

SE200100G

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

Advanced trench technology to provide excellent RDS(ON), low gate charge and low operation voltage. This device is suitable for using as a load switch or in PWM applications.

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

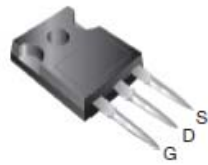
Features

For a single MOSFET

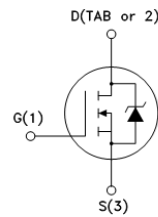
- $V_{DS} = 200V$
- $R_{DS(ON)} = 11.5m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



TO-247



Absolute Maximum Ratings

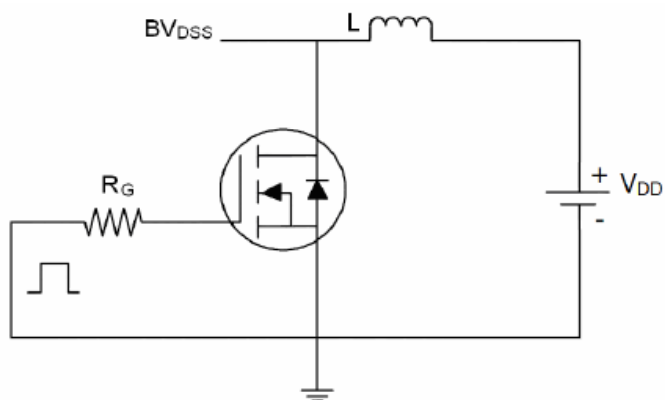
Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	100	A
	Pulsed		400	
Single pulse avalanche energy		E_{AS}	1369	mJ
Total Power Dissipation	@TA=25°C	P_D	400	W
Operating Junction Temperature Range		T_J	-55 to 175	°C

SE200100G

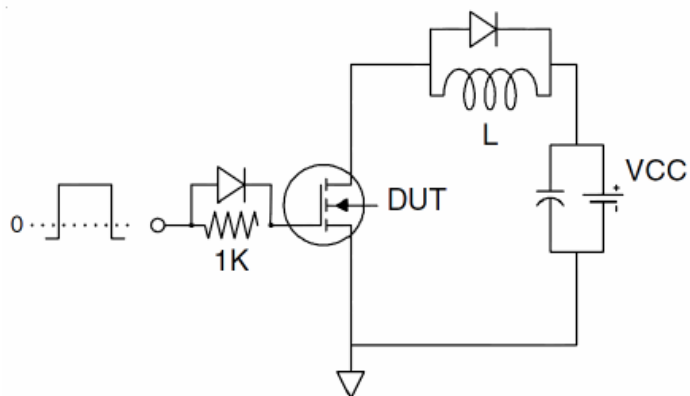
Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
B _V DSS	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0 V	200			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =150V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =20V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	2	3	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =50A	-	11.5	13	mΩ
g _{FS}	Forward Transconductance	V _{DS} =50V, I _D =40A	50			S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, f=1MHz		9382		pF
C _{oss}	Output Capacitance			529		pF
C _{rss}	Reverse Transfer Capacitance			206		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =100V, I _D =50A		150.9		nC
Q _{gs}	Gate Source Charge			36.8		nC
Q _{gd}	Gate Drain Charge			52.5		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =100V, R _{GEN} =2.5Ω I _D =2A		35		ns
t _{d(off)}	Turn-Off Delay Time			55		ns
t _{d(r)}	Turn-On Rise Time			30		ns
t _{d(f)}	Turn-Off Fall Time			25		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJC}	Thermal Resistance Junction to Case(t≤10s)		-	0.39	°C/W	

Test Circuits and Waveform

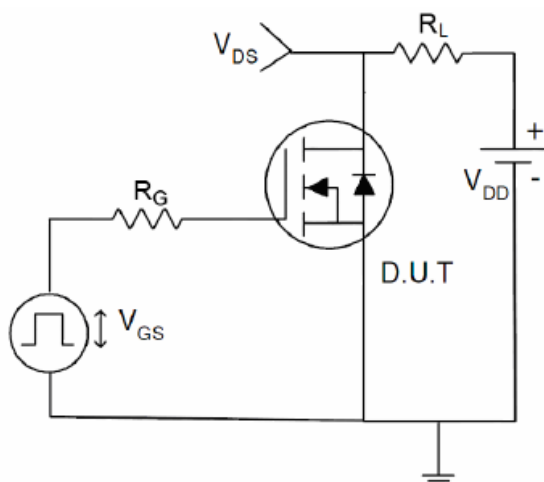
1) E_{AS} test Circuits



2) Gate charge test Circuit:



3) Switch Time Test Circuit:



Typical Characteristics

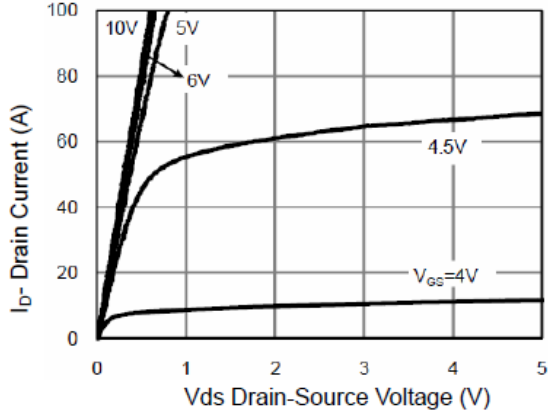


Figure 1 Output Characteristics

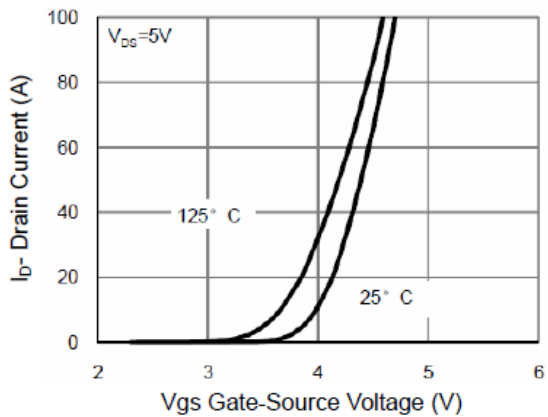


Figure 2 Transfer Characteristics

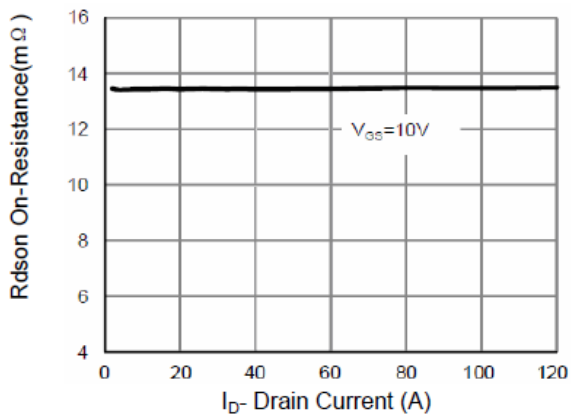


Figure 3 Rdson- Drain Current

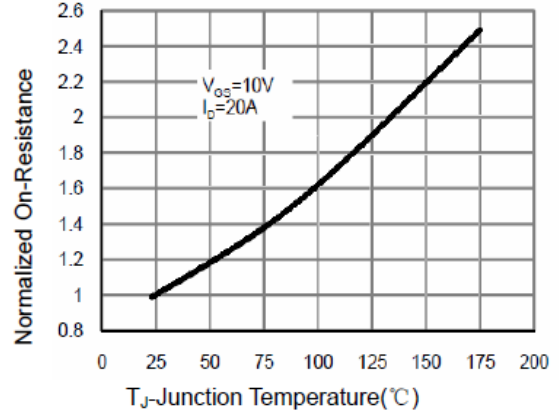


Figure 4 Rdson-Junction Temperature

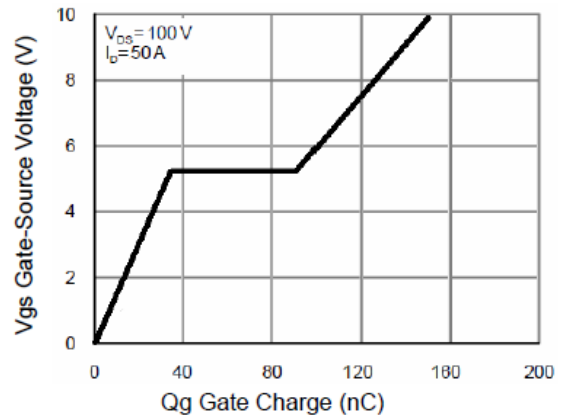


Figure 5 Gate Charge

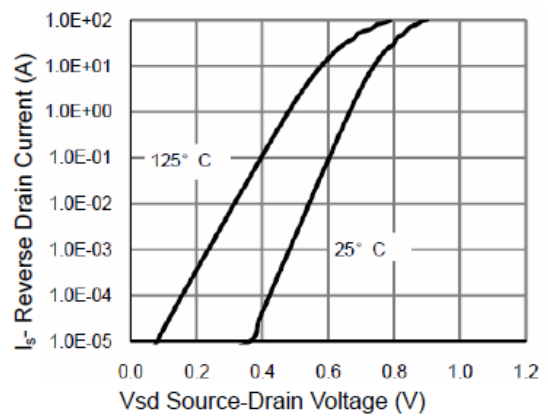


Figure 6 Source- Drain Diode Forward

Typical Characteristics

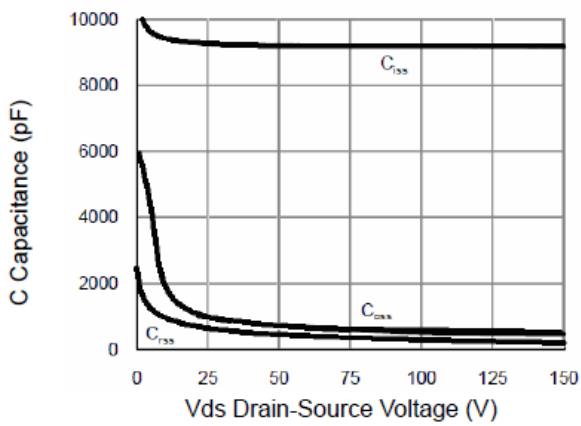


Figure 7 Capacitance vs Vds

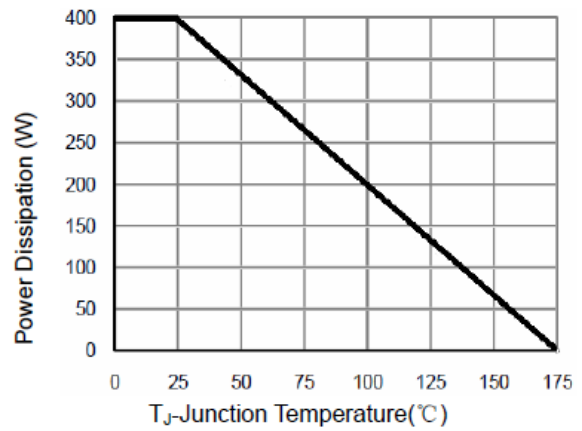


Figure 9 Power De-rating

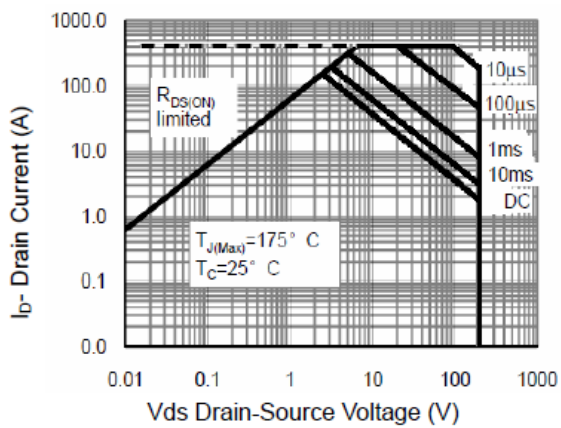


Figure 8 Safe Operation Area

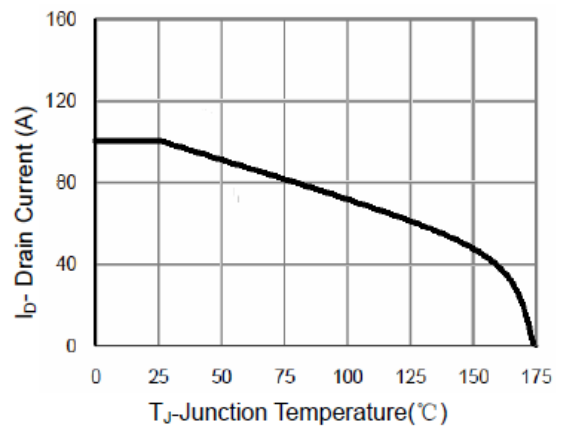


Figure 10 Current De-rating

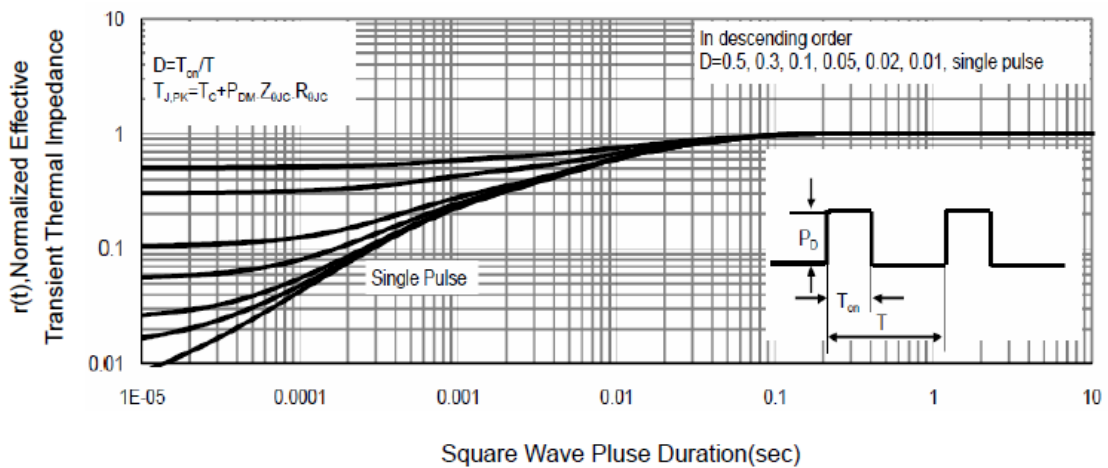
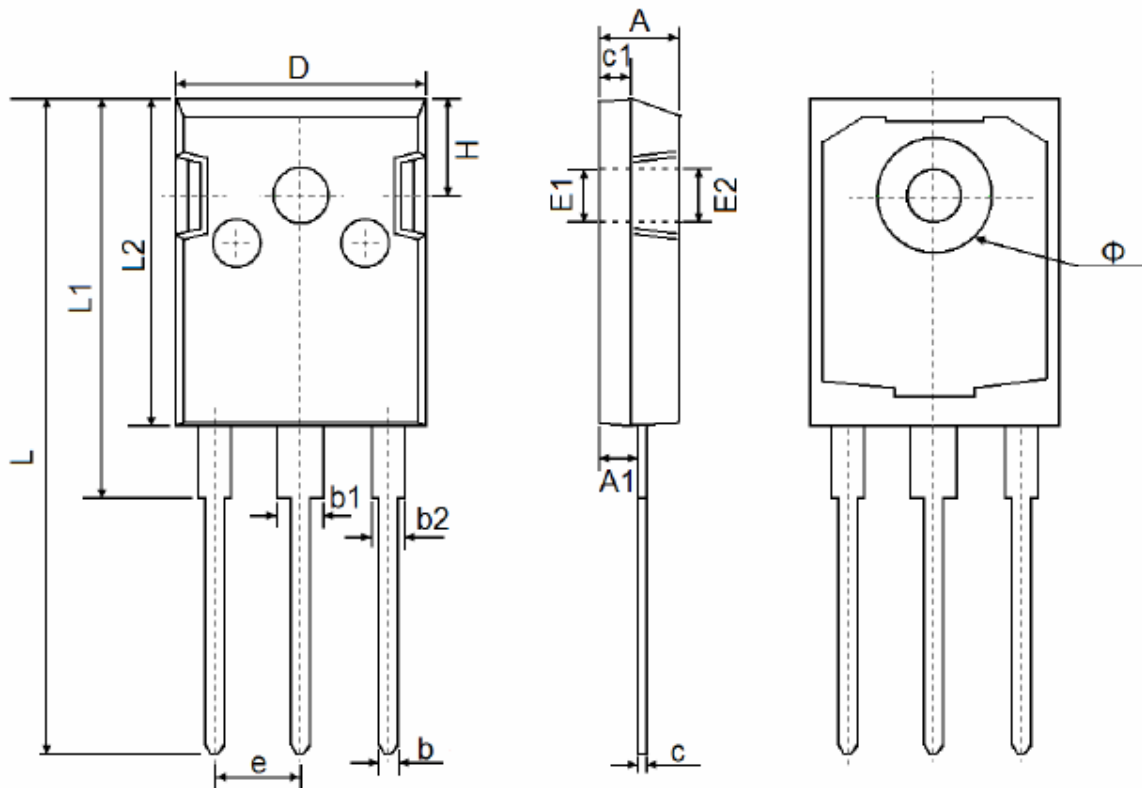


Figure 11 Normalized Maximum Transient Thermal Impedance

SE200100G

Package Outline Dimension

TO-247



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	

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