

General Description

The HSBB30N06 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 HSBB30N06 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

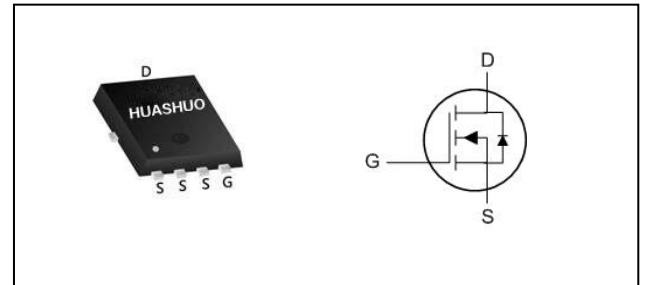
Features

- 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}	60	V
$R_{DS(ON),typ}$	20	mΩ
I_D	30	A

PRPAK3*3 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	30	A
$I_D@T_C=70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	24	A
I_{DM}	Pulsed Drain Current ²	120	A
E_{AS}	Single Pulse Avalanche Energy ³	49	mJ
I_{AS}	Avalanche Current	14	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation ¹	95	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
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	1.32	$^\circ\text{C/W}$

Note :

1.Surface mounted on 1" x 1" FR4 board.

2.Pulse width limited by maximum junction temperature.

3.EAS condition : $T_J=25^\circ\text{C}$, $V_{DD}=30V$, $V_{GS}=10V$, $L=0.5mH$, $R_g=25\Omega$



Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ¹	$V_{GS}=10V$, $I_D=10A$	---	20	26	$m\Omega$
		$V_{GS}=4.5V$, $I_D=8A$	---	26	35	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	1.5	2.2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2.3	---	Ω
Q_g	Total Gate Charge	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=10A$	---	21.7	---	nC
Q_{gs}	Gate-Source Charge		---	5.3	---	
Q_{gd}	Gate-Drain Charge		---	2.9	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V$, $V_{GS}=10V$, $R_G=3\Omega$, $I_D=10A$	---	9	---	ns
T_r	Rise Time		---	7	---	
$T_{d(off)}$	Turn-Off Delay Time		---	31	---	
T_f	Fall Time		---	8	---	
C_{iss}	Input Capacitance	$V_{DS}=30V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1113	---	pF
C_{oss}	Output Capacitance		---	58	---	
C_{rss}	Reverse Transfer Capacitance		---	47	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=5A$, $T_J=25^{\circ}\text{C}$	---	---	1.2	V

Note :

1. Pulse test: pulse width $\leq 300\mu s$, duty $\leq 2\%$.

2. Guaranteed by design, not subject to production testing.



Typical Characteristics

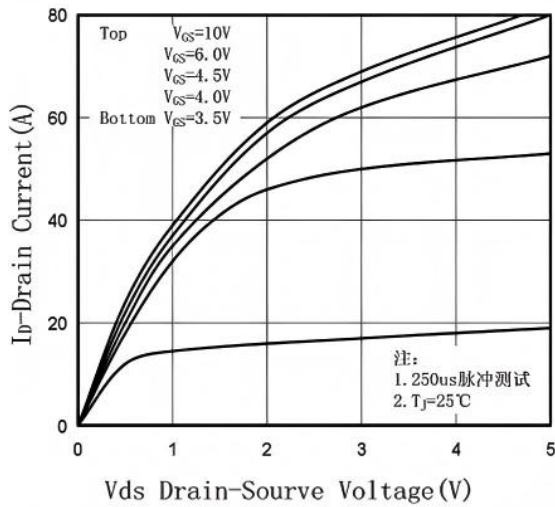


Fig.1 Output Characteristic

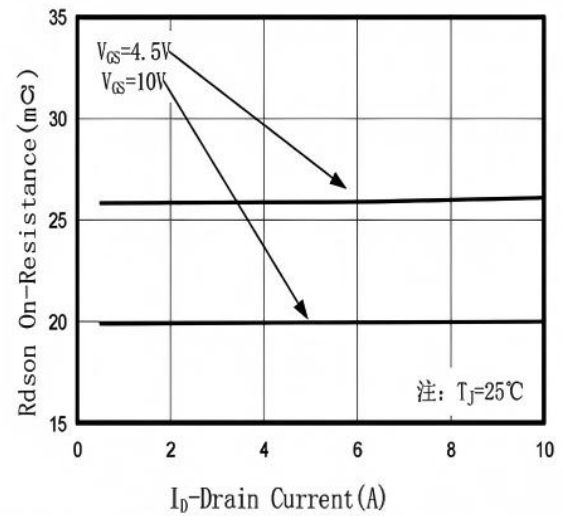


Fig.2 On-Resistance vs. Drain Current

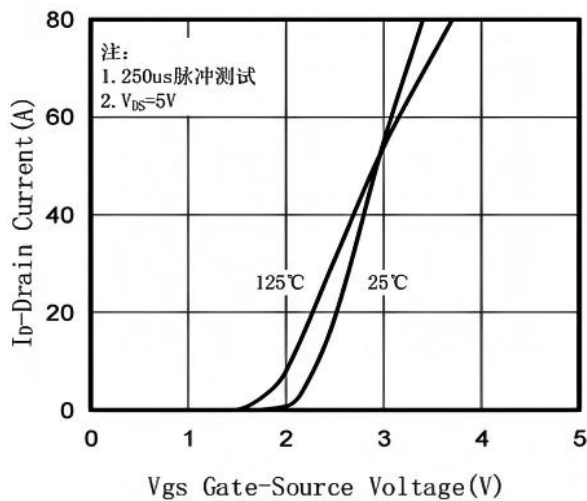


Fig.3 Transfer Characteristic

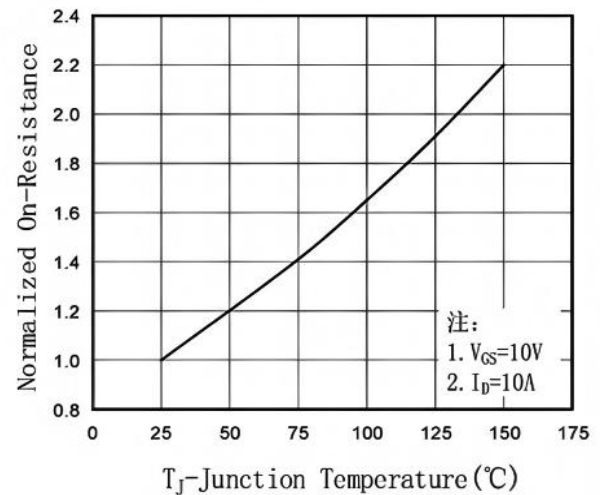


Fig.4 On-Resistance vs. Junction Temperature

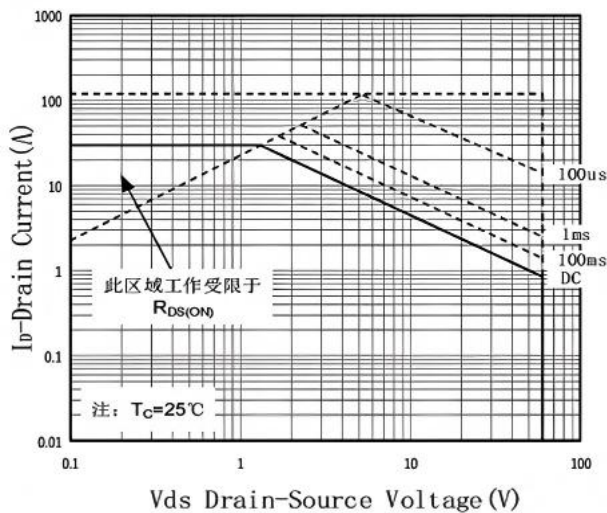


Fig.5 Safe Operation Area

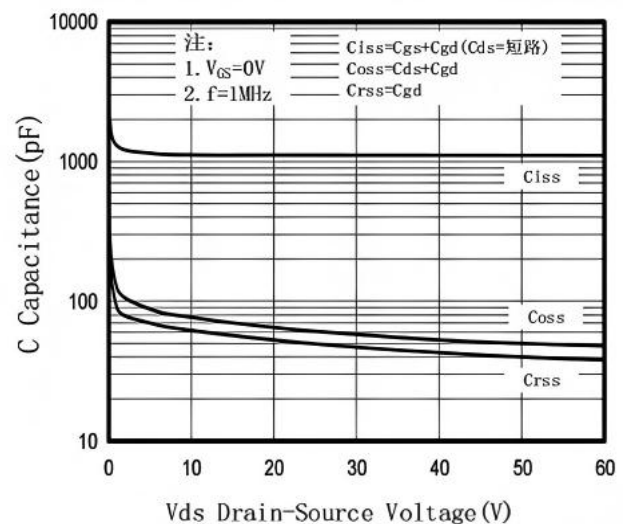


Fig.6 Capacitance Characteristic

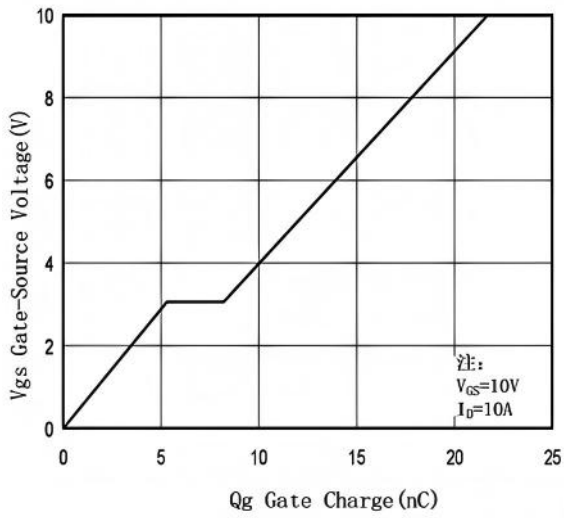


Fig.7 Gate-Charge Characteristic

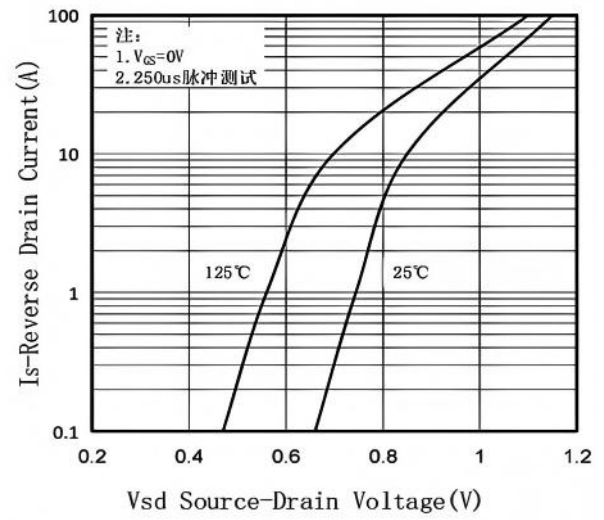


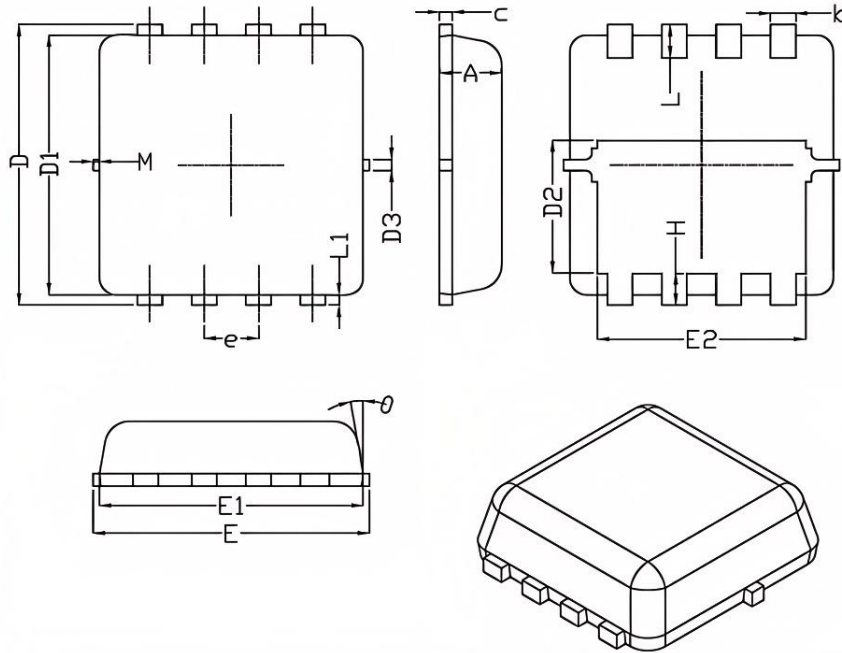
Fig.8 Body Diode Characteristic



Ordering Information

Part Number	Package code	Packaging
HSBB30N06	PRPAK3*3	5000/Tape&Reel

PRPAK3*3(E) Single Package Outline



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
C	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.15	3.30	3.45
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°

HSBB30N06 Marking:

