HSBB10P15

P-Ch 150V Fast Switching MOSFETs

Description

The HSBB10P15 uses advanced trench MOSFET technology to provide excellent $R_{DS(ON)}$ and gate charge for use in a wide variety of other applications.

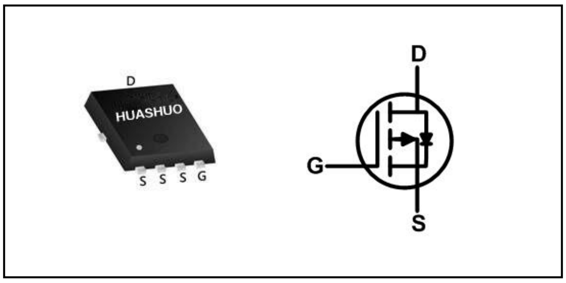
The HSBB10P15 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

- 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}	-150	V
$R_{DS(ON),typ}$	290	mΩ
I_D	-10	A

PRPAK3*3 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-150	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25℃$	Continuous Drain Current, V_{GS} @ -10V[1]	-10	A
$I_D@T_C=100℃$	Continuous Drain Current, V_{GS} @ -10V[1]	-7	A
I_{DM}	Pulsed Drain Current[2]	-35	A
EAS	Single Pulse Avalanche Energy[3]	73	mJ
$P_D@T_C=25℃$	Total Power Dissipation[4]	35	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	62	℃/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	---	2.9	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-5A	---	290	345	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-2	-2.7	-4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-150V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ± 20V , V_{DS}=0V	---	---	± 100	nA
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-5A	---	10	---	S
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz	---	5	---	Ω
Q_g	Total Gate Charge	V_{DS}=-50V , V_{GS}=-10V , I_D=-5A	---	39	---	nC
Q_{gs}	Gate-Source Charge		---	8.1	---	
Q_{gd}	Gate-Drain Charge		---	9.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-50V , V_{GS}=-10V , R_G=3.3Ω, I_D=-5A	---	33	---	ns
T_r	Rise Time		---	27	---	
$T_{d(off)}$	Turn-Off Delay Time		---	250	---	
T_f	Fall Time		---	130	---	
C_{iss}	Input Capacitance	V_{DS}=-50V , V_{GS}=0V , f=1MHz	---	2021	---	pF
C_{oss}	Output Capacitance		---	44	---	
C_{rss}	Reverse Transfer Capacitance		---	37	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	-10	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	I_F=-2A , di/dt=-100A/μs , T_J=25℃	---	35	---	nS
Q_{rr}	Reverse Recovery Charge		---	32	---	nC

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 V_{DD}=-50V,V_{GS}=-10V,L=0.5mH
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 Characteristics

Figure 1. Output Characteristics

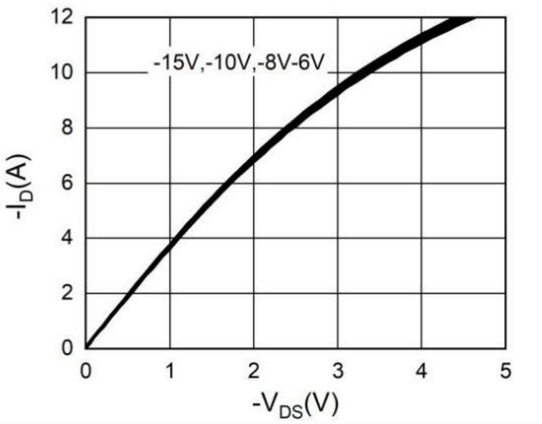


Figure 2. Transfer Characteristics

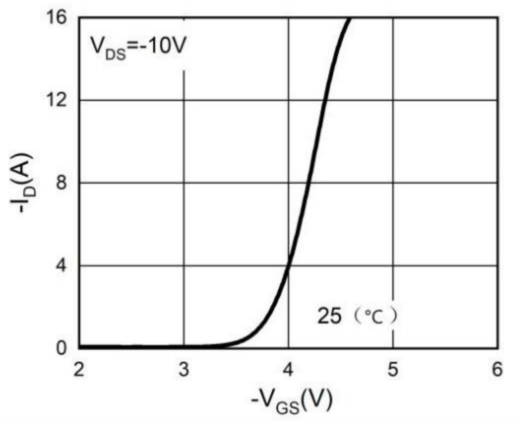


Figure 3. Power Dissipation

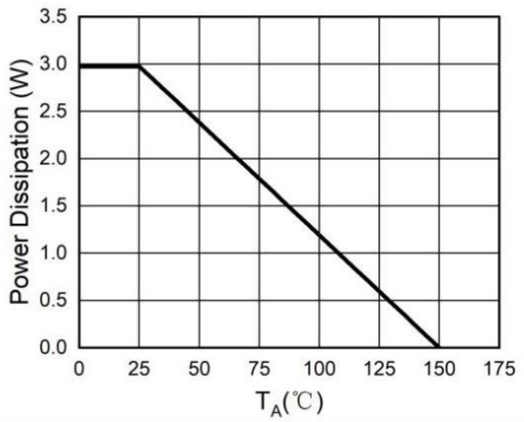


Figure 4. Drain Current

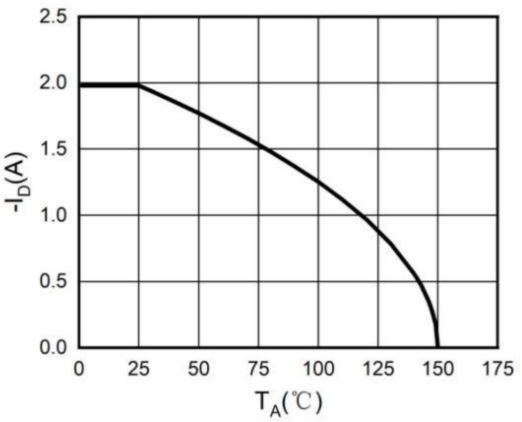


Figure 5. BV_{DSS} vs Junction Temperature

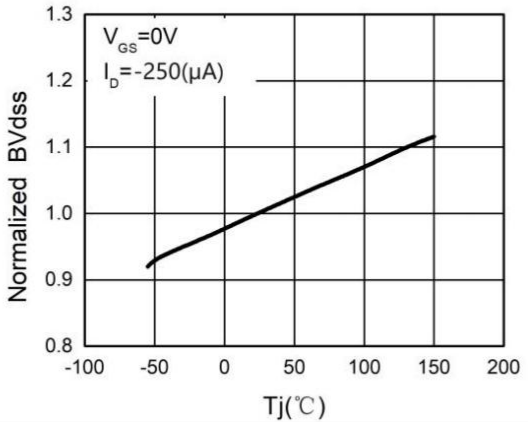


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

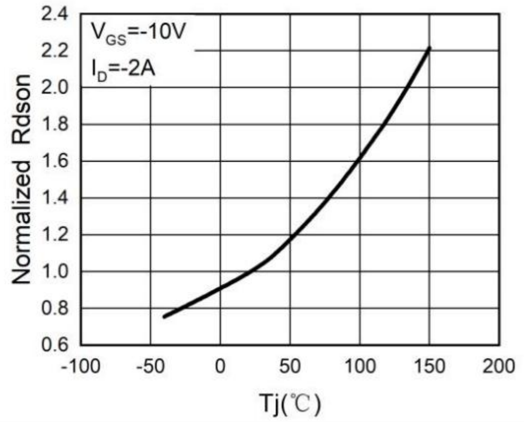


Figure 7. Gate Charge Waveforms

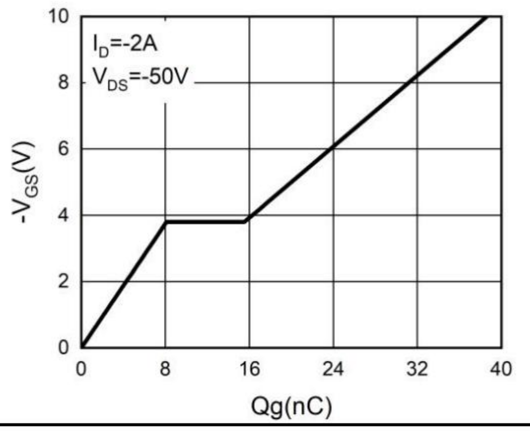


Figure 8. Capacitance

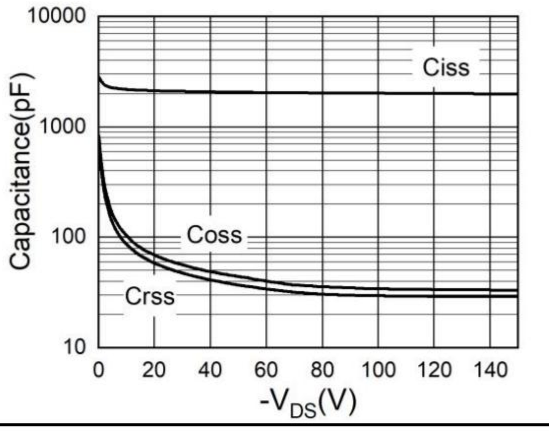


Figure 9. Body-Diode Characteristics

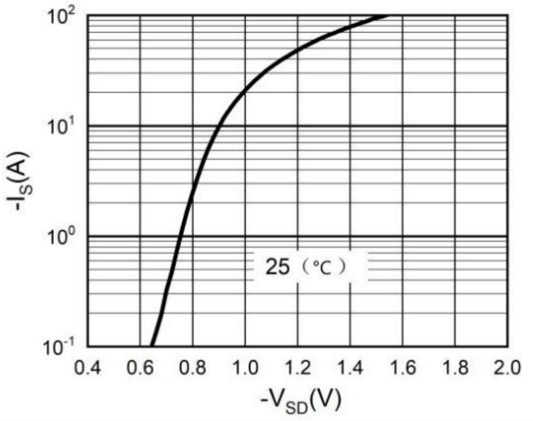
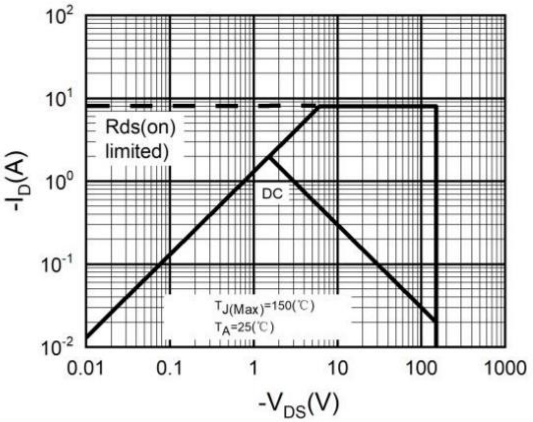


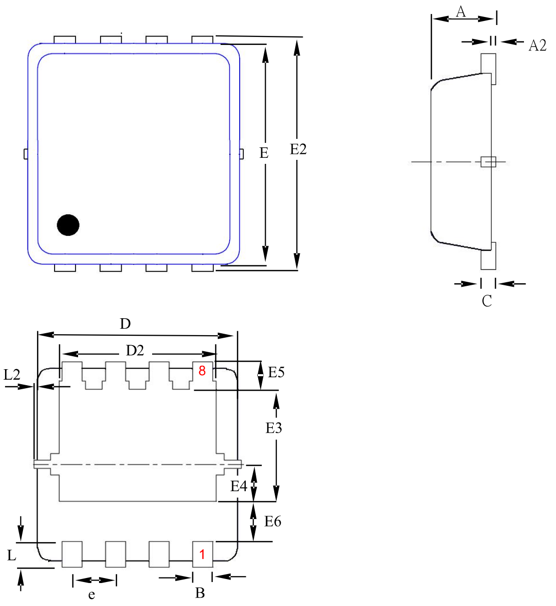
Figure 10. Maximum Safe Operating Area



Ordering Information

Part Number	Package code	Packaging
HSBB10P15	PRPAK3*3	3000/Tape&Reel

PRPAK 3*3(E) Single Outline



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.028	0.031	0.035
A2	0.00	--	0.05	0.000	--	0.002
B	0.24	0.30	0.35	0.009	0.012	0.014
C	0.10	0.15	0.25	0.004	0.006	0.010
D	2.90	3.00	3.20	0.114	0.118	0.126
D2	2.15	2.35	2.59	0.085	0.093	0.102
E	2.90	3.00	3.12	0.114	0.118	0.123
E2	3.05	3.20	3.45	0.120	0.126	0.136
E3	1.55	1.75	1.95	0.061	0.069	0.077
E4	0.48	0.58	0.68	0.019	0.023	0.027
E5	0.28	0.43	0.58	0.011	0.017	0.023
E6	0.43	0.63	0.87	0.017	0.025	0.034
L	0.30	0.40	0.50	0.012	0.016	0.020
L2	0.00	--	0.10	0.000	--	0.004
e	--	0.65	--	--	0.026	--