

General Description

The HST011N10 is the high cell density SGT N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The HST011N10 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

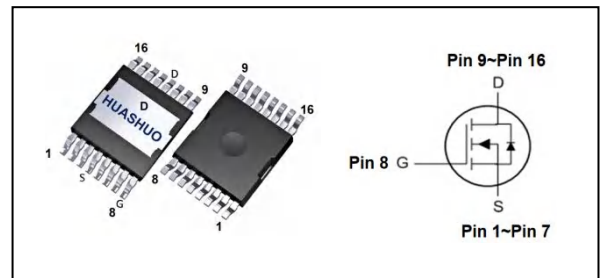
Applications

- BLDC Motor Control
- Synchronous Rectification
- DC/DC Converter.
- Telecom and Server Power Supply
- BMS

Product Summary

V_{DS}	100	V
$R_{DS(ON),typ}$	1.05	m Ω
I_D	370	A

TOLT Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current ¹	370	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current ¹	235	A
I_{DM}	Pulsed Drain Current ²	1472	A
E_{AS}	Single Pulse Avalanche Energy ³	1445	mJ
I_{AS}	Avalanche Current	90	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation ⁴	312	W
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	3.1	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	---	40	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	0.4	$^\circ\text{C/W}$

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	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =100A	---	1.05	1.3	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2.0	3.0	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =100V, V _{GS} =0V, T _J =55°C	---	---	10	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =1V, I _D =100A	---	312	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	0.4	---	Ω
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =100A	---	141	---	nC
Q _{gs}	Gate-Source Charge		---	45	---	
Q _{gd}	Gate-Drain Charge		---	33	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =10V, R _G =1Ω, I _D =100A	---	39	---	ns
T _r	Rise Time		---	37	---	
T _{d(off)}	Turn-Off Delay Time		---	45	---	
T _f	Fall Time		---	13	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	10043	---	pF
C _{oss}	Output Capacitance		---	4487	---	
C _{rss}	Reverse Transfer Capacitance		---	70	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	260	A
I _{SM}	Maximum Pulsed Diode Forward Current ^{2,5}	---	---	---	1472	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =100A, T _J =25°C	---	0.84	---	V
t _{rr}	Reverse Recovery Time	I _S =100A, V _{GS} =0V,	---	65	---	nS
Q _{rr}	Reverse Recovery Charge	dI/dt=400A/μs, T _J =25°C	---	480	---	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 L=0.5mH, I_{AS}=90A
- 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.

Typical Characteristics

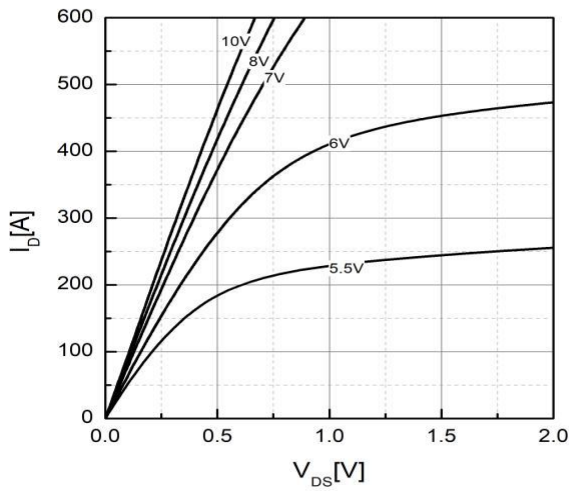


Fig.1 Output Characteristics

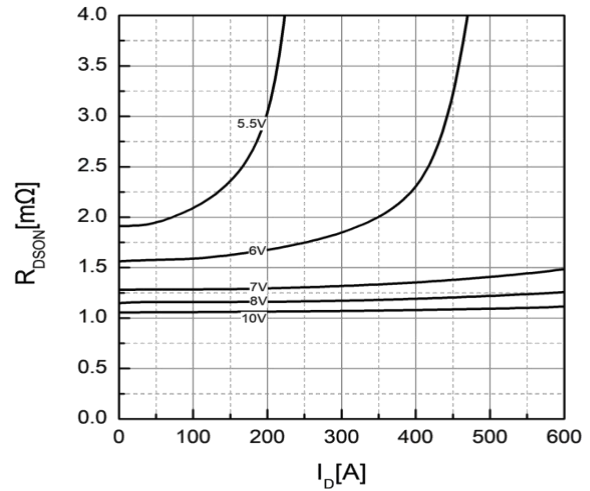


Figure 2. Drain-source on resistance

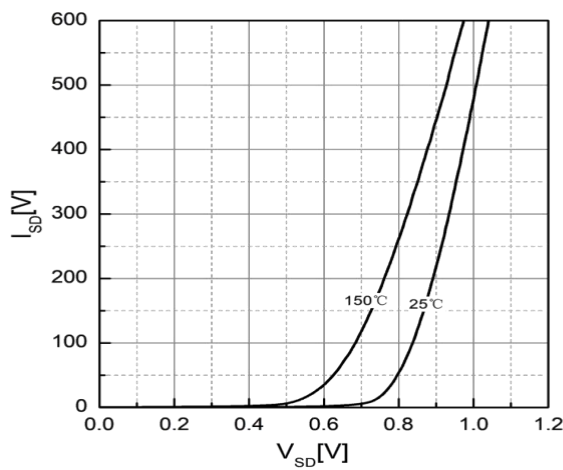


Fig.3 Forward characteristics of body diode

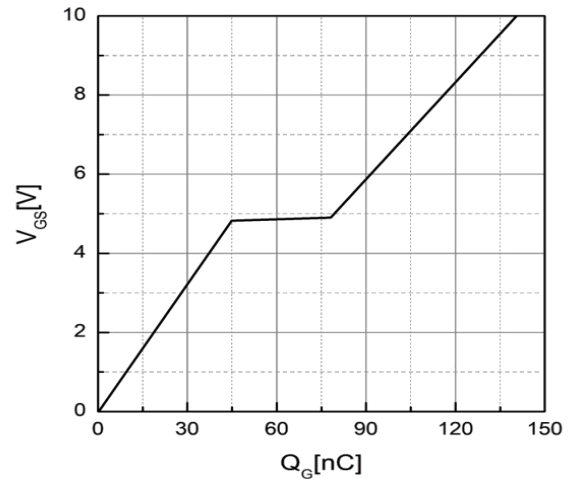


Fig.4 Gate Charge Characteristics

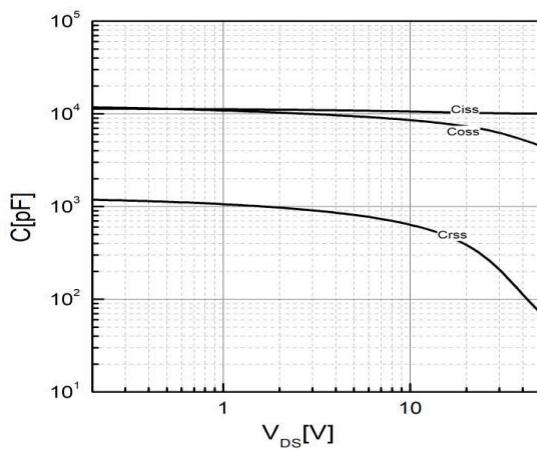


Fig.5 Capacitance Characteristics

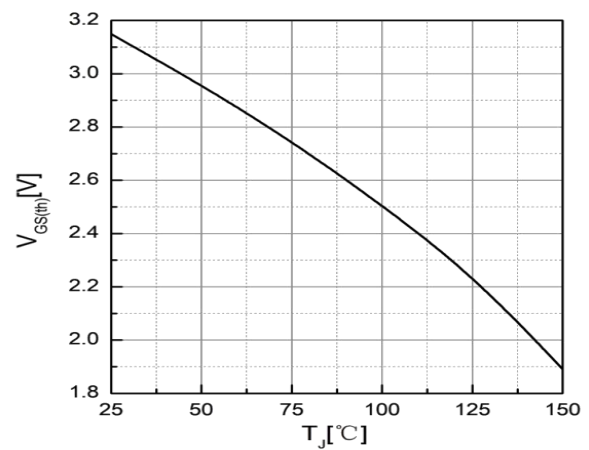


Fig.6 Threshold Voltage Vs. Temperature

N-Ch 100V Fast Switching MOSFETs

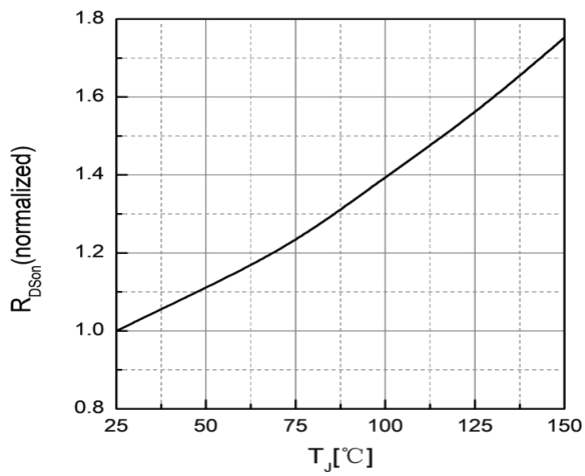


Fig.7 Drain-source on-state resistance

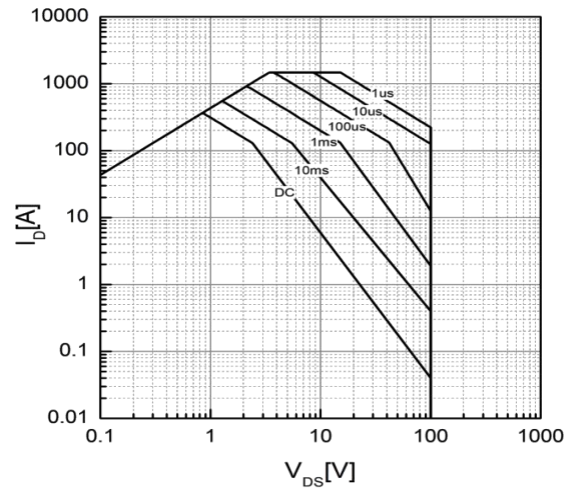


Fig.8 Maximum Safe Operating Area

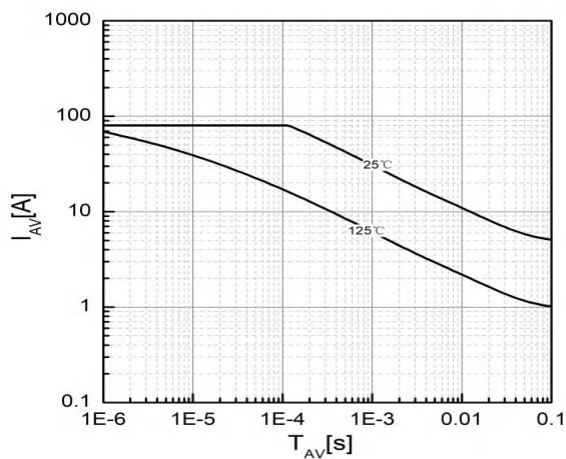


Fig.9 Avalanche characteristics

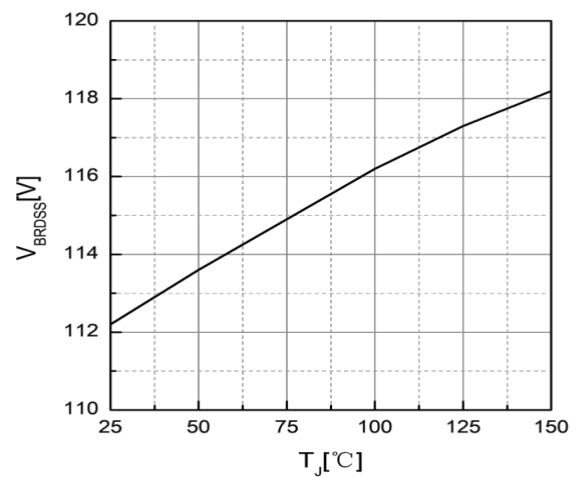


Fig.10 Drain-source breakdown voltage

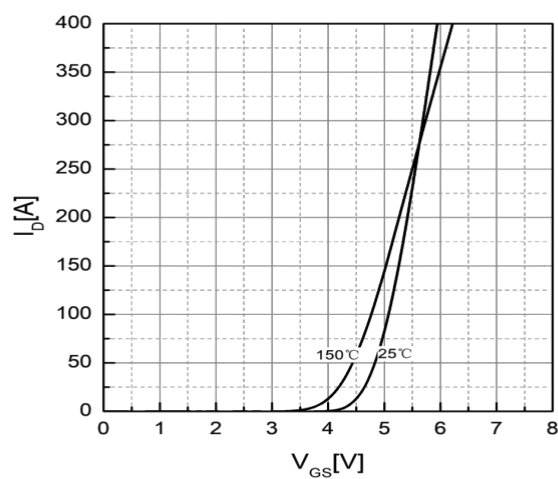


Figure 11. Transfer characteristics

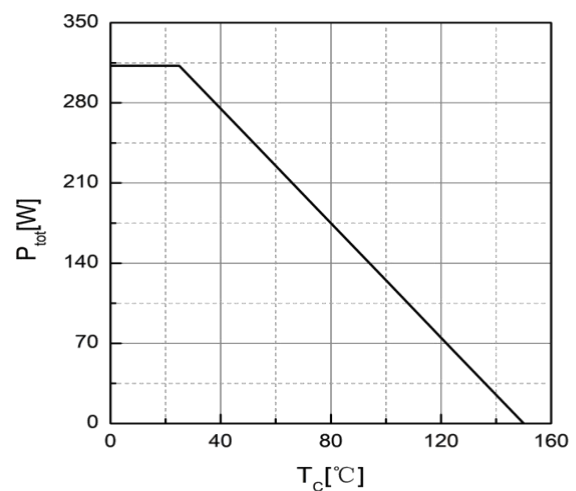


Figure 12. Power dissipation

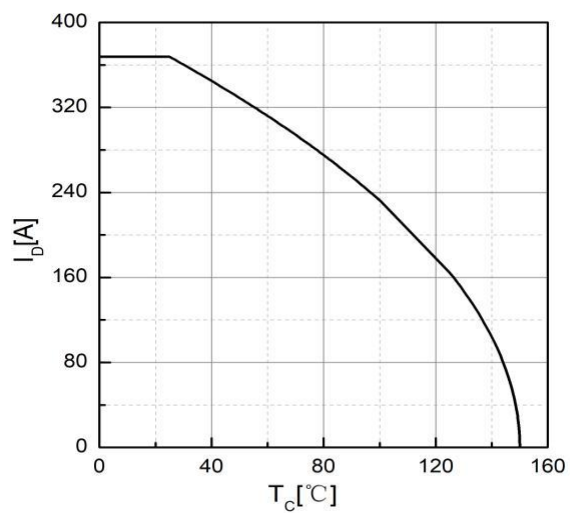


Fig.13 Drain current

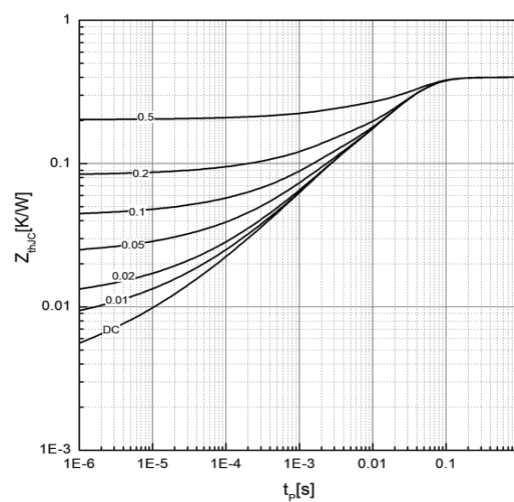
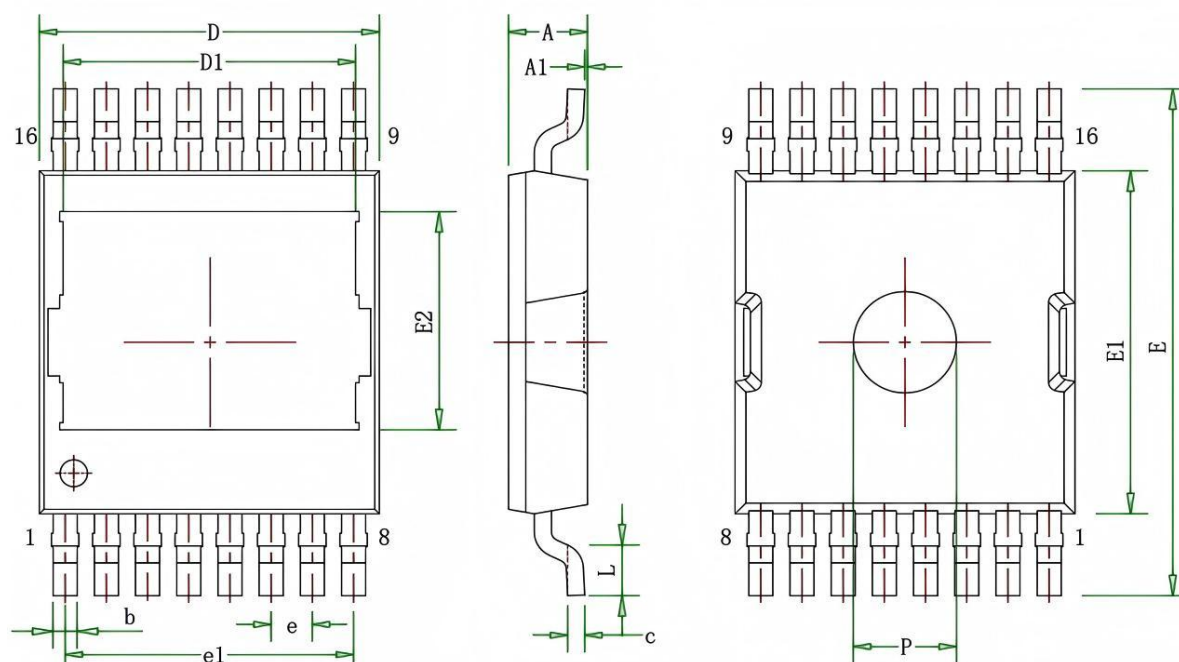


Fig.14 Effective Transient Thermal Impedance

Ordering Information

Part Number	Package code	Packaging
HST011N10	TOLT	2000/Tape&Reel

TOLT Package Outline



COMMON DIMENSIONS(MM)			
Symbol	Min	Typ	Max
A	2.25	2.30	2.35
A1	0.01		0.16
b	0.65	0.70	0.75
c	0.45	0.50	0.55
D	9.70	9.90	10.10
D1	8.37	8.52	8.67
E	14.80	15.00	15.20
E1	10.00	10.15	10.30
E2	6.06	6.26	6.46
e		1.20	
e1		8.40	
L	1.40	1.50	1.60
P	2.90	3.00	3.10

HST011N10 Marking:

