

General Description

The HSCB1216E 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 HSCB1216E meet the RoHS and Green Product requirement with full function reliability approved.

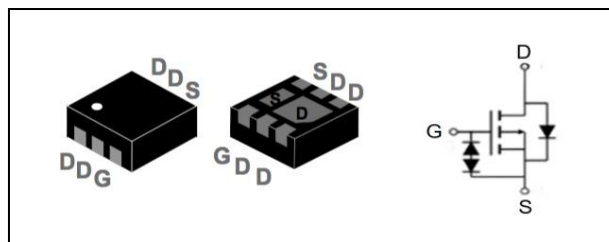
Product Summary

V_{DS}	-16	V
$R_{DS(ON),typ}$	20	mΩ
I_D	-12	A

Features

- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench Technology
- ESD Rating: > 2000V HBM

DFN2*2-6L Pin Configurations



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-12	V
V_{GS}	Gate-Source Voltage	±10	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -4.5V^1$	-12	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ -4.5V^1$	-9.6	A
I_{DM}	Pulsed Drain Current ²	-48	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ¹	1.5	W
$P_D@T_C=100^{\circ}C$	Total Power Dissipation ¹	0.95	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ^{1,2}	---	75	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Ambient	---	6.5	°C/W

Note :

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

2.Pulse width limited by maximum junction temperature.

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-16	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-4.5V, I_D=-6A$	---	20	28	$m\Omega$
		$V_{GS}=-2.5V, I_D=-4A$	---	36	50	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.45	-0.75	-1.2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-16V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$	---	---	± 10	μA
R_G	Gate Resistance	$f=1.0\text{MHz}$	---	6.3	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-8V, V_{GS}=-4.5V, I_D=-6A$	---	10	---	nC
Q_{gs}	Gate-Source Charge		---	1.5	---	
Q_{gd}	Gate-Drain Charge		---	3.6	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-8V, V_{GS}=-4.5V, R_G=1\Omega, I_D=-6A$	---	21	---	ns
T_r	Rise Time		---	25	---	
$T_{d(off)}$	Turn-Off Delay Time		---	48	---	
T_f	Fall Time		---	22	---	
C_{iss}	Input Capacitance	$V_{DS}=-8V, V_{GS}=0V, f=1\text{MHz}$	---	907	---	pF
C_{oss}	Output Capacitance		---	211	---	
C_{rss}	Reverse Transfer Capacitance		---	185	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=-3A, T_J=25^\circ\text{C}$	---	---	-1.2	V

Note :

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

2. Pulse width limited by maximum junction temperature.

Typical Characteristics

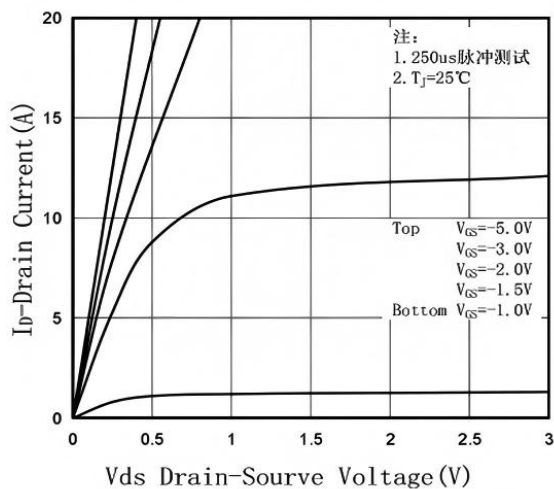


Fig.1 Output Characteristic

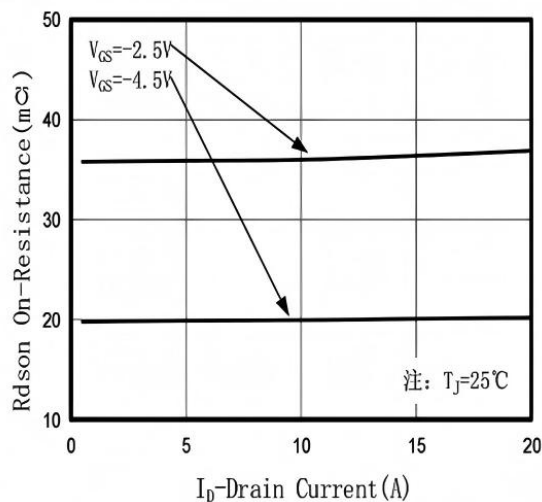


Fig.2 On-Resistance vs. Drain Current

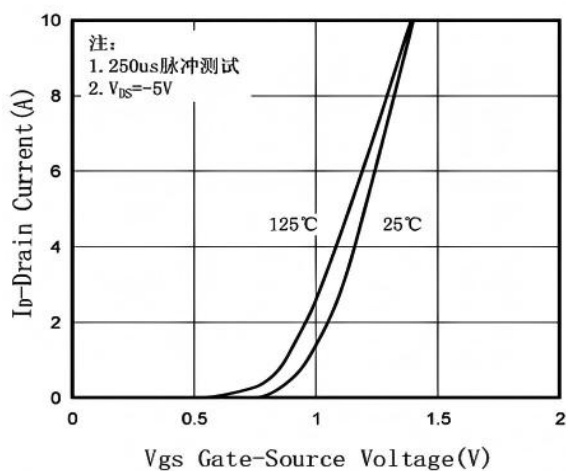


Fig.3 Transfer Characteristic

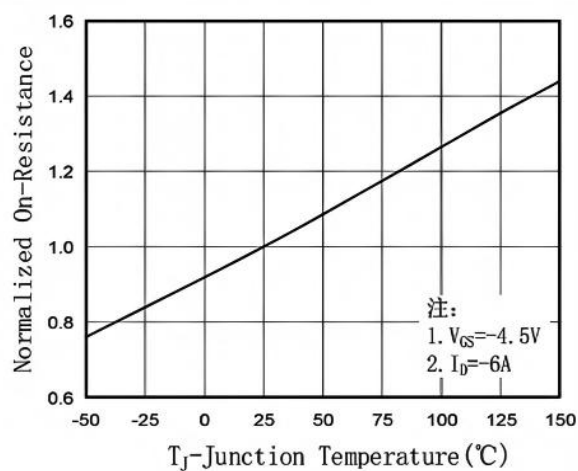


Fig.4 On-Resistance vs. Junction Temperature

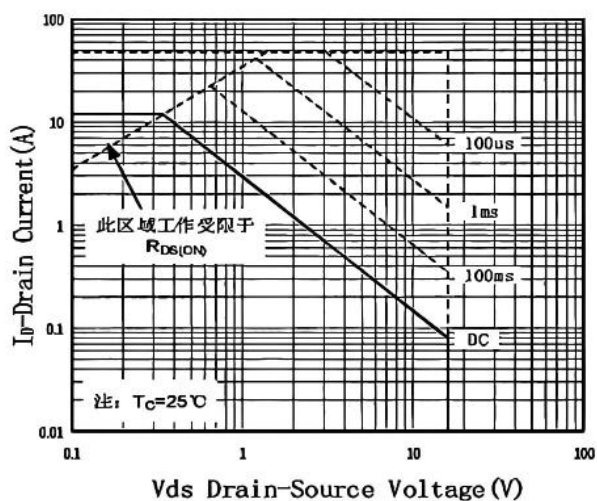


Fig.5 Safe Operation Area

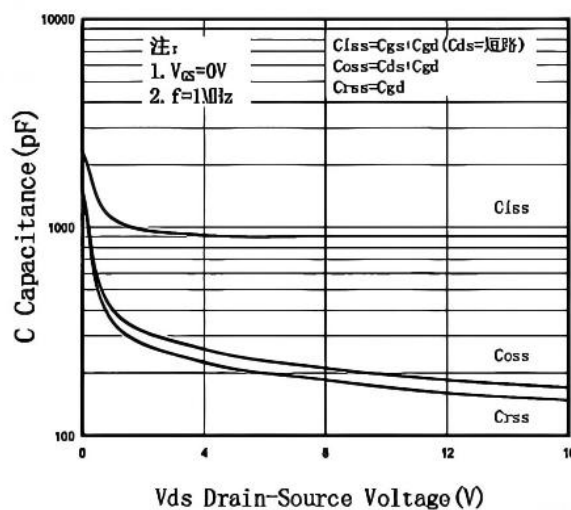


Fig.6 Capacitance Characteristic

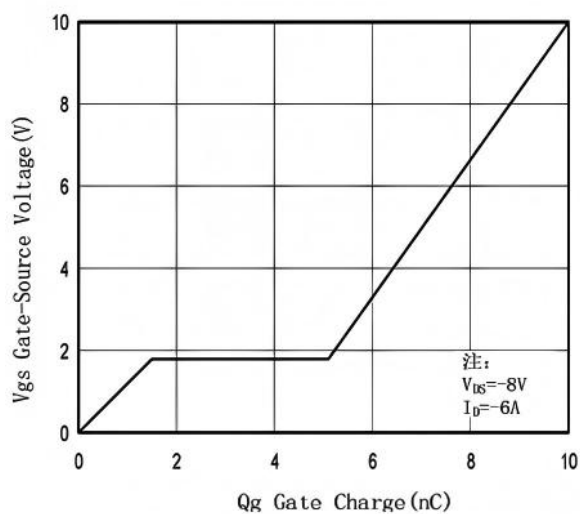


Fig.7 Gate-Charge Characteristic

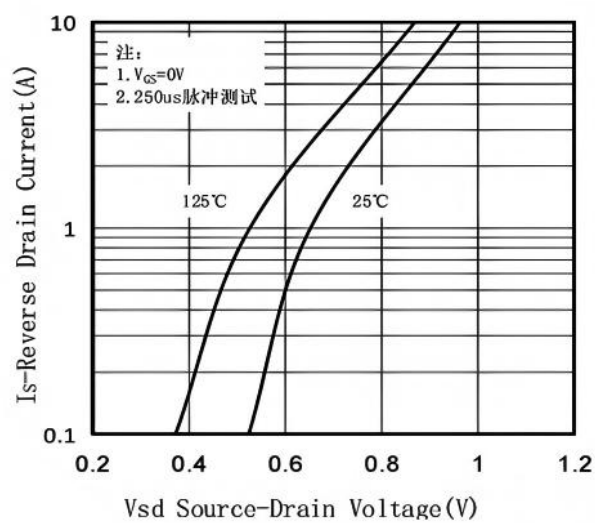
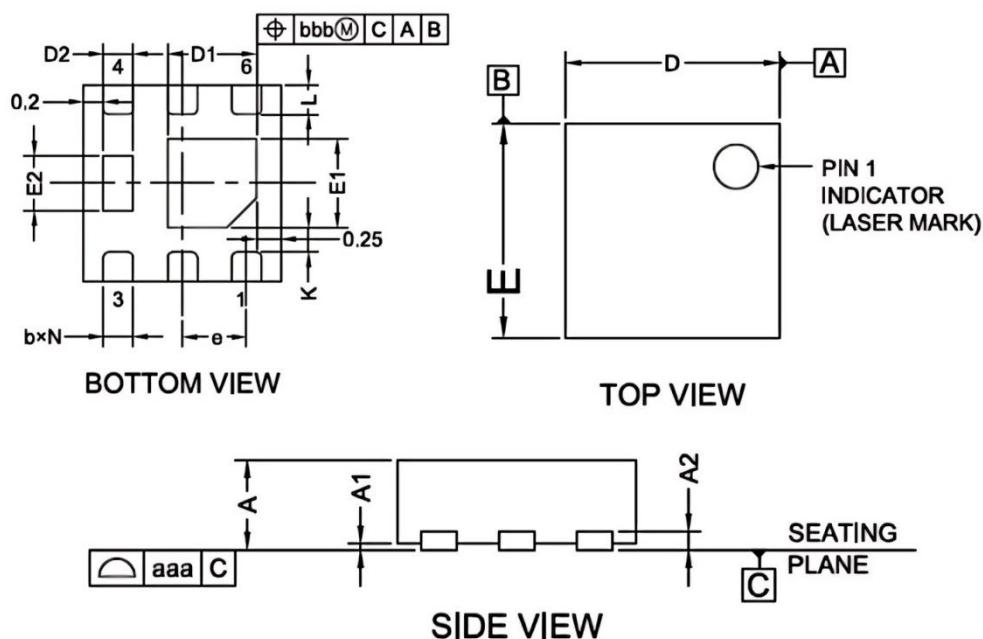


Fig.8 Body Diode Characteristic

Ordering Information

Part Number	Package code	Packaging
HSCB1216E	DFN2*2-6L	3000/Tape&Reel

DFN2*2-6L 2EP Package Outline



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A2	0.152REF.		
b	0.25	0.30	0.35
D	1.95	2.00	2.05
D1	0.80	0.90	1.00
D2	0.25	0.30	0.35
E	1.95	2.00	2.05
E1	0.80	0.90	1.00
E2	0.46	0.56	0.66
e	0.65BSC		
L	0.25	0.30	0.35
J	0.40BSC		
K	0.20MIN		
N	6		
aaa	8		
bbb	0.10		

HSCB1206E Marking:

