

SE200100

**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

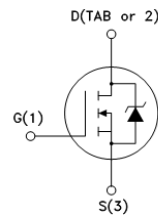
- $V_{DS} = 200V$
- $R_{DS(ON)} = 11.5m\Omega @ V_{GS}=10V$

**Pin configurations**

See Diagram below



TO-247



**Absolute Maximum Ratings**

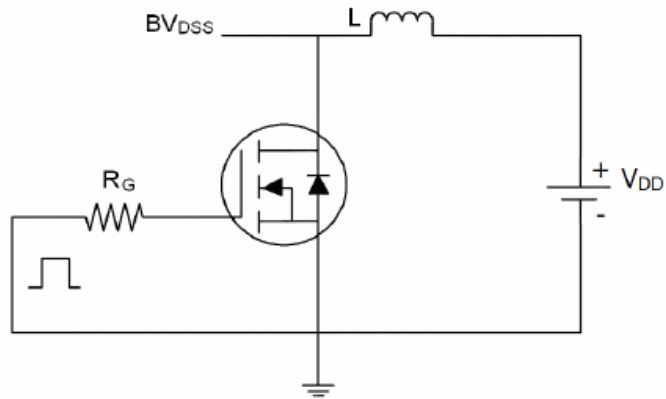
Parameter		Symbol	Rating	Units
Drain-Source Voltage		$V_{DS}$	200	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	100	A
	Pulsed		400	
Single pulse avalanche energy		$E_{AS}$	1369	mJ
Total Power Dissipation	@TA=25°C	$P_D$	400	W
Operating Junction Temperature Range		$T_J$	-55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

## SE200100

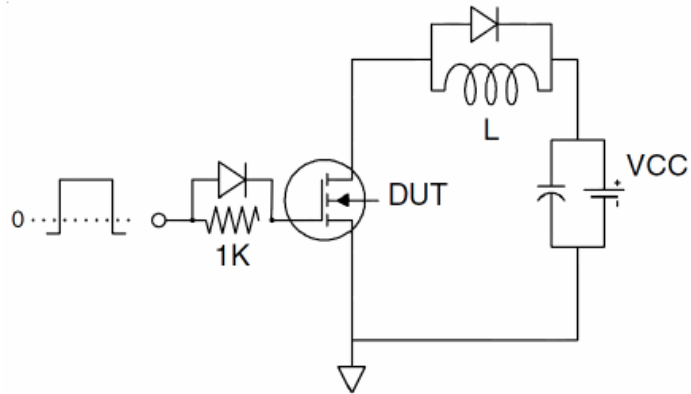
Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS (Note 2)</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0 V	200			V
I <sub>DSS</sub>	Drain to Source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

Test Circuits and Waveform

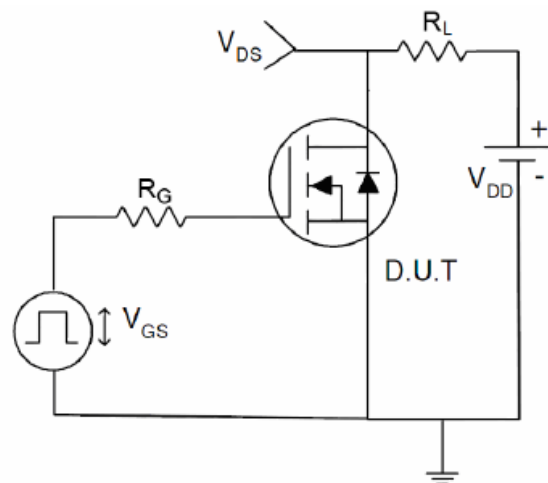
1)  $E_{AS}$  test Circuits



2) Gate charge test Circuit:



3) Switch Time Test Circuit:



Typical Characteristics

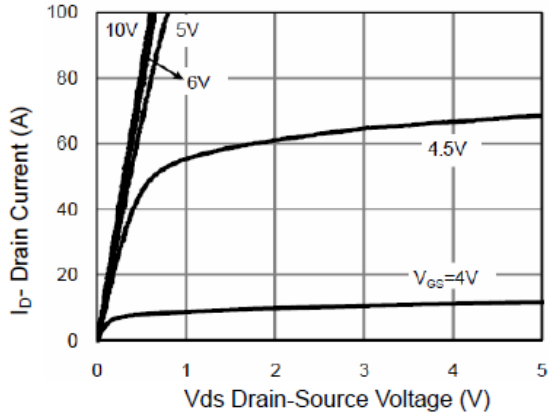


Figure 1 Output Characteristics

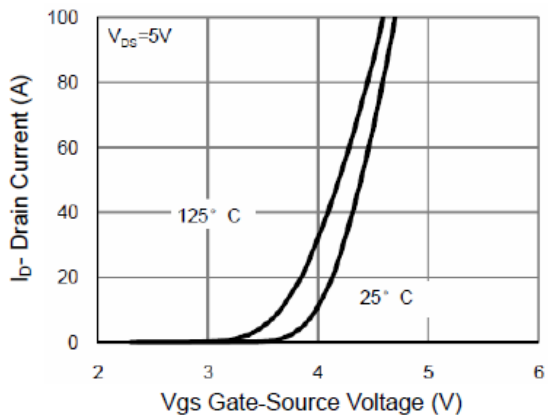


Figure 2 Transfer Characteristics

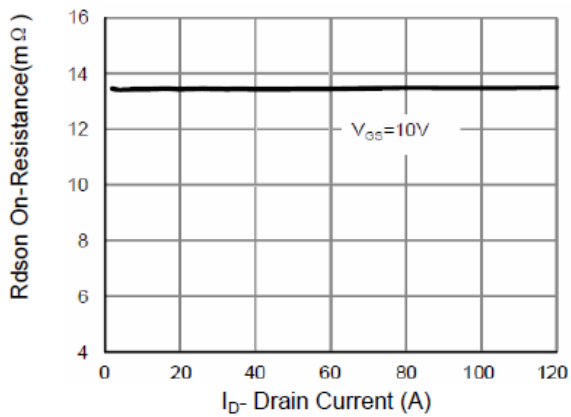


Figure 3 Rdson- Drain Current

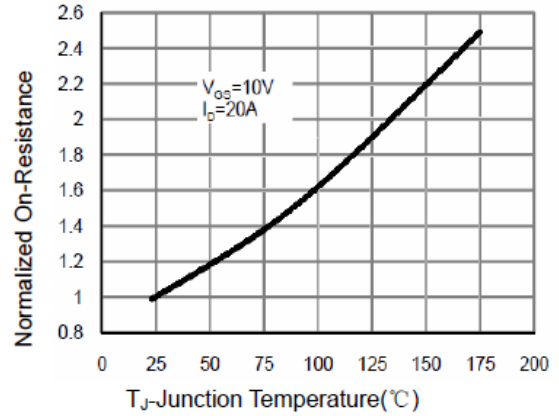


Figure 4 Rdson-Junction Temperature

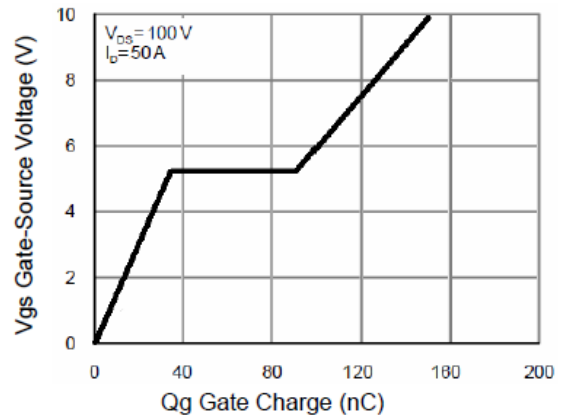


Figure 5 Gate Charge

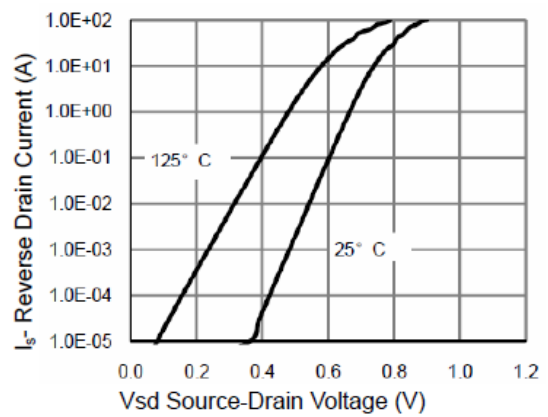


Figure 6 Source- Drain Diode Forward

Typical Characteristics

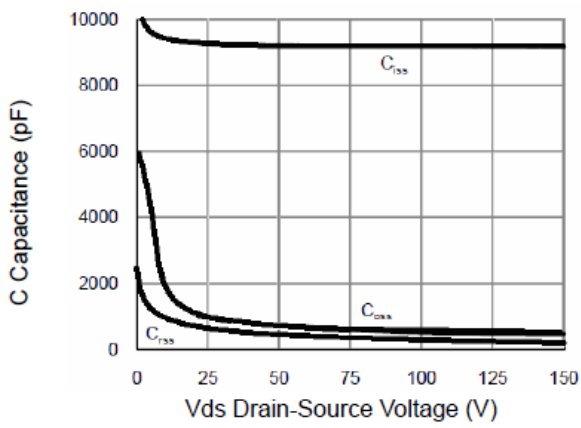


Figure 7 Capacitance vs Vds

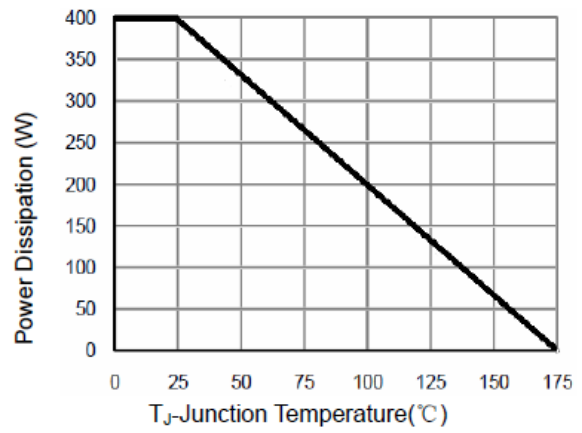


Figure 9 Power De-rating

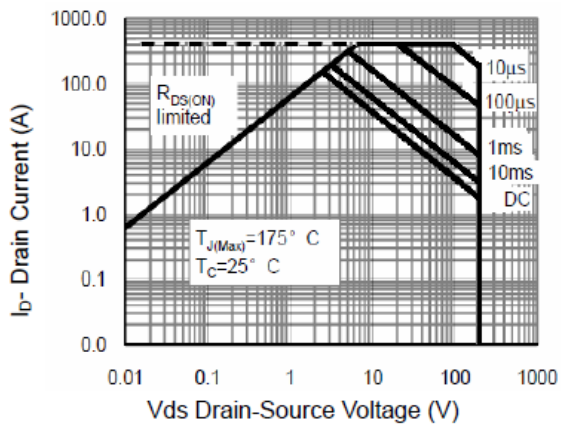


Figure 8 Safe Operation Area

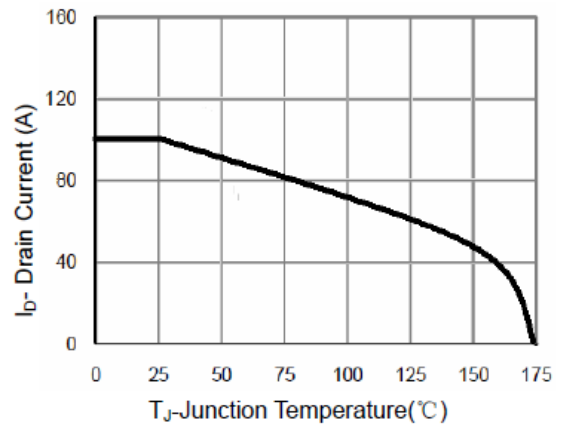


Figure 10 Current De-rating

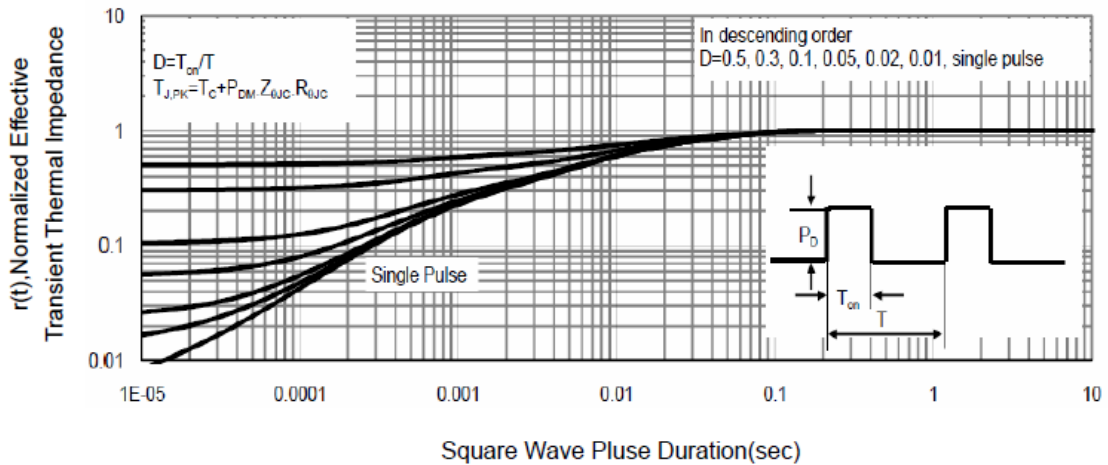
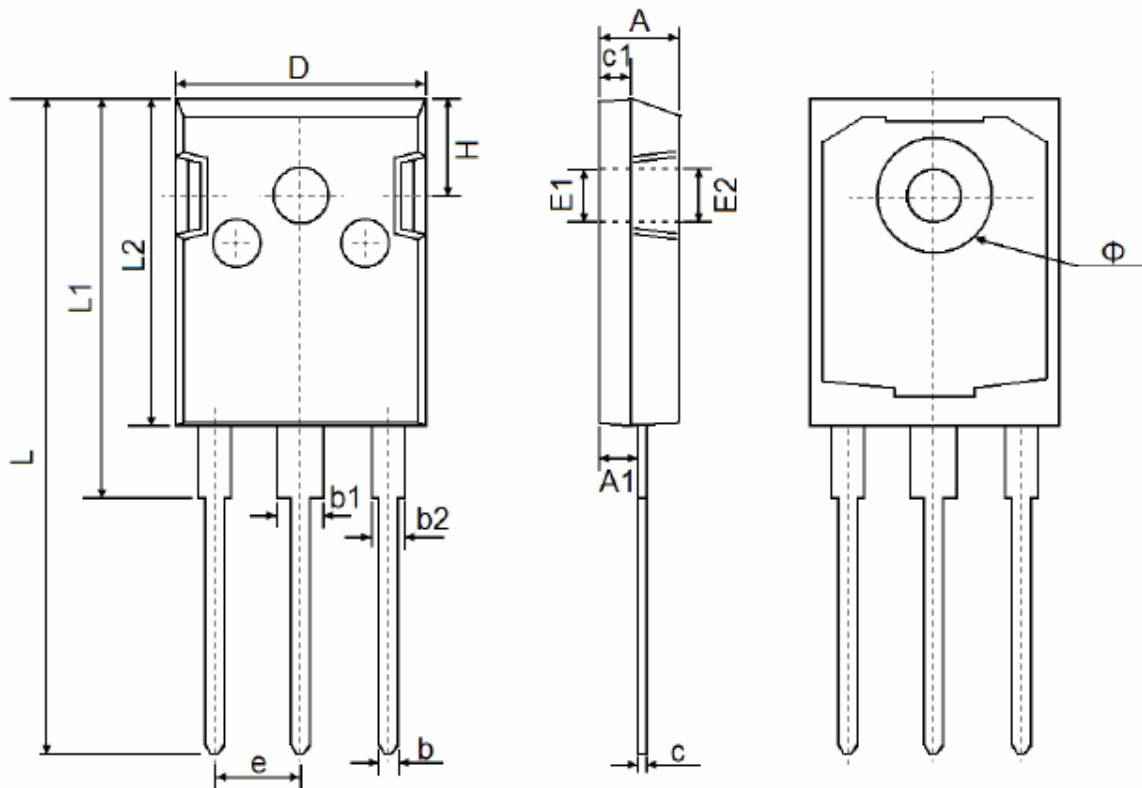


Figure 11 Normalized Maximum Transient Thermal Impedance

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## Package Outline Dimension

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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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