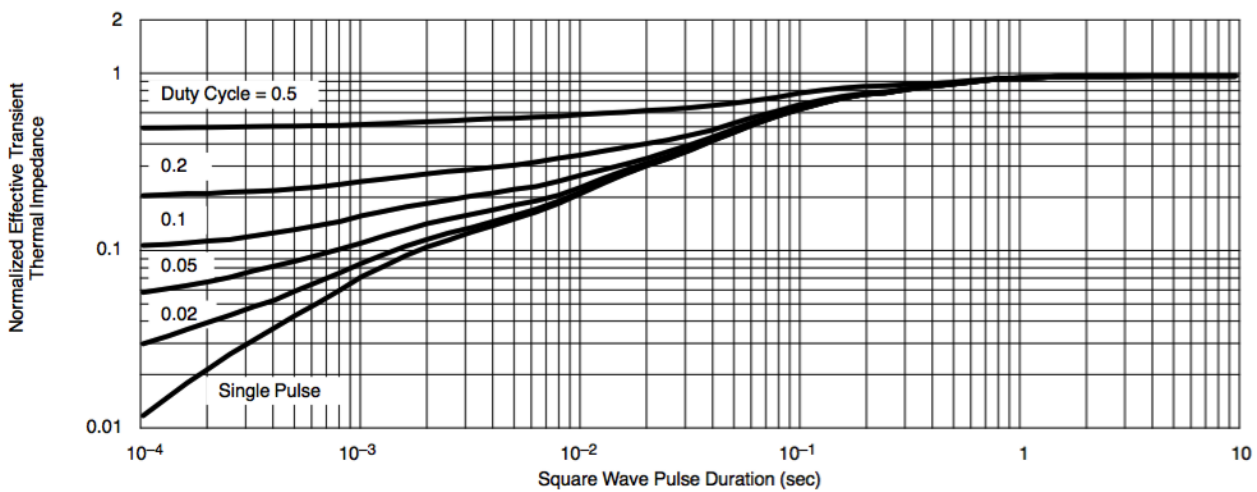
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



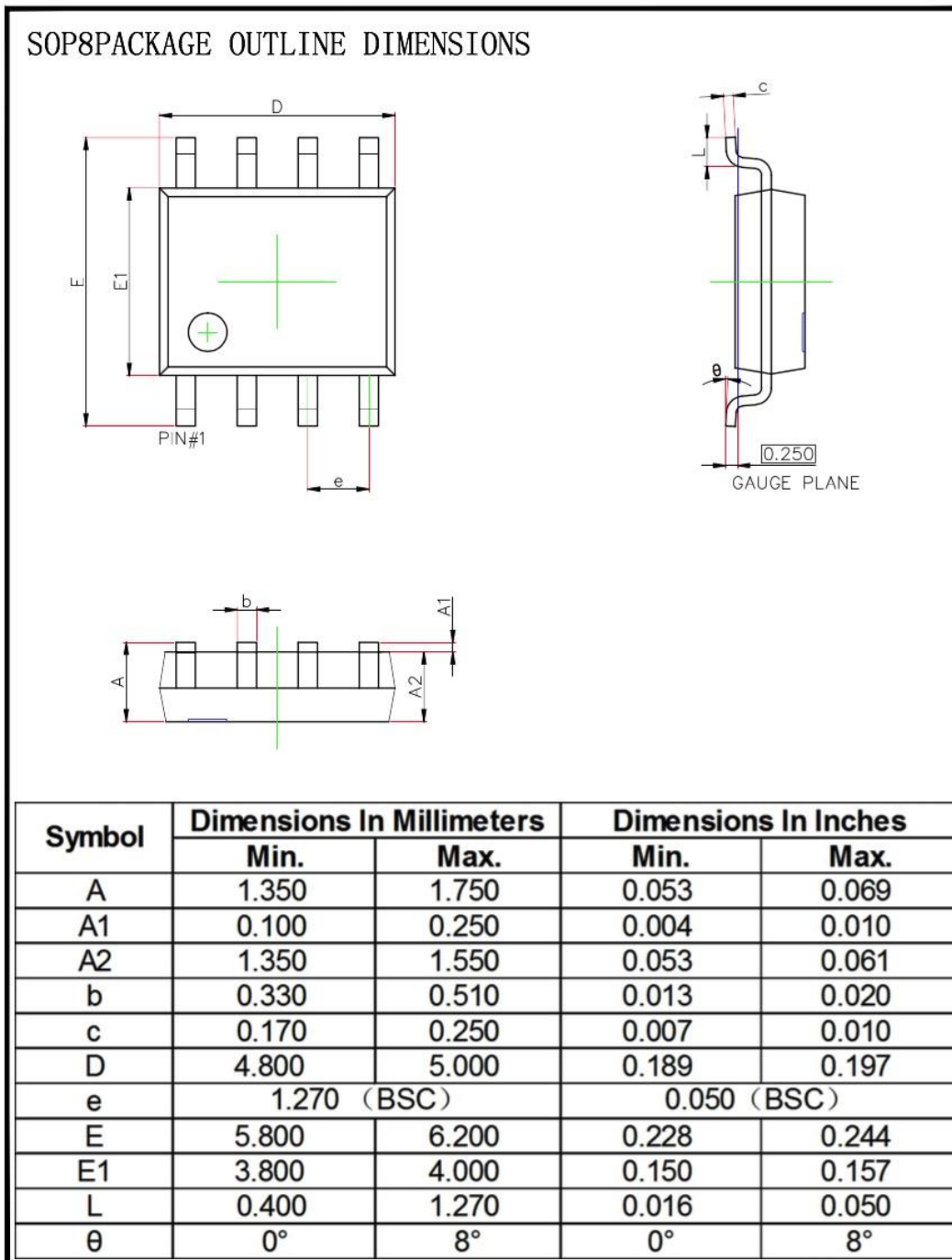
Normalized Thermal Transient Impedance, Junction-to-Foot





Ordering Information

Part Number	Package code	Packaging
HSM3305	SOP-8	4000/Tape&Reel



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