

Description

The HSH120N85 is the high cell density trench N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

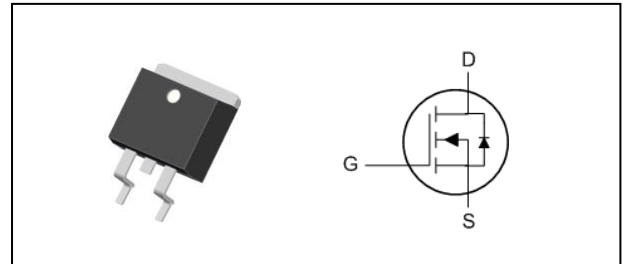
The HSH120N85 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

- 100% EAS Guaranteed
- Motor Drives
- SR(Synchronous rectification)
- DC/DC Converter
- Advanced high cell density Trench technology

Product Summary

V_{DS}	85	V
$R_{DS(ON),TYP}$	4.6	m Ω
I_D	120	A

TO-263 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	85	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V _{1.6}	120	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V _{1.6}	100	A
I_{DM}	Pulsed Drain Current ²	480	A
EAS	Single Pulse Avalanche Energy ³	145	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation ⁴	220	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	0.7	$^\circ\text{C/W}$



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	85	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ₂	V _{GS} =10V , I _D =20A	---	4.6	5.5	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2	3	4	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =64V , V _{GS} =0V , T _J =25°C	---	---	100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V , V _{DS} =0V	---	---	± 100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V , I _D =30A	---	80	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	3.1	---	Ω
Q _g	Total Gate Charge (10V)	V _{DD} =40V , V _{GS} =10V , I _D =20A	---	48	---	nC
Q _{gs}	Gate-Source Charge		---	15	---	
Q _{gd}	Gate-Drain Charge		---	13	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =40V , V _{GS} =10V , R _G =6Ω, I _D =20A	---	20	---	ns
T _r	Rise Time		---	39	---	
T _{d(off)}	Turn-Off Delay Time		---	44	---	
T _f	Fall Time		---	22	---	
C _{iss}	Input Capacitance	V _{DS} =40V , V _{GS} =0V , f=1MHz	---	3600	---	pF
C _{oss}	Output Capacitance		---	1050	---	
C _{rss}	Reverse Transfer Capacitance		---	31	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current _{1,5}	V _G =V _D =0V , Force Current	---	---	120	A
V _{SD}	Diode Forward Voltage ₂	V _{GS} =0V , I _S =50A , T _J =25°C	---	---	1.4	V
t _{rr}	Reverse Recovery Time	I _F =20A , dI/dt=500A/μs , T _J =25°C	---	60	---	nS
Q _{rr}	Reverse Recovery Charge		---	340	---	nC



Figure 1. Typ. Output Characteristics ($T_j=25^\circ\text{C}$)

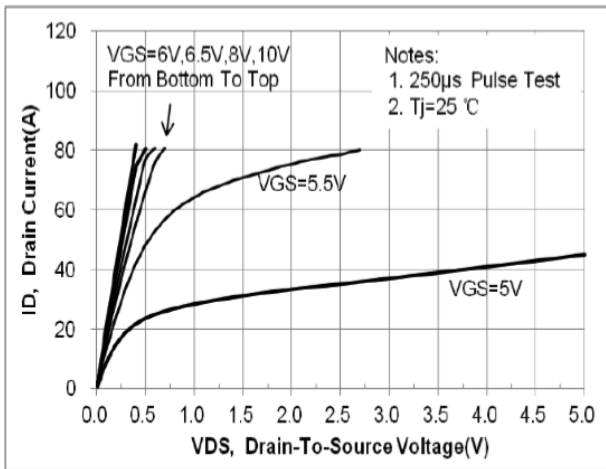


Figure 2. Transfer Characteristics (Junction Temperature)

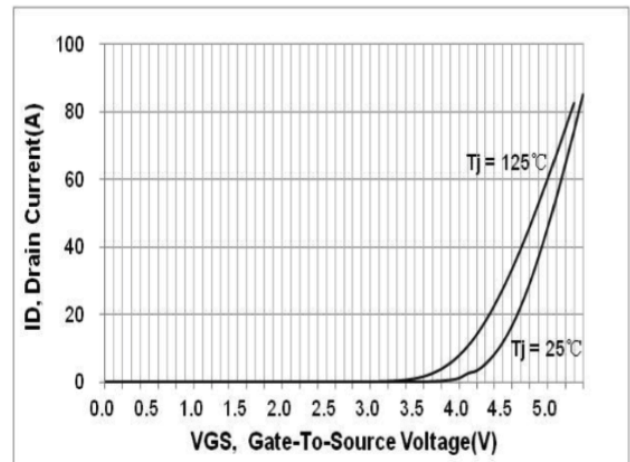


Figure 3. On-Resistance vs. Drain Current and Gate Voltage Figure

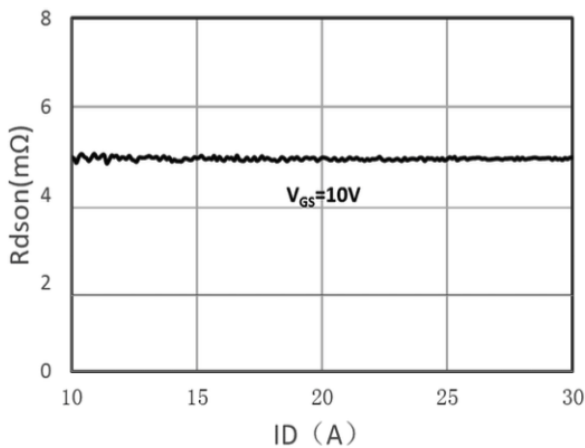


Figure 4. On-Resistance vs. Junction Temperature

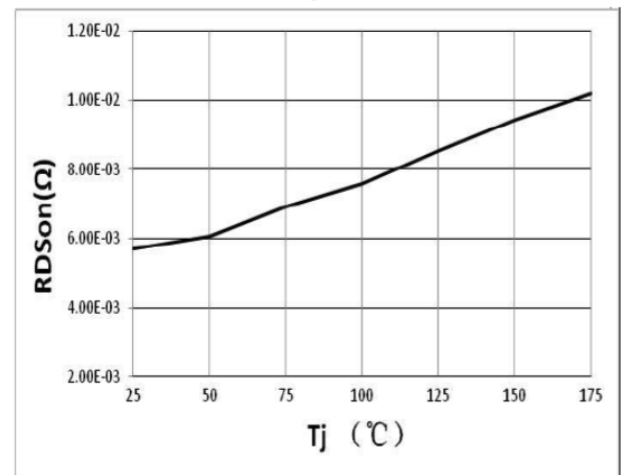


Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)

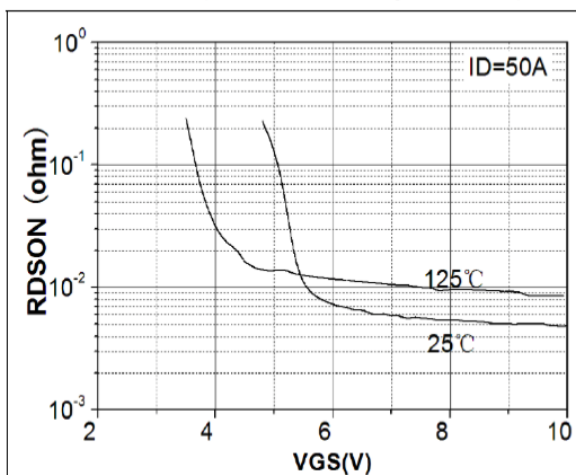


Figure 6. Body-Diode Characteristics (Junction Temperature)

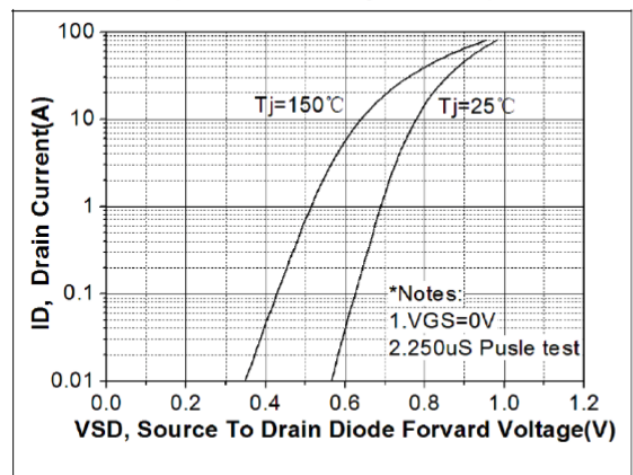




Figure 7. Gate-Charge Characteristics

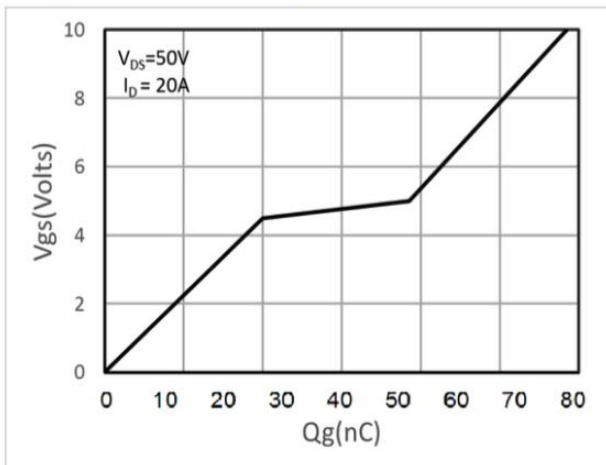


Figure 8. Capacitance Characteristics

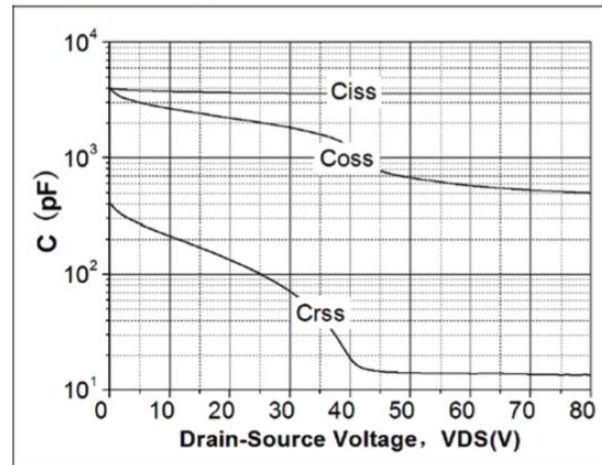


Figure 9: Normalized Maximum Transient Thermal Impedance (R_{thJC})

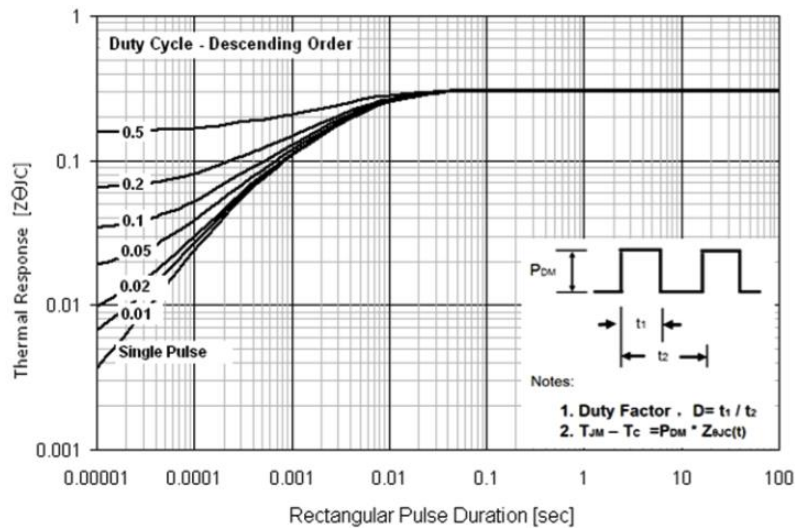
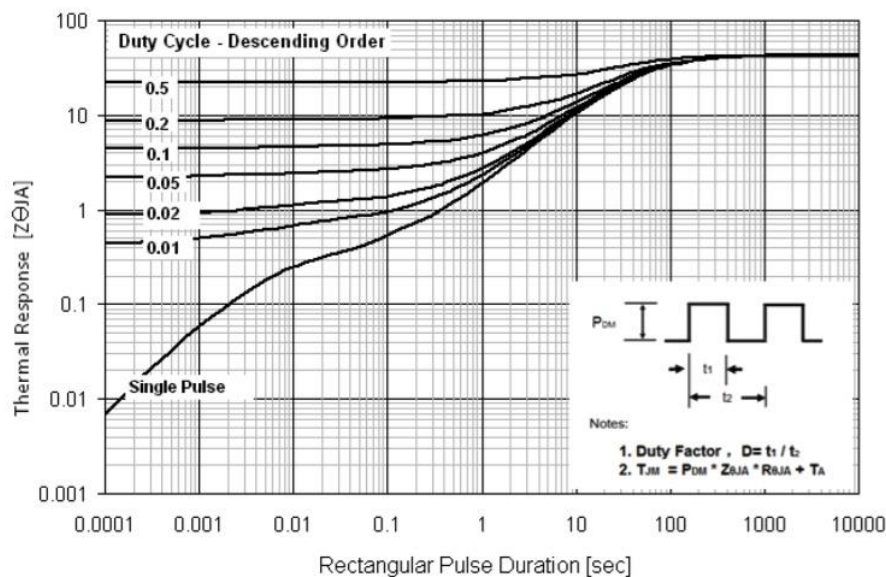


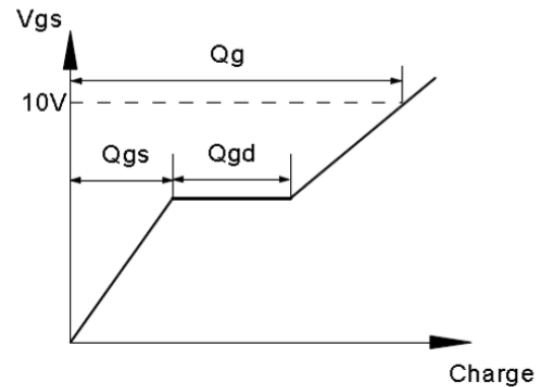
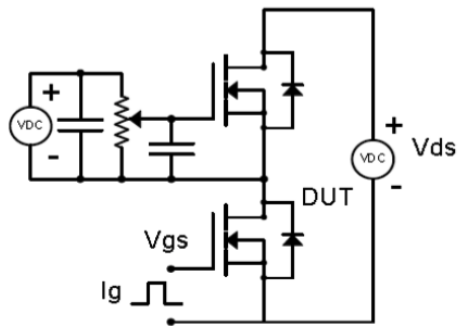
Figure 10: Normalized Maximum Transient Thermal Impedance (R_{thJA})



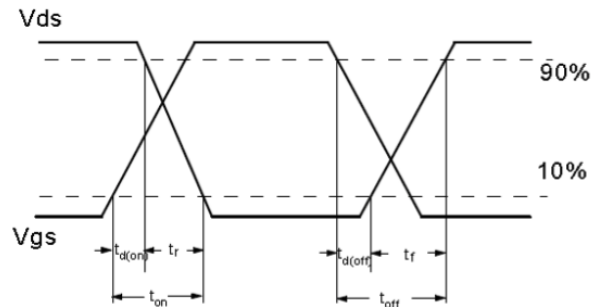
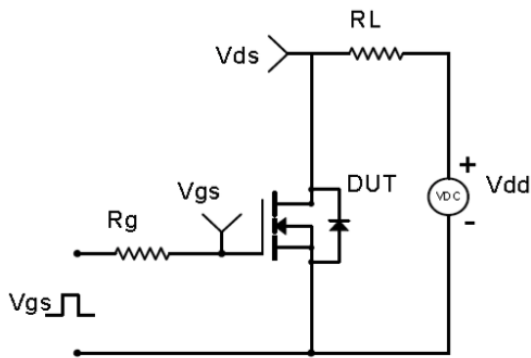


Test Circuit & Waveform

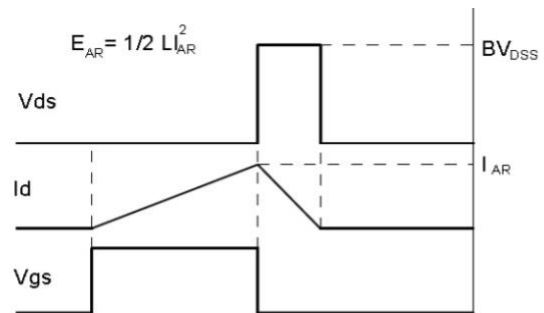
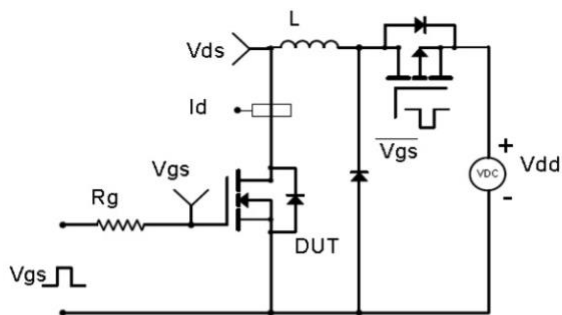
Gate Charge Test Circuit & Waveform



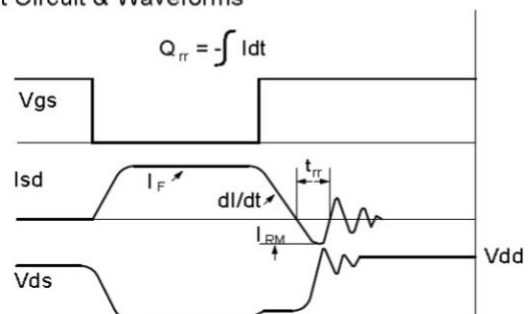
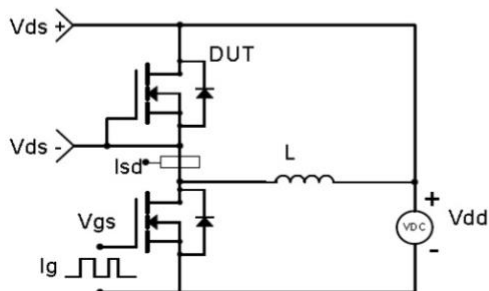
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

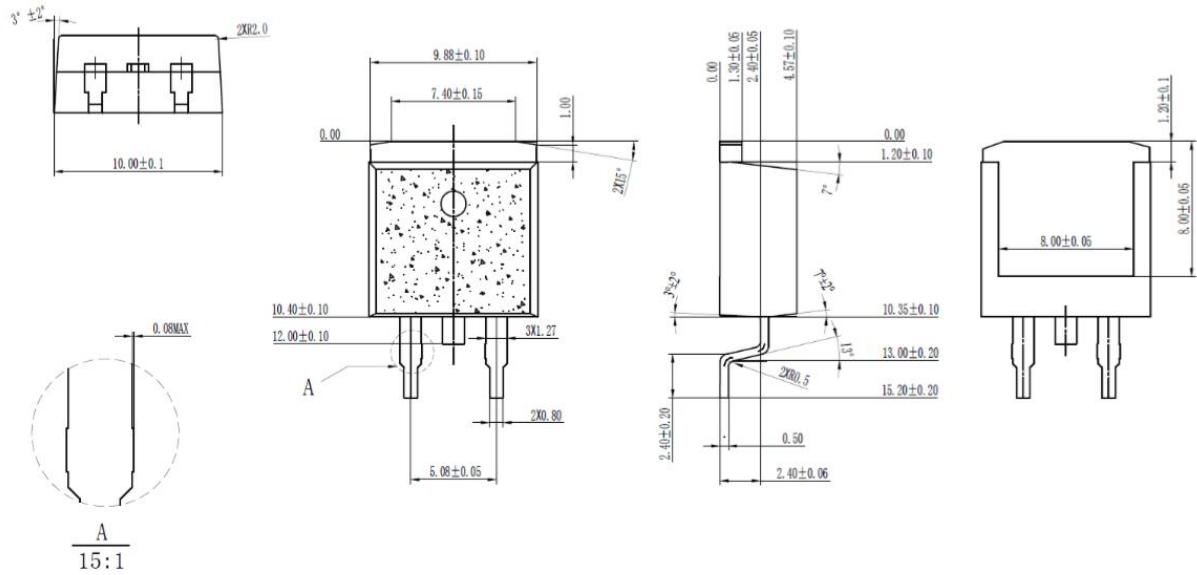


Diode Recovery Test Circuit & Waveforms





Package Outline: TO-263-2L



技术要求:

1. 塑封体中心与引线框架中心线偏差 ≤ 0.05 ,
上下塑封体中心偏差 ≤ 0.05 ;
2. 塑封体不准有缺损、气泡、气孔、裂纹等缺陷;
3. 塑封体表面除阴影部分为毛面, 其余为光面;
4. 未注脱模斜度 $\leq 5^\circ$;
5. 未注公差为 ± 0.05 , 未注圆角为 $R0.15$ (max)。

