

BV _{DSS}	-60V
R _{DS(ON)}	175mΩ
I _D	-2.2A

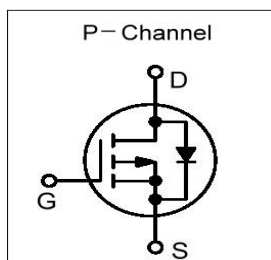
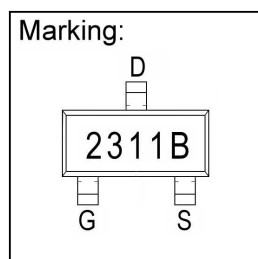
Description

The SE2311B is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent R_{DS(ON)} and gate charge for most of the small power switching and load switch applications.

The SE2311B meet the RoHS and Green Product requirement with full function reliability approved.

Features

- ☐ Advanced high cell density Trench technology
- ☐ Super Low Gate Charge
- ☐ Excellent CdV/dt effect decline
- ☐ Green Device Available



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹	I _D @T _A =25°C	-2.2	A
	I _D @T _A =70°C	-1.7	A
Pulsed Drain Current ^{1,2}	I _{DM} @T _A =25°C	-5	A
Total Power Dissipation ³	P _D @T _A =25°C	1.38	W
Linear Derating Factor	-	0.01	W/°C
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Max. Value	Unit
Thermal Resistance Junction-ambient ¹	R _{θJA}	90	°C/W



Electrical Characteristics (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	-60	-	-	V	V _{GS} =0, I _D =-250uA
Gate Threshold Voltage	V _{GS(th)}	-1	-	-3	V	V _{DS} =V _{GS} , I _D =-250uA
Forward Transconductance	g _{fs}	-	5.8	-	S	V _{DS} =-10V, I _D =-2A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current(T _J =25°C)	I _{DSS}	-	-	-1	uA	V _{DS} =-48V, V _{GS} =0
Drain-Source Leakage Current(T _J =55°C)		-	-	-5		V _{DS} =-48V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(on)}	-	-	175	mΩ	V _{GS} =-10V, I _D =-2.0A
		-	-	230		V _{GS} =-4.5V, I _D =-1.0A
Total Gate Charge ²	Q _g	-	4.59	-	nC	I _D =-2A
Gate-Source Charge	Q _{gs}	-	1.39	-		V _{DS} =-20V
Gate-Drain ("Miller") Charge	Q _{gd}	-	1.62	-		V _{GS} =-4.5V
Turn-on Delay Time ²	T _{d(on)}	-	17.4	-	ns	V _{DD} =-15V
Rise Time	T _r	-	5.4	-		I _D =-1A
Turn-off Delay Time	T _{d(off)}	-	37.2	-		V _{GS} =-10V
Fall Time	T _f	-	2.4	-		R _G =3.3Ω
Input Capacitance	C _{iss}	-	531	-	pF	V _{GS} =0V
Output Capacitance	C _{oss}	-	59	-		V _{DS} =-15V
Reverse Transfer Capacitance	C _{rss}	-	38	-		f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode Forward Voltage ²	V _{SD}	-	-	-1.0	V	I _S =-1A, V _{GS} =0V, T _J =25°C
Continuous Source Current ^{1,4}	I _S	-	-	-2.2	A	V _G =V _D =0V, Force Current
Pulsed Source Current ^{2,4}	I _{SM}	-	-	-4.5	A	

Notes: 1. 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 power dissipation is limited by 150°C junction temperature.

4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.



Typical Characteristics

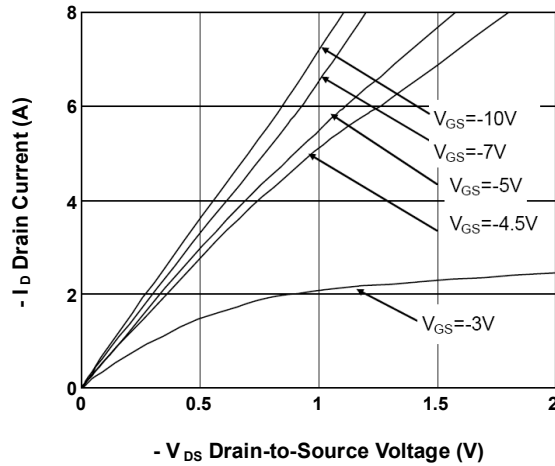


Fig.1 Typical Output Characteristics

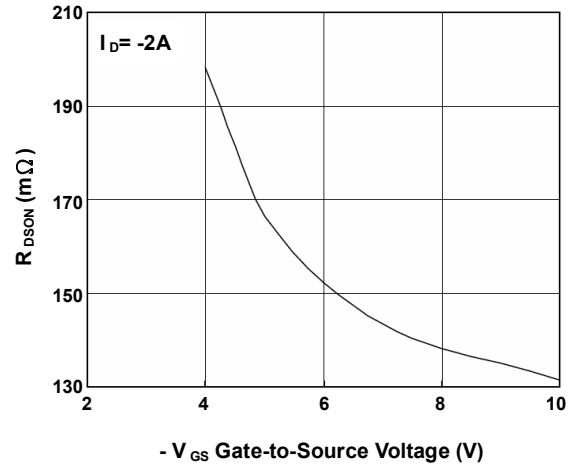


Fig.2 On-Resistance vs. G-S Voltage

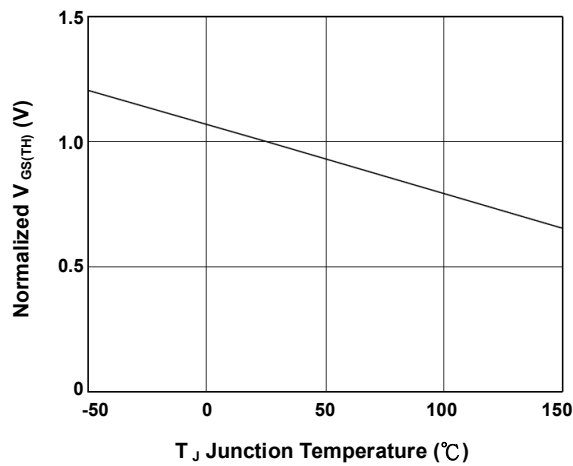


Fig.3 Normalized $V_{GS(th)}$ vs. T_J

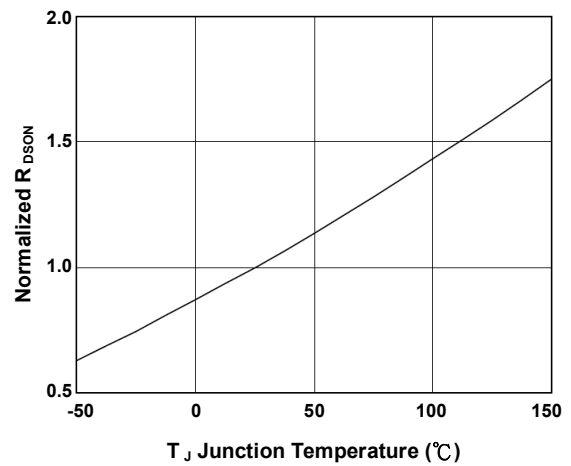


Fig.4 Normalized $R_{DS(on)}$ vs. T_J

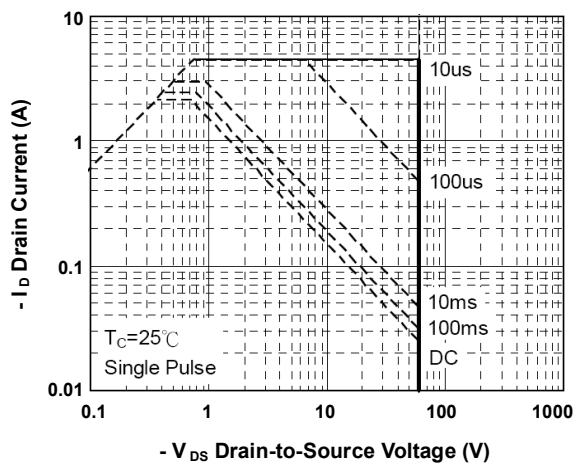


Fig.5 Safe Operating Area

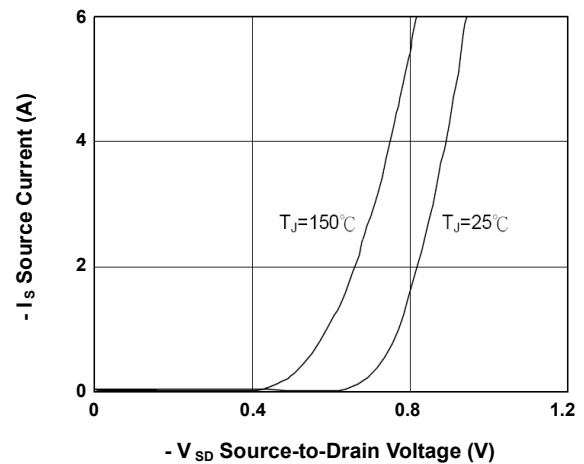


Fig.6 Forward Characteristics of Reverse

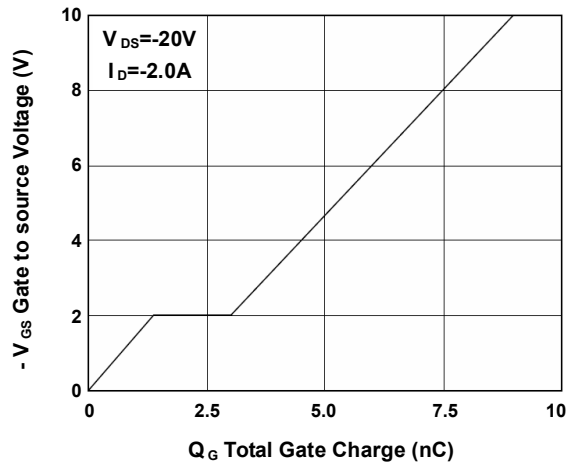


Fig.7 Gate Charge Characteristics

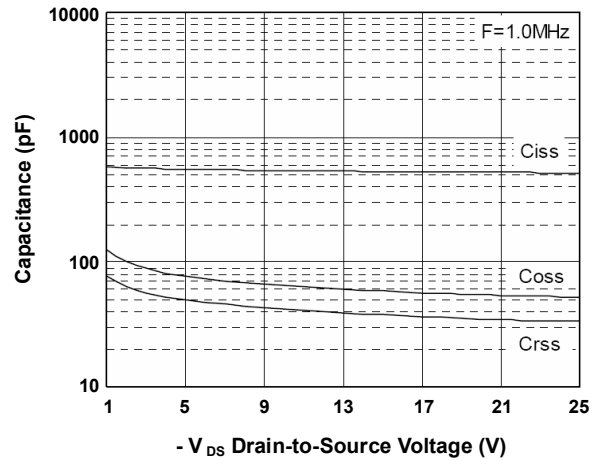


Fig.8 Capacitance Characteristics

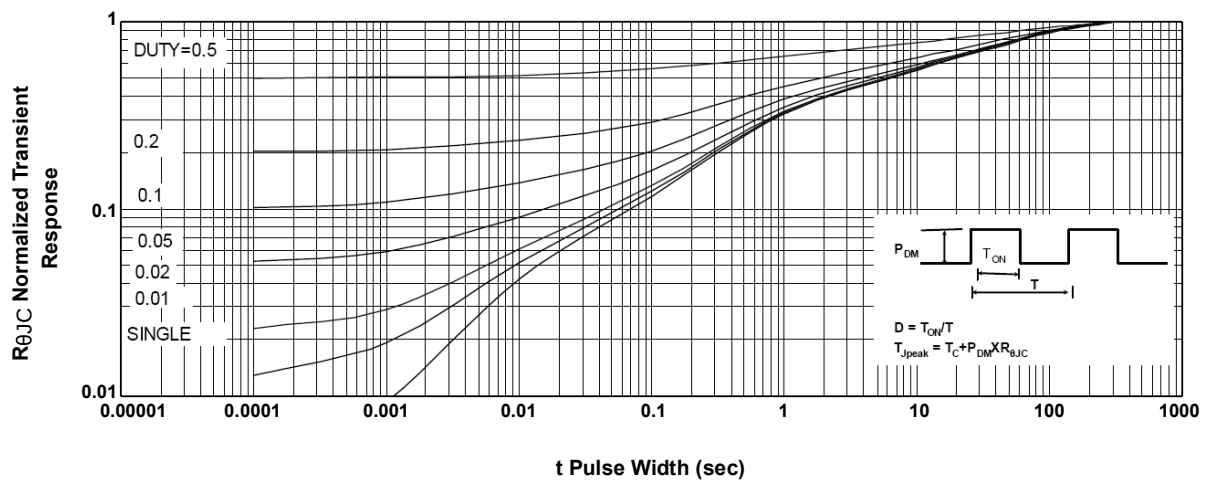


Fig.9 Normalized Maximum Transient Thermal Impedance

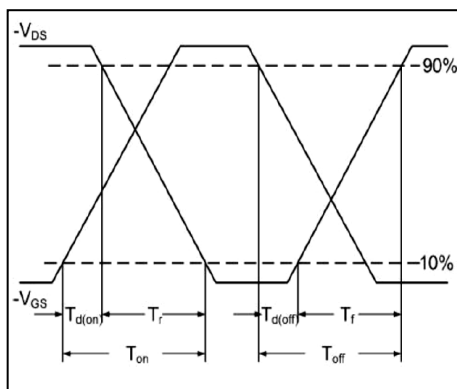


Fig.10 Switching Time Waveform

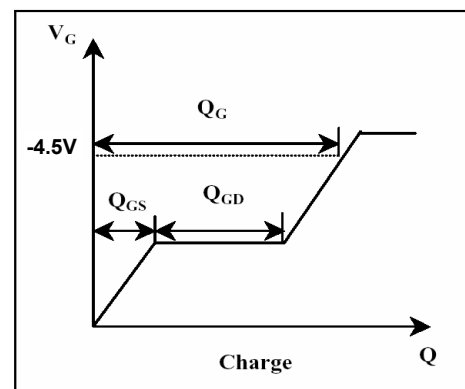
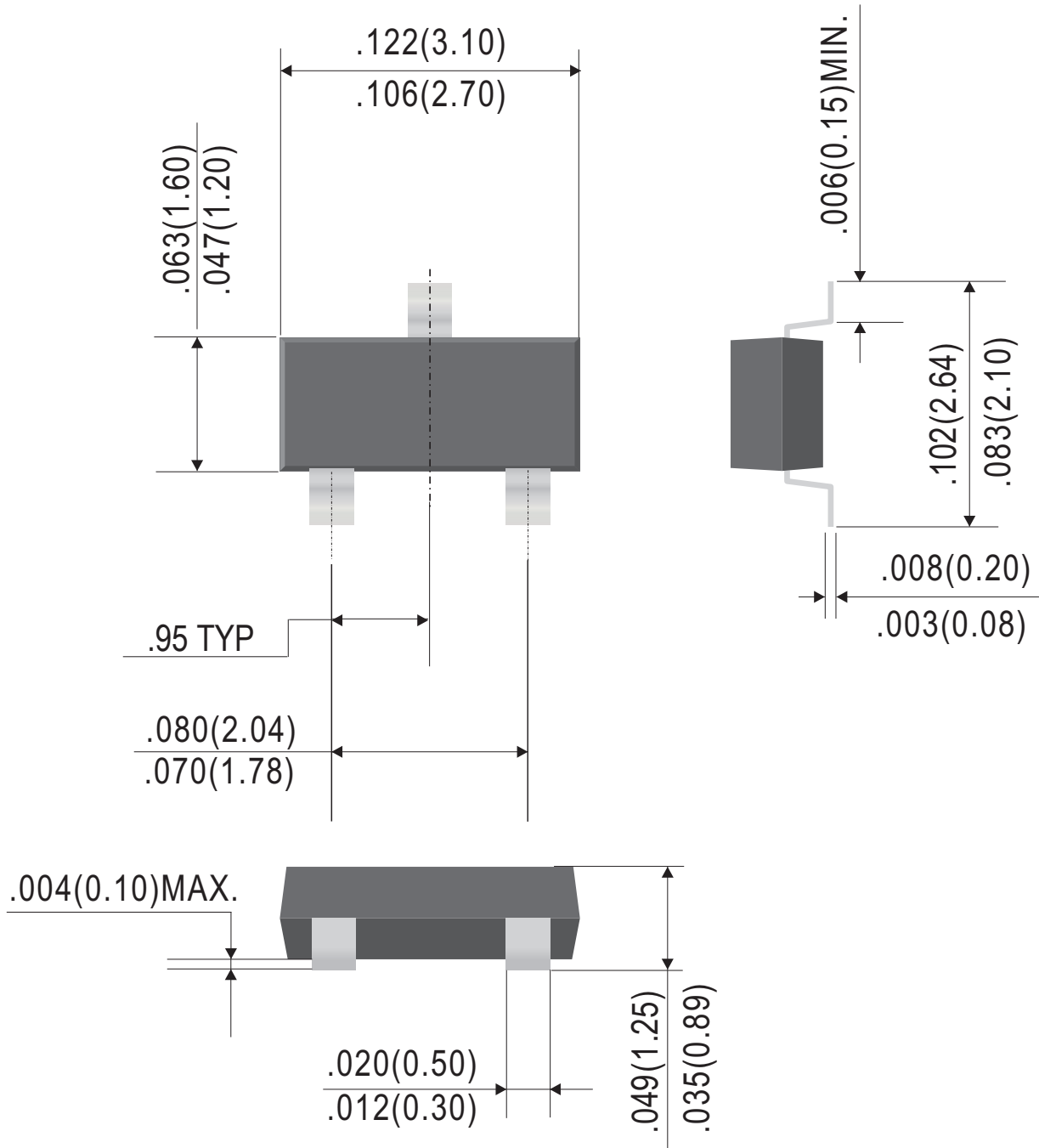


Fig.11 Gate Charge Waveform



Outline Drawing

SOT-23



Dimensions in inches and (millimeters)

Rev.E

Ordering Information:

Device PN	Packing
SE2311B -T ⁽¹⁾ H ⁽²⁾ -WS	Tape&Reel: 3 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) Halogen free product for packing code suffix "H"

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