

General Description

The HSBG3132 is the high cell density trench N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The HSBG3132 meets the RoHS and Green Product requirement with full function reliability approved.

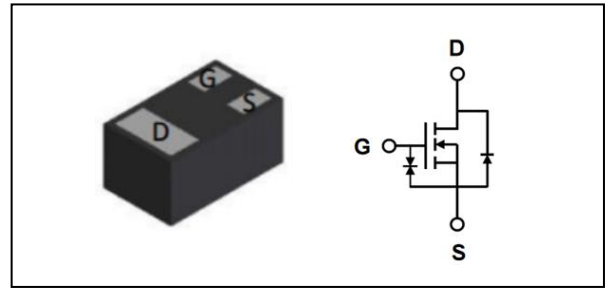
Features

- Small Single Switch
- Load Switch
- ESD Protected Gate
- Low Gate Threshold Voltage

Product Summary

V_{DS}	30	V
$R_{DS(ON),typ}$	220	mΩ
I_D	1.5	A

DFN1006 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±10	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current ¹	1.5	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current ¹	1.05	A
I_{DM}	Pulsed Drain Current ²	3.2	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ³	1.2	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 ⁴	---	105	°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	30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =4.5V, I _D =500mA	---	220	305	mΩ
		V _{GS} =2.5V, I _D =350mA	---	270	410	
		V _{GS} =1.8V, I _D =150mA	---	390	515	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.5	0.8	1.2	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V, T _J =25°C	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±10V, V _{DS} =0V	---	---	±10	uA
Q _g	Total Gate Charge (4.5V)	V _{DS} =15V, V _{GS} =4.5V, I _D =500mA	---	0.6	---	nC
Q _{gs}	Gate-Source Charge		---	0.16	---	
Q _{gd}	Gate-Drain Charge		---	0.1	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =15V, V _{GS} =4.5V, R _G =10Ω I _D =500mA	---	6	---	ns
T _r	Rise Time		---	3.5	---	
T _{d(off)}	Turn-Off Delay Time		---	27	---	
T _f	Fall Time		---	8	---	
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	---	16	---	pF
C _{oss}	Output Capacitance		---	12	---	
C _{rss}	Reverse Transfer Capacitance		---	4	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.3A, T _J =25°C	---	---	1.2	V

Note :

- 1.Computed continuous current assumes the condition of T_J_Max while the actual continuous current depends on the thermal & electro-mechanical application board design.
- 2.Repetitive Rating: Pulse width limited by maximum junction temperature(T_J_Max=150°C).
- 3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4.Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout, RDS(ON)(T_J_max)= 500mΩ . The value in any given application depends on the user's specific board design. The maximum current rating is package limited.



Typical Characteristics

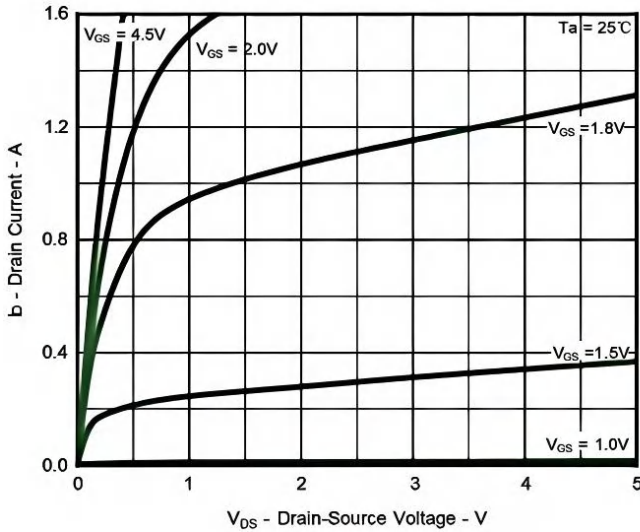


Fig.1 Typical Output Characteristics

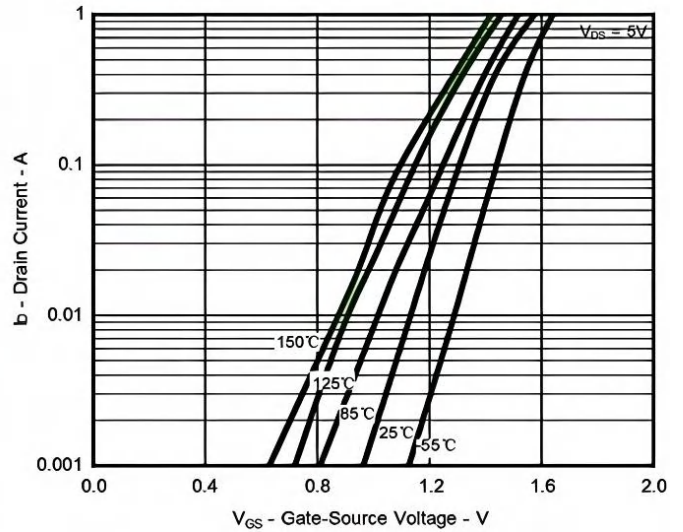


Fig.2 Typical Transfer Characteristic

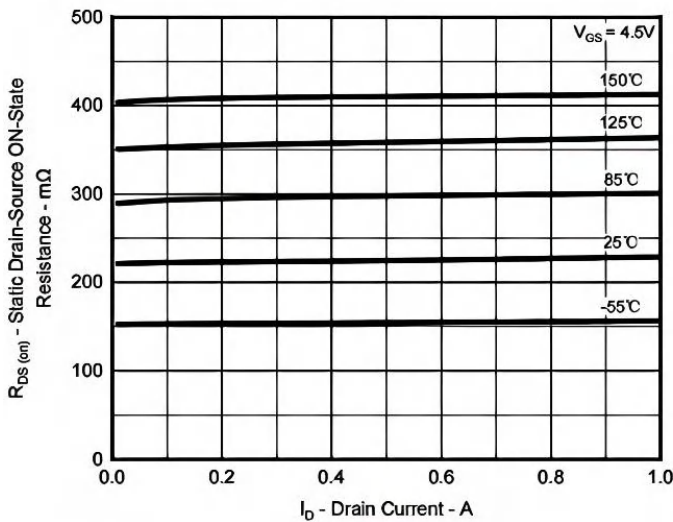


Fig.3 On-Resistance vs. Drain Current and Temperature

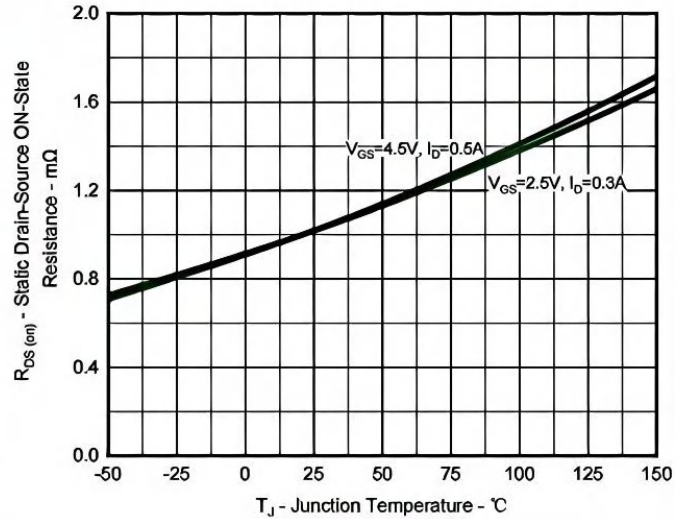


Fig.4 On-Resistance Variation with Temperature

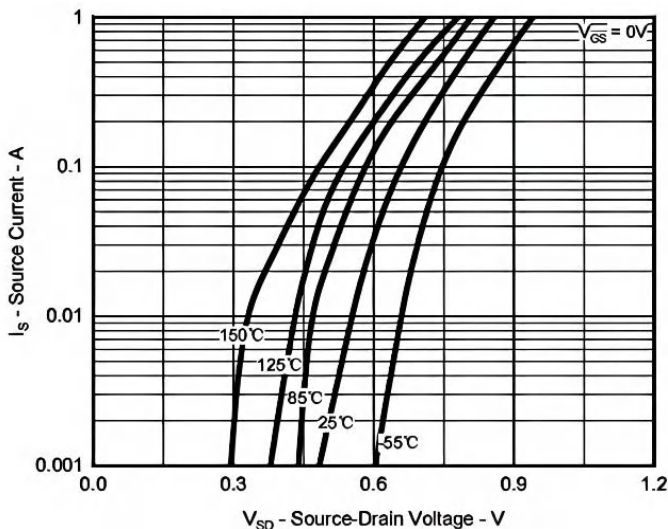


Fig.5 Diode Forward Voltage vs. Current

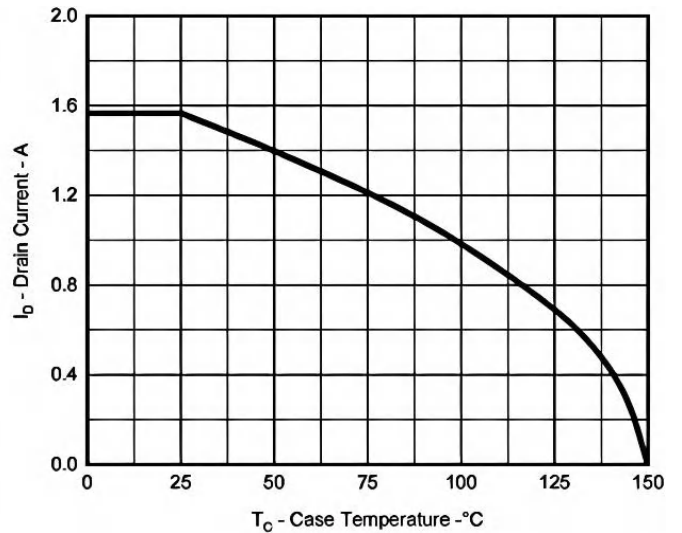


Fig.6 Maximum Drain Current vs. Case Temperature



N-Ch 30V Fast Switching MOSFETs

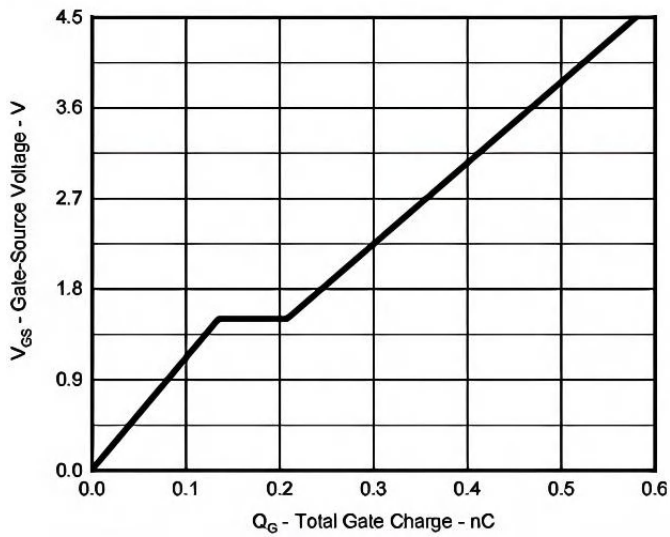


Fig.7 Gate Charge Characteristics

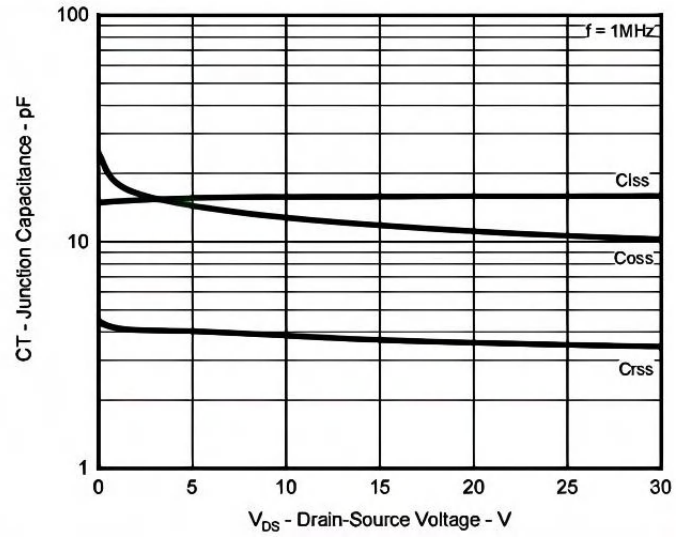


Fig.8 Typical Junction Capacitance

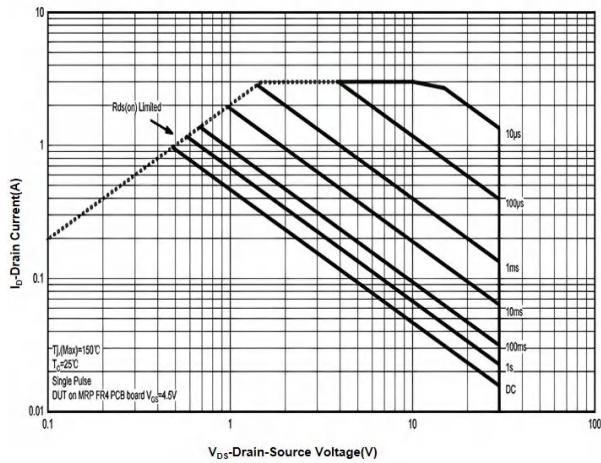


Fig.9 Safe Operation Area

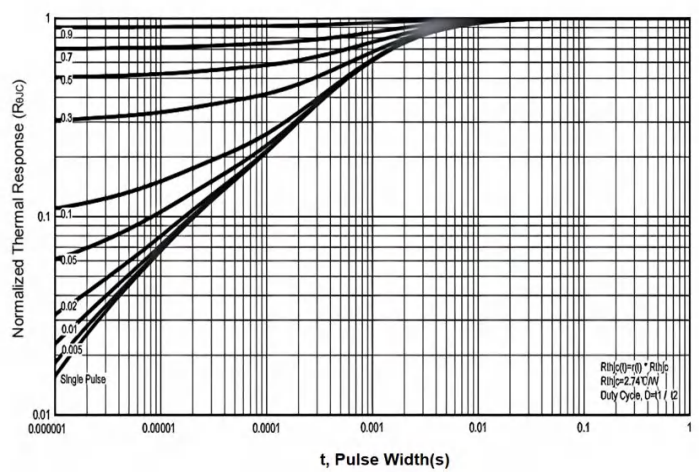


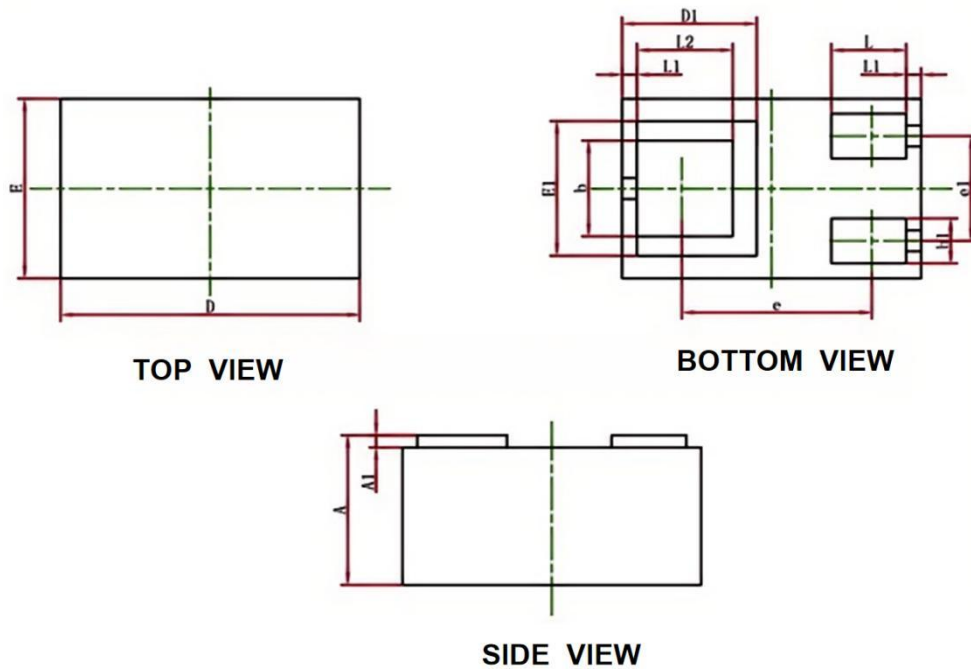
Fig.10 Transient Thermal Resistance



Ordering Information

Part Number	Package code	Packaging
HSBG3132	DFN1006-3	10000/Tape&Reel

DFN1006-3 Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
AL	0.010	0.100	0.000	0.004
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
D1	0.450REF.		0.0178REF.	
E1	0.450REF.		0.0178REF.	
b	0.270	0.370	0.011	0.015
bl	0.100	0.200	0.004	0.008
e	0.635REF.		0.025REF.	
el	0.300	0.400	0.012	0.016
L	0.200	0.300	0.008	0.012
L1	0.050REF.		0.002REF.	
L2	0.270	0.370	0.011	0.015



HSBG3132 Marking

