

N-Ch 100V Fast Switching MOSFETs

Description

The HSBL009N10 is the high cell density Super Trench N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous rectification applications.

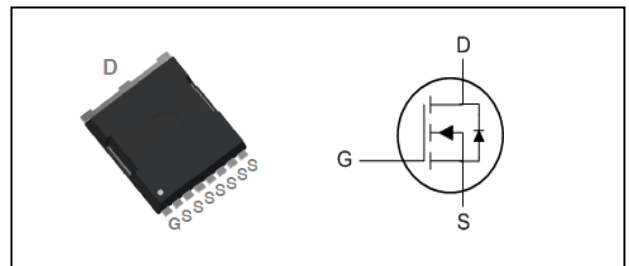
The HSBL009N10 meet the RoHS and Halogen-Free compliant product requirement, 100% EAS guaranteed with full function reliability approved.

- 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}	100	V
$R_{DS(ON),typ}$	1.05	m Ω
I_D	450	A

TOLL Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	450	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	285	A
I_{DM}	Pulsed Drain Current ²	1800	A
EAS	Single Pulse Avalanche Energy ³	2800	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴	500	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	40	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	0.25	$^\circ C/W$

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	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =80A	---	1.05	1.25	mΩ
		V _{GS} =6V, I _D =50A		1.55	1.85	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2	---	4	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =125°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Q _g	Total Gate Charge (10V)	V _{DS} =50V, V _{GS} =10V, I _D =30A	---	284	---	nC
Q _{gs}	Gate-Source Charge		---	74	---	
Q _{gd}	Gate-Drain Charge		---	87	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =10V, R _L =3.9Ω, I _D =30A	---	39	---	ns
T _r	Rise Time		---	86	---	
T _{d(off)}	Turn-Off Delay Time		---	181	---	
T _f	Fall Time		---	116	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	13770	---	pF
C _{oss}	Output Capacitance		---	2100	---	
C _{rss}	Reverse Transfer Capacitance		---	100	---	

Diode Characteristics

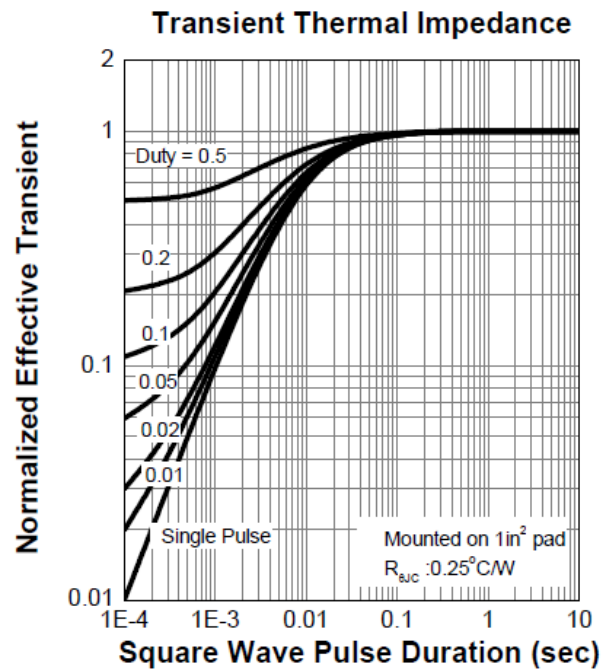
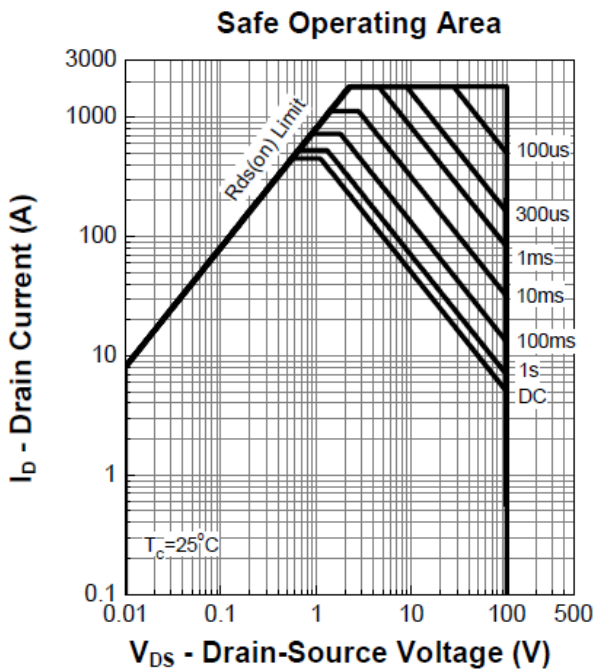
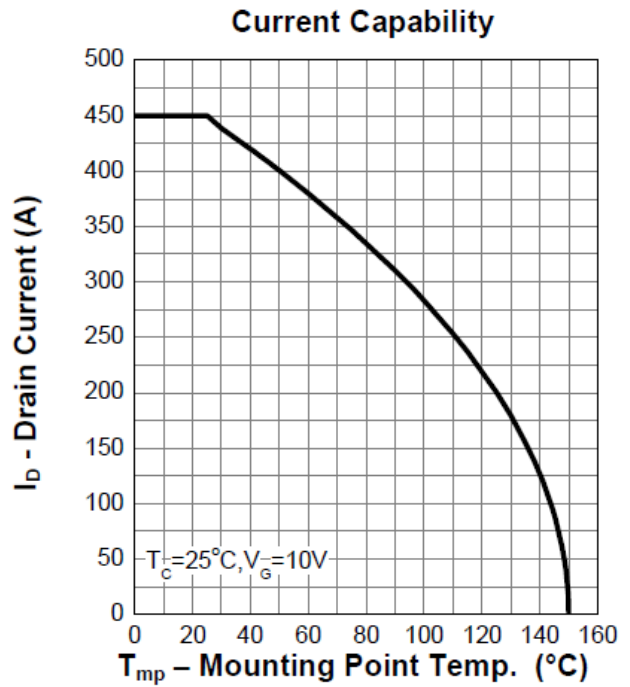
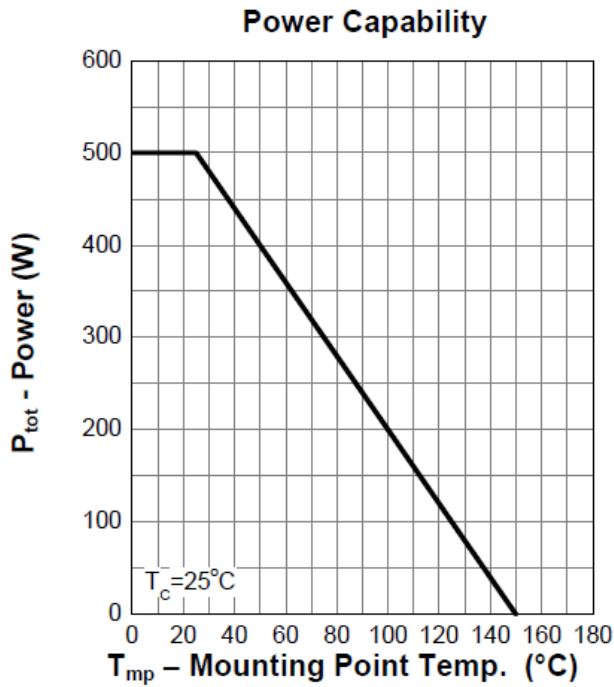
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =50A, T _J =25°C	---	---	1.3	V
T _{rr}	Body Diode Reverse Recovery Time	I _f =30A, DI/dt=500A/us	---	121	---	ns
Q _{rr}	Body Diode Reverse Recovery charge	I _f =30A, DI/dt=100A/us	---	405	---	nC

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 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.
- 5.The maximum current rating is package limited.

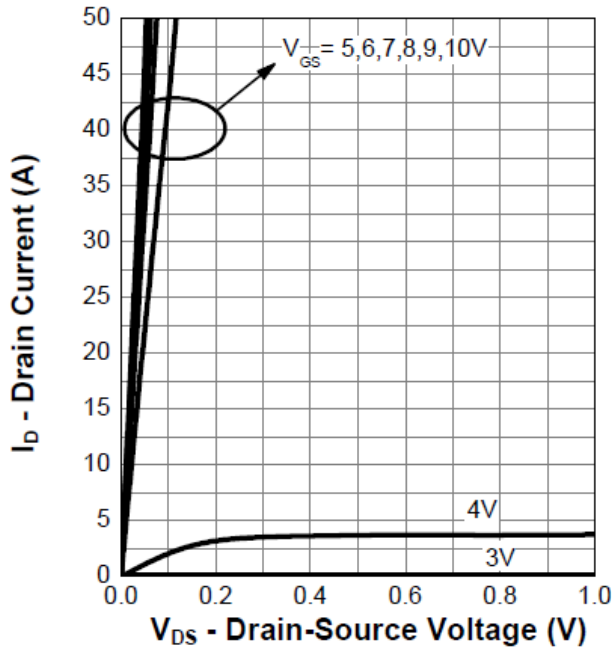


Typical Characteristics

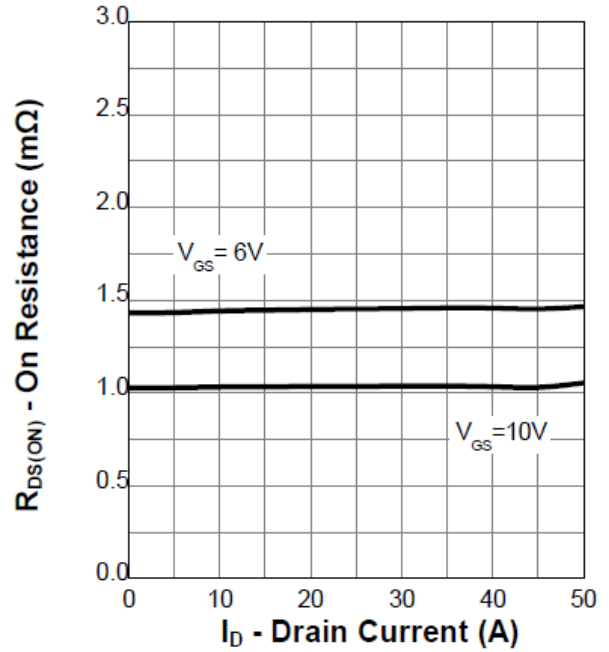




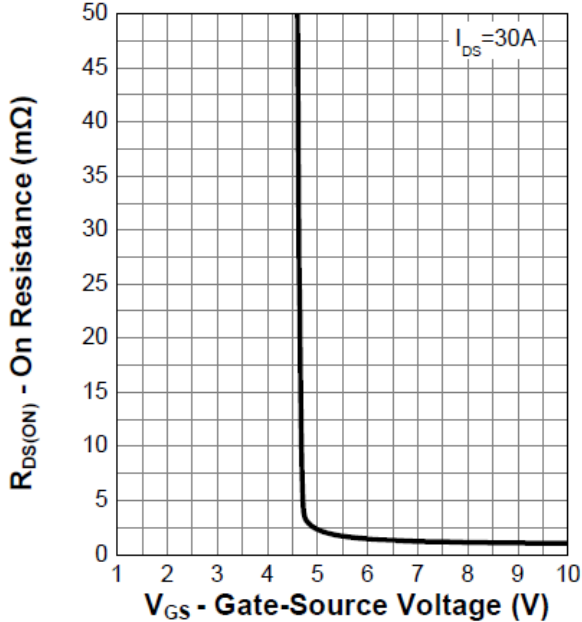
Output Characteristics



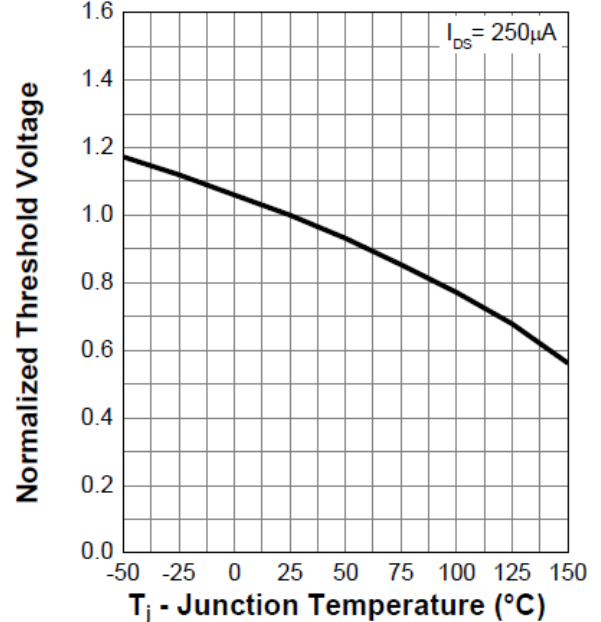
On Resistance

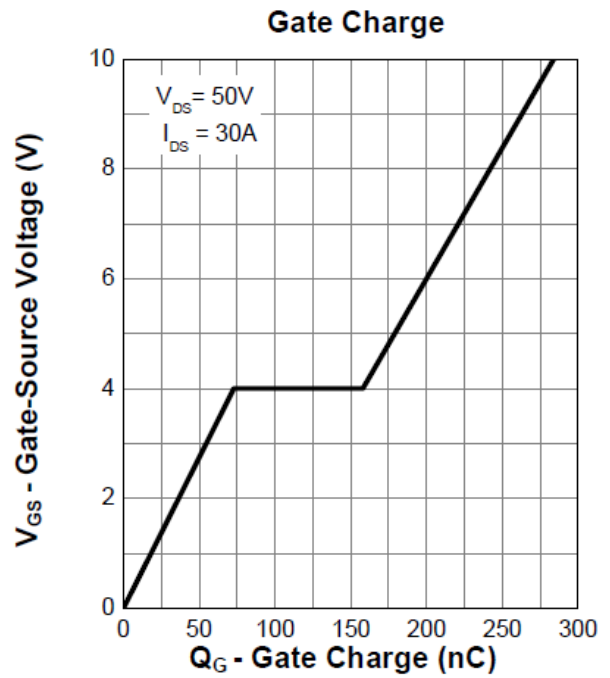
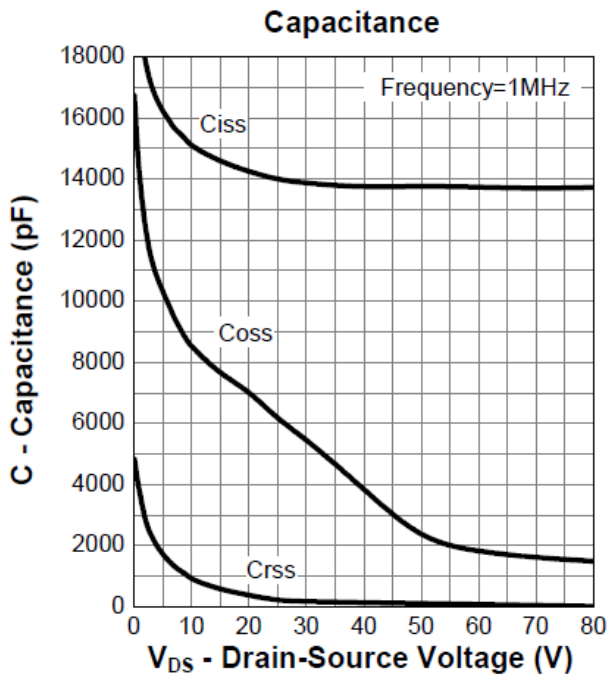
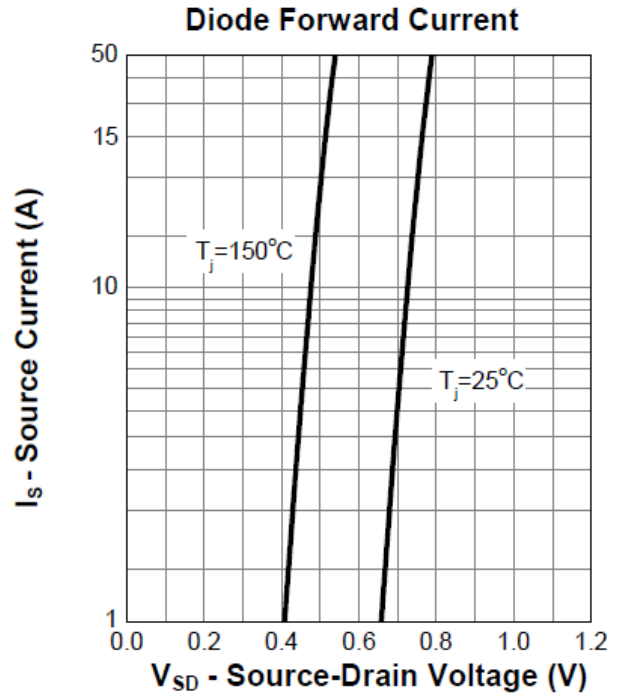
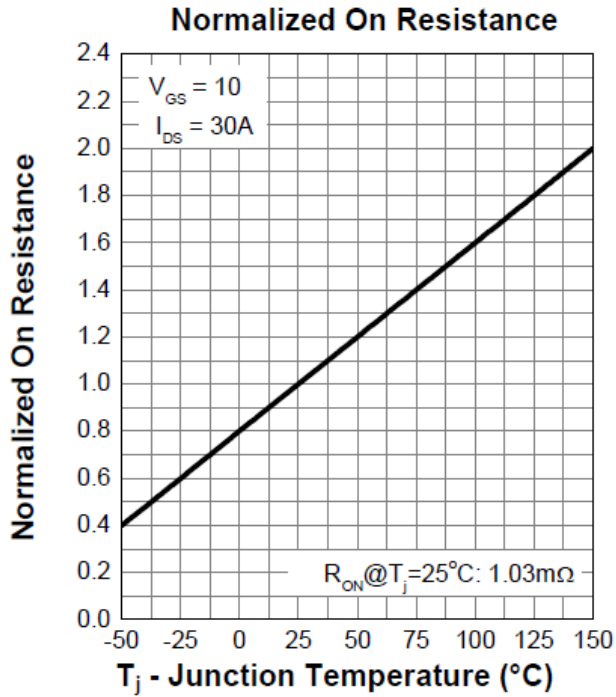


Transfer Characteristics



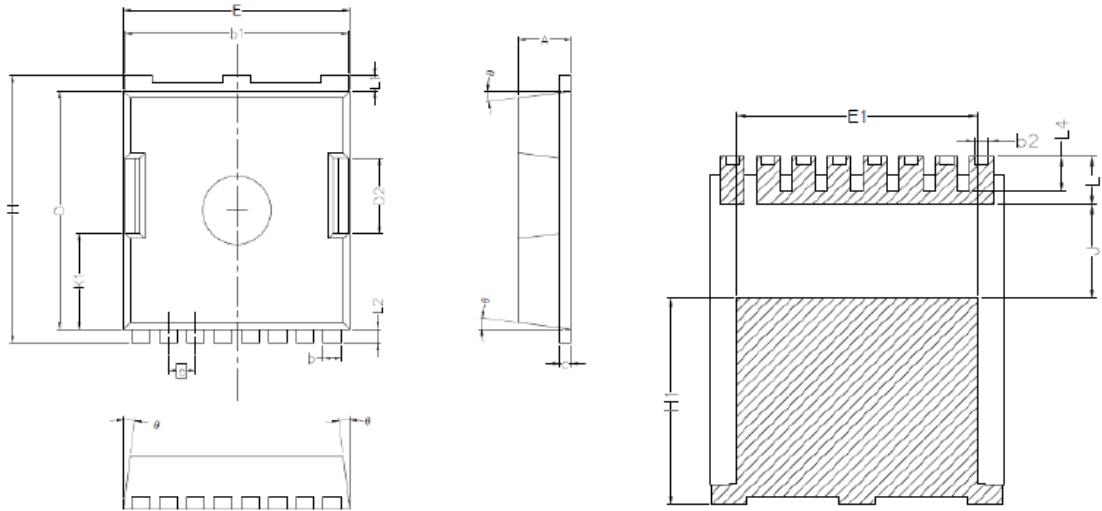
Normalized Threshold Voltage







■ TOLL-8L Package information



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.20	2.40
b	0.90	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°