

General Description

The HSBA6315 is the high cell density trench P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The HSBA6315 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

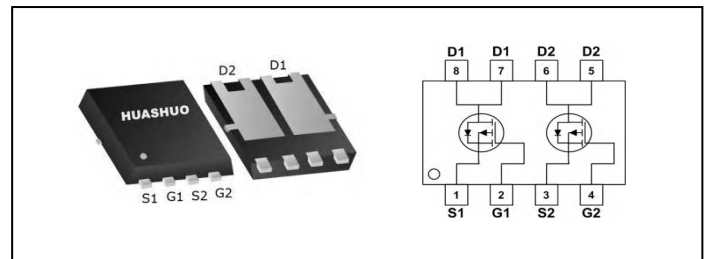
Features

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench Technology

Product Summary

V_{DS}	-60	V
$R_{DS(ON),typ}$	24	mΩ
I_D	-30	A

PRPAK5*6 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
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, $-V_{GS} @ -10V^1$	-23	A
I_{DM}	Pulsed Drain Current ²	-70	A
EAS	Single Pulse Avalanche Energy ³	110	mJ
I_{AS}	Avalanche Current	42	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation ⁴	40	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 ¹	---	55	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	2.2	$^\circ\text{C/W}$



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	-60	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-18A	---	24	30	mΩ
		V _{GS} =-4.5V, I _D =-12A	---	30	37	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	-1.7	-2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-48V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =-48V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-18A	---	23	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	7	---	Ω
Q _g	Total Gate Charge (-4.5V)	V _{DS} =-20V, V _{GS} =-4.5V, I _D =-12A	---	25	---	nC
Q _{gs}	Gate-Source Charge		---	6.7	---	
Q _{gd}	Gate-Drain Charge		---	5.5	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GS} =-10V, R _G =3.3Ω, I _D =-1A	---	38	---	ns
T _r	Rise Time		---	23.6	---	
T _{d(off)}	Turn-Off Delay Time		---	100	---	
T _f	Fall Time		---	6.8	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	3635	---	pF
C _{oss}	Output Capacitance		---	224	---	
C _{rss}	Reverse Transfer Capacitance		---	141	---	

Diode Characteristics

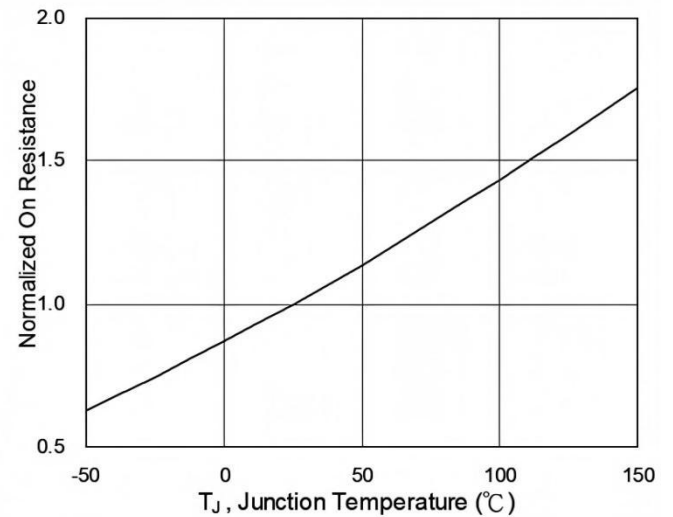
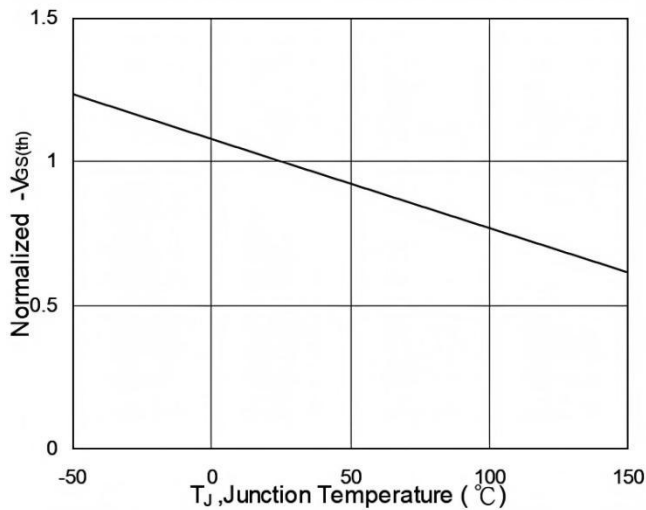
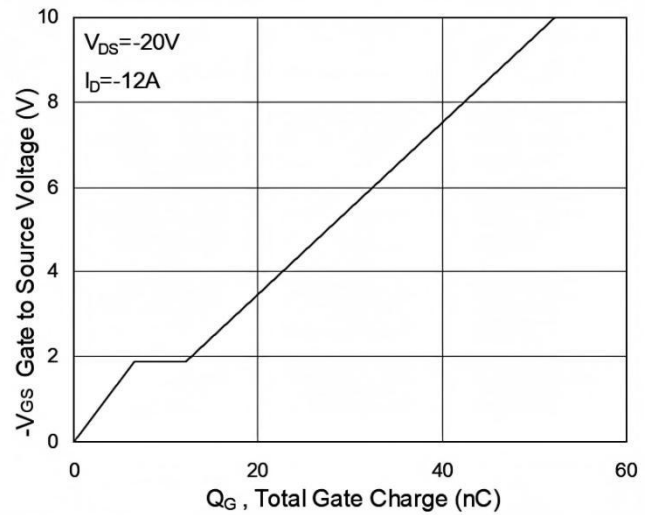
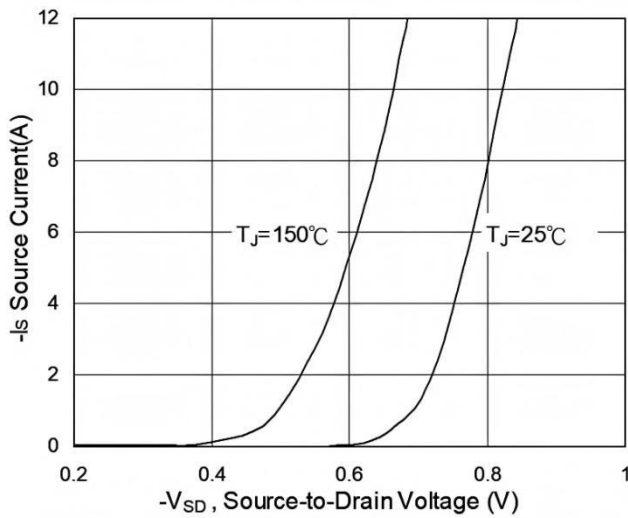
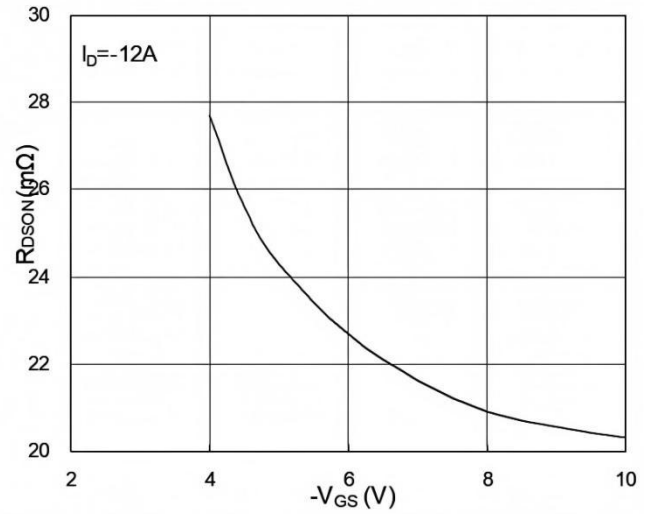
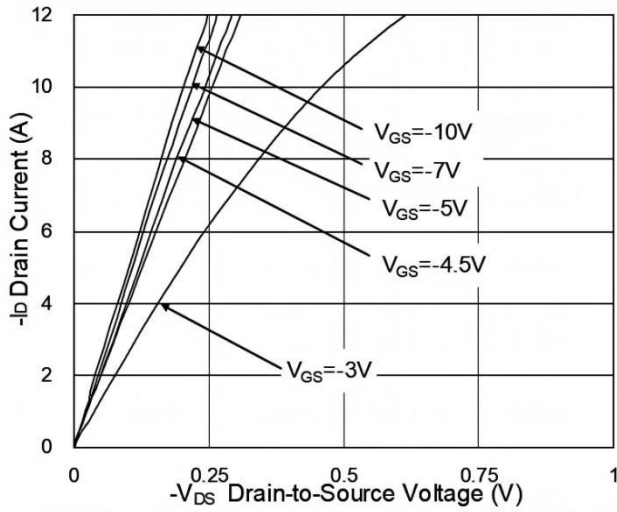
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	-30	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	-70	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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=0.1mH,I_{AS}=-42A
- 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



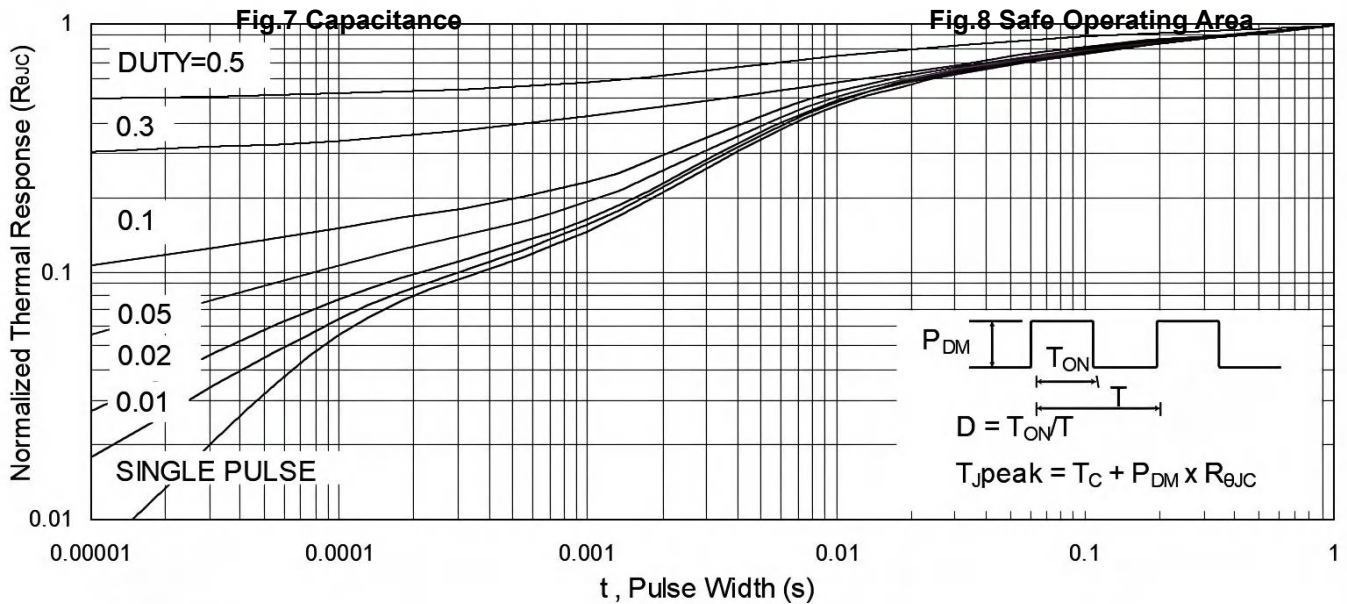
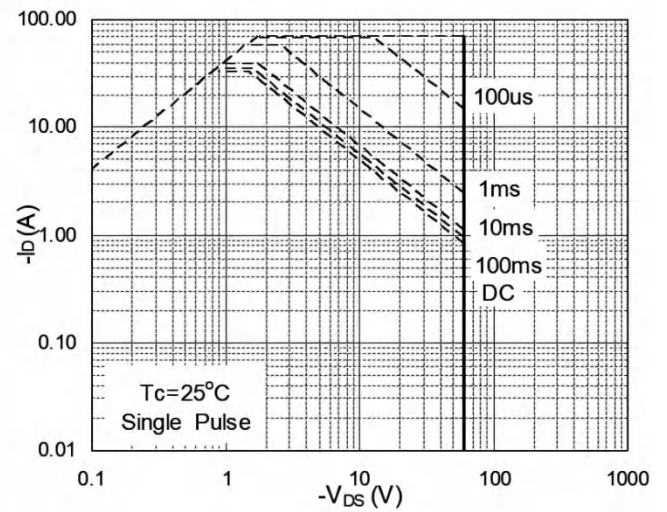
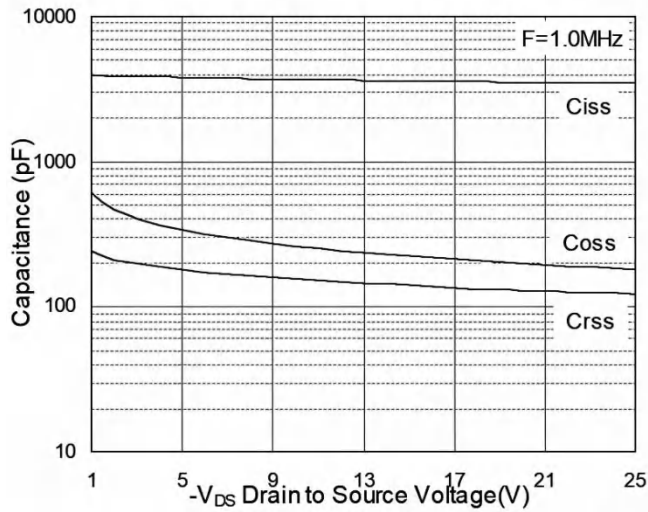


Fig.9 Normalized Maximum Transient Thermal Impedance

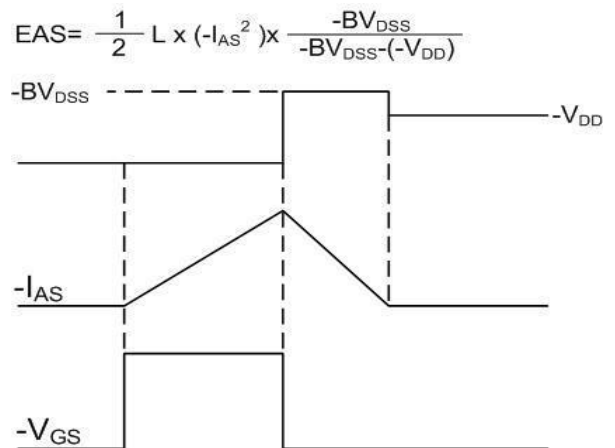
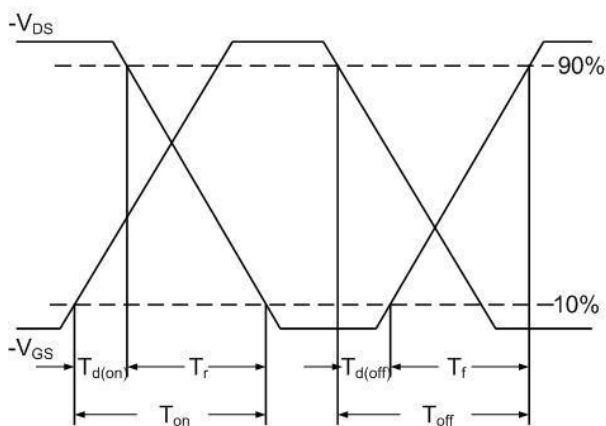


Fig.10 Switching Time Waveform

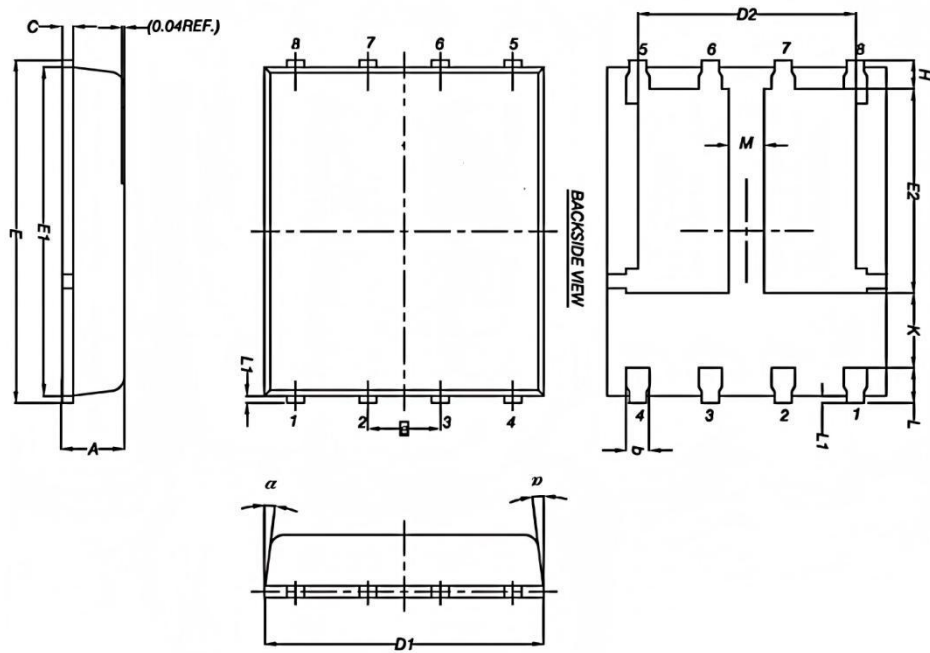
Fig.

Ordering Information



Part Number	Package code	Packaging
HSBA6315	PRPAK5*6	3000/Tape&Reel

PRPAK5*6 Dual EP2 Package Outline



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.17	0.035	0.046
b	0.33	0.51	0.013	0.020
C	0.20	0.30	0.008	0.012
D1	4.80	5.20	0.189	0.205
D2	3.61	3.96	0.142	0.156
E	5.90	6.15	0.232	0.242
E1	5.70	5.85	0.224	0.230
E2	3.30	3.78	0.130	0.149
e	1.27 BSC		0.05 BSC	
H	0.38	0.61	0.015	0.024
K	1.10	---	0.043	---
L	0.38	0.61	0.015	0.024
L1	0.05	0.25	0.002	0.010
M	0.50	---	0.020	---
α	0°	12°	0°	12°



HSBA6315 Marking:

