Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

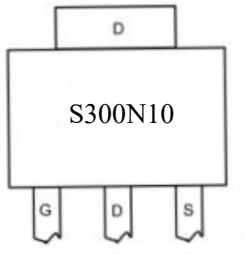
Bvdss	Rdson	ID
100V	2mΩ	300A

Application

RoHS

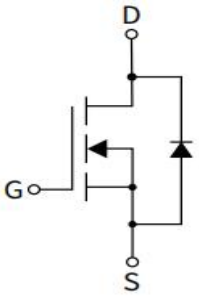
- DC-DC Converters
- Synchronous-rectification applications
- Power management functions

Package



Marking and pin assignment

TO247 top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
S300N10	S300N10H	TO247	50

Absolute Maximum Ratings (T_C=25℃unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current,V_{GS}@10V[1]	T_C=25°C	I_D	300	A
	T_C=100°C		163	A
Pulsed Drain Current[2]		I_{DM}	1028	A
Single Pulse Avalanche Energy[3]		EAS	583	mJ
Power Dissipation	T_C= 25℃	P_D	379	W
Operating junction and storage temperature		T_J, T_{STG}	-55 ~ 150	℃
Maximum Temperature for Soldering		T_L	-	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	0.33	℃/W
Thermal Resistance, Junction -to-Ambient[1]	$R_{\theta JA}$	59	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HLS300N10H	TO247	1	2	3	Tube

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	100	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
Gate to Source Forward Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2	3	4	V
Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V,I_D=20A	-	2	2.6	mΩ
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V, f=1MHz	-	9030	-	pF
Output Capacitance	C_{oss}		-	1505	-	
Reverse Transfer Capacitance	C_{rss}		-	40	-	
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=50V,I_D=20A	-	150	-	nC
Gate-Source Charge	Q_{gs}		-	32.5	-	
Gate-Drain Charge	Q_{gd}		-	49	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=50V, R_G=3Ω,I_D=20A	-	27	-	ns
Rise Time	t_r		-	78.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	110	-	
Fall Time	t_f		-	86	-	
Diode Forward Current[1,4]	I_S	V_G=V_D=0V,Force Current	-	-	300	A
Pulsed Source Current[2,4]	I_{SM}		-	-	1000	
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V	-	-	-1.2	V
Reverse Recovery time	T_{rr}	I_F=20A,dI/dt=100A/μs	-	90	-	ns
Reverse Recovery Charge	Q_{rr}		-	175	-	nC
Forward Transconductance	gfs	V_{DS}=10V,I_D=20A	-	76	-	S
Gate Resistance	R_g	V_{DS}=0V,V_{GS}=0V,f=1MHz	-	2.3	-	Ω

Note :

1.The data tested by surface mounted on a 1 inch^2 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 T_J=25℃,V_{DD}=50V,V_{GS}=10V, L=0.4mH, IAS=54A.

4.The power dissipation is limited by 150℃ 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.

Typical Performance Characteristics

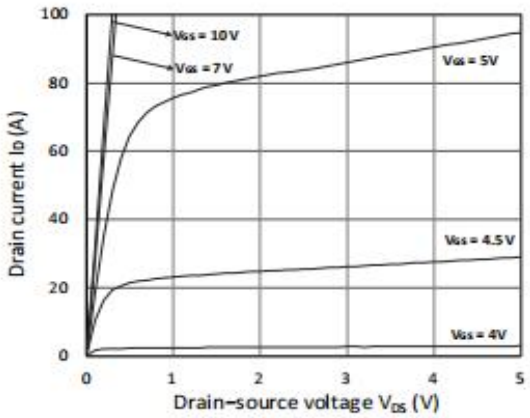


Figure 1. Output Characteristics

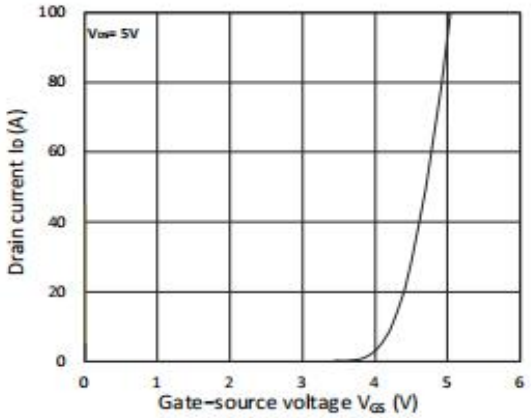


Figure 2. Transfer Characteristics

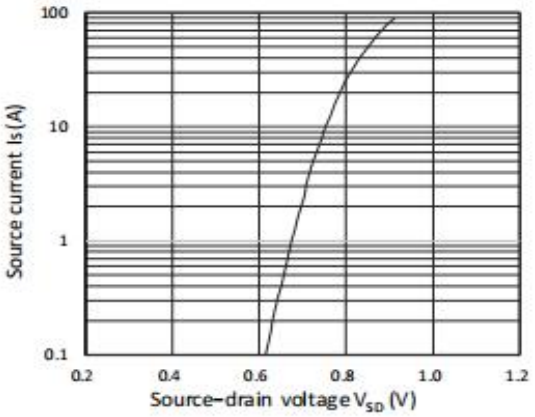


Figure 3. Forward Characteristics of Reverse

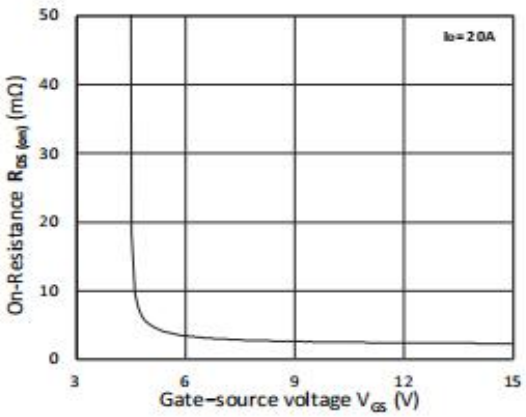


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

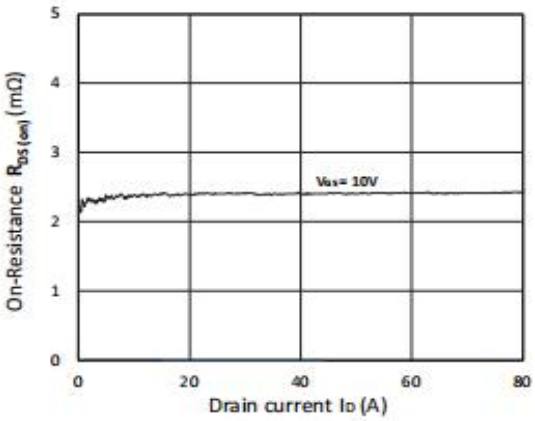


Figure 5. $R_{DS(ON)}$ vs. I_D

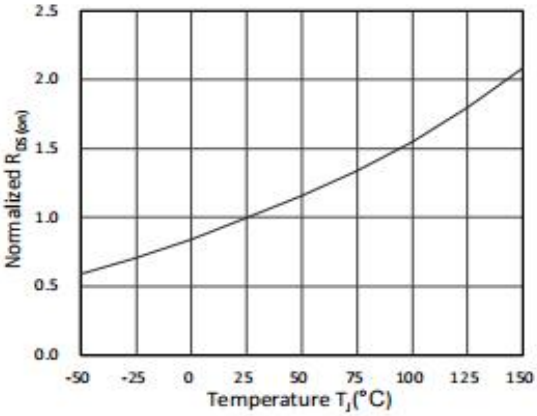


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

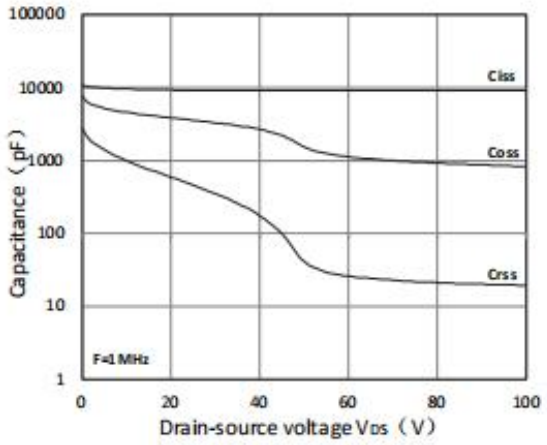


Figure 7. Capacitance Characteristics

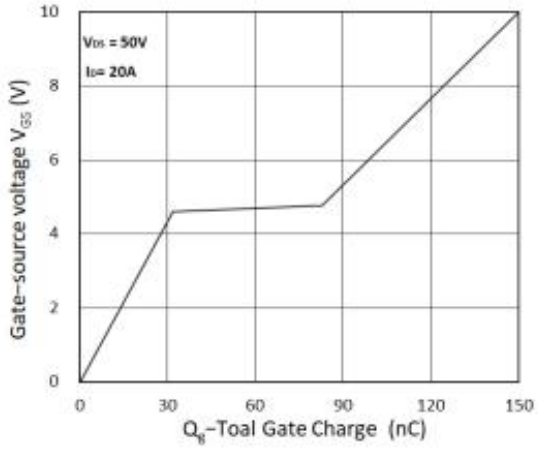


Figure 8. Gate Charge Characteristics

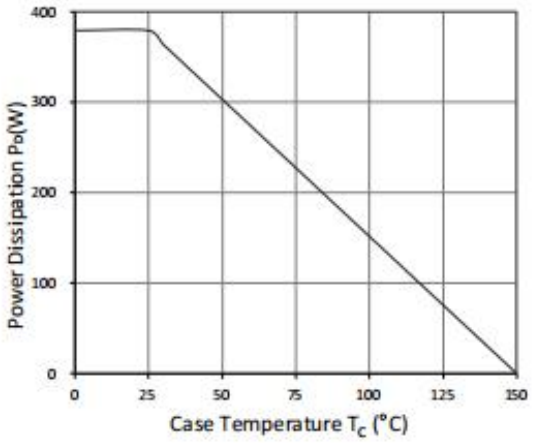


Figure 9. Power Dissipation

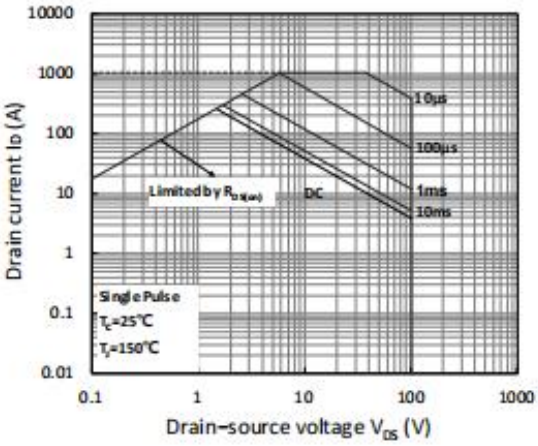


Figure10. Safe Operating Area

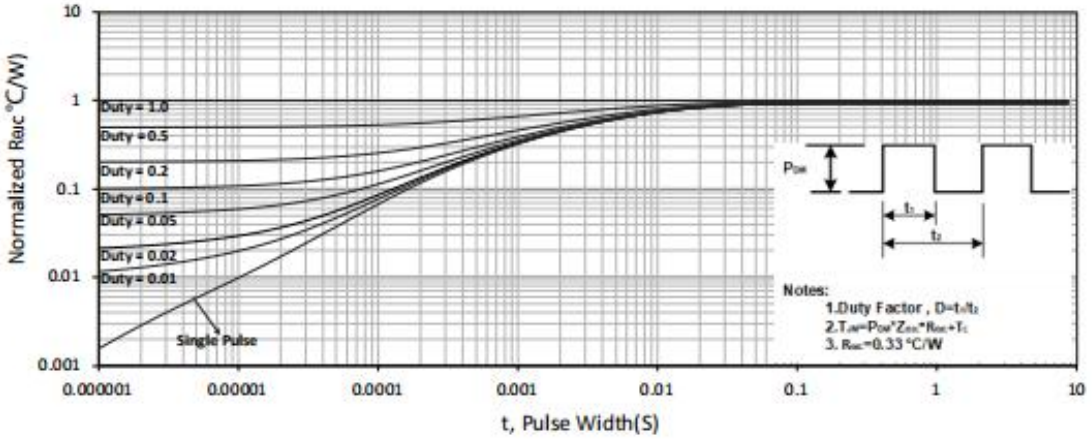


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit and Waveform

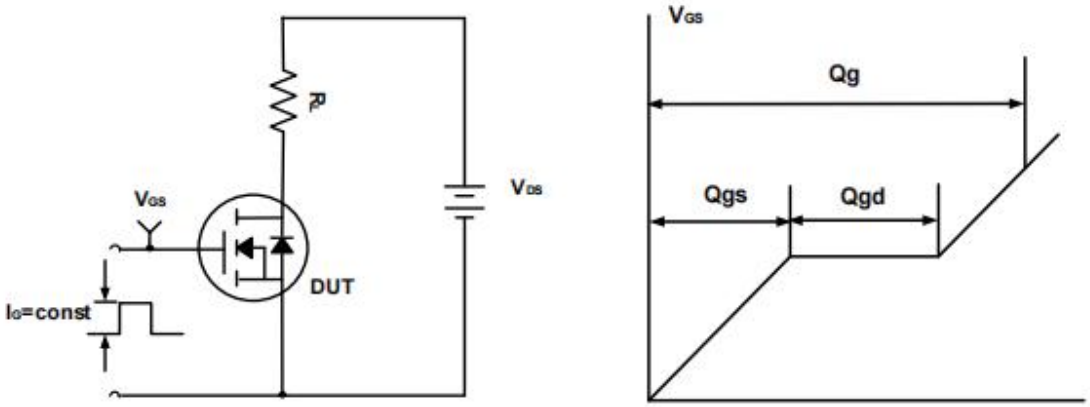


Figure A. Gate Charge Test Circuit & Waveforms

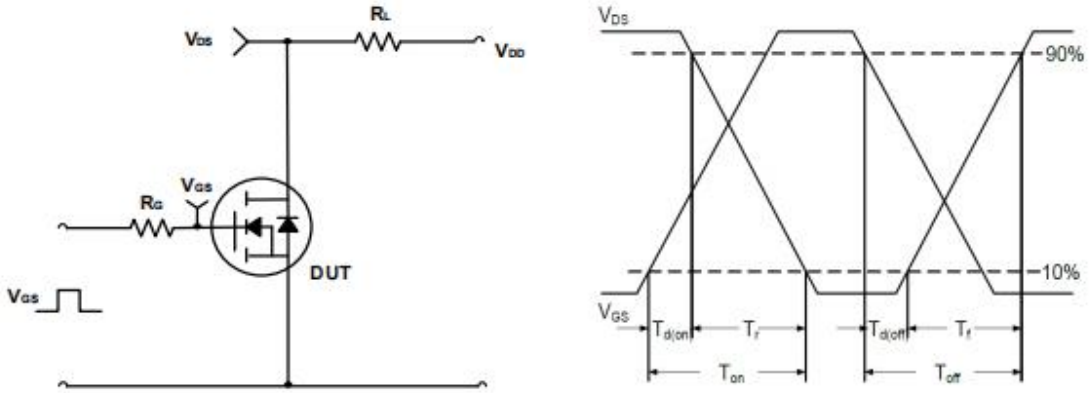
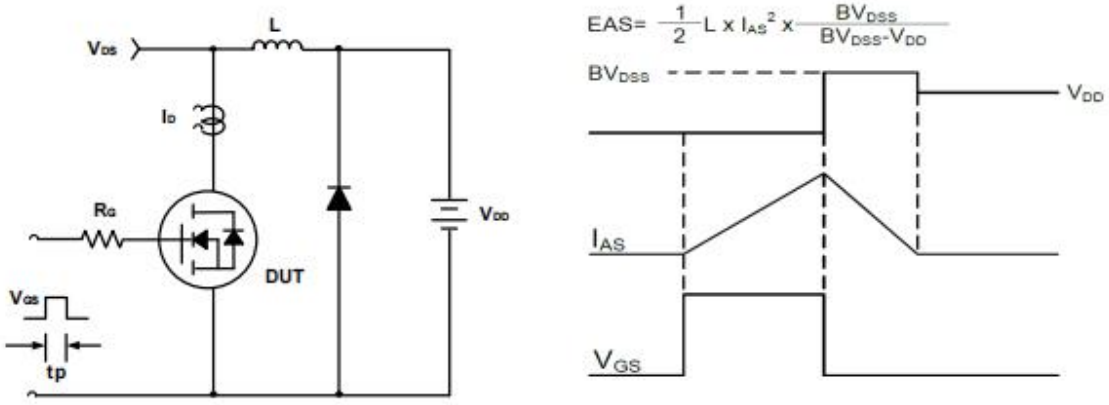
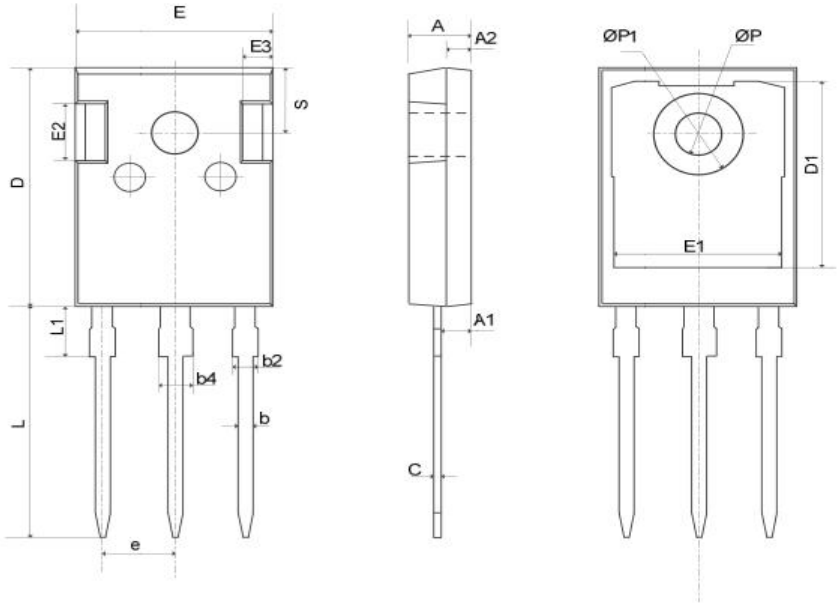


Figure B. Switching Test Circuit & Waveforms



Package Dimensions TO247



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.11	1.36
b2	1.91	2.21
b4	2.91	3.21
c	0.51	0.75
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.00	13.60
E2	4.80	5.20
E3	2.30	2.70
e	5.44BSC	
L	19.62	20.22
L1	—	4.30
ØP	3.40	3.80
ØP1	—	7.30
S	6.15BSC	

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