

SE100150G

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

This device used advanced semiconductor technology and design to provide excellent RDS(ON) with low gate charge and low operation voltage. It can be used in wide variety of application

- Excellent package for superior thermal resistance
- Optimized technology for DC/DC converters
- Easy to use and parallel

Features

For a single MOSFET

- $V_{DS} = 100V$
- $R_{DS(ON)} = 3.0m\Omega @ V_{GS}=10V$

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	150	A
	Pulsed		450	
Single Pulse Avalanche Energy		E_{AS}	1000	mJ
Total Power Dissipation	@TC=25°C	P_D	300	W
Operating Junction Temperature Range		T_J	-55 to 175	°C

100

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Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
B _{VDS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0 V	100			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =100V, 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	2.0	2.8	4.0	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =100A	-	3.0	4.0	mΩ
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =50A	50			S
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, f=1MHz		6100		pF
C _{oss}	Output Capacitance			480		pF
C _{rss}	Reverse Transfer Capacitance			33		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =50V, I _D =100A		160		nC
Q _{gs}	Gate Source Charge			52		nC
Q _{gd}	Gate Drain Charge			29		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =50V, R _{GEN} =1.6Ω		35		ns
t _{d(off)}	Turn-Off Delay Time			89		ns
t _{d(r)}	Turn-On Rise Time			59		ns
t _{d(f)}	Turn-Off Fall Time			29		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJC}	Thermal Resistance Junction to Case(t≤10s)		-	0.53	°C/W	

Typical Characteristics

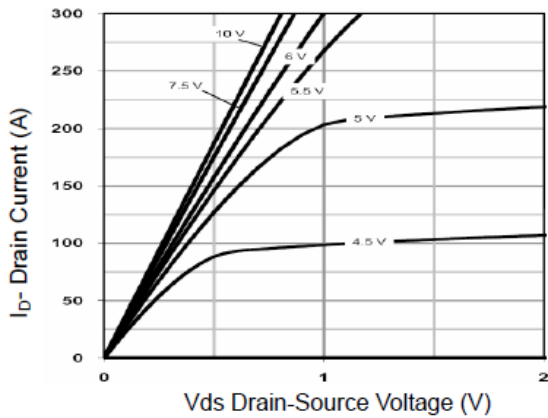


Figure 1 Output Characteristics

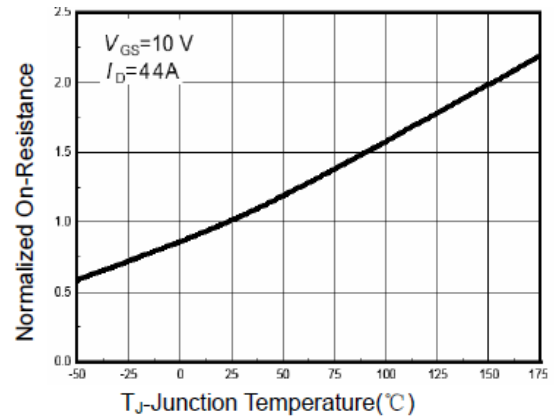


Figure 4 R_{Dson} -Junction Temperature

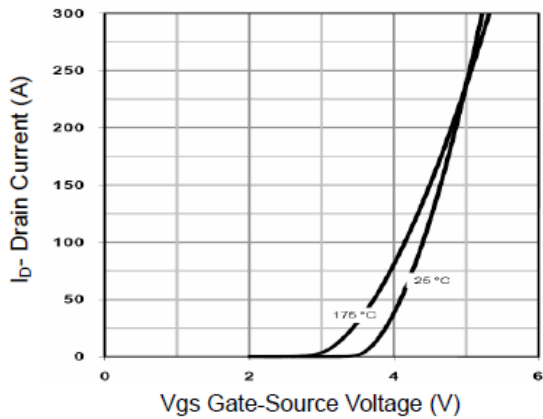


Figure 2 Transfer Characteristics

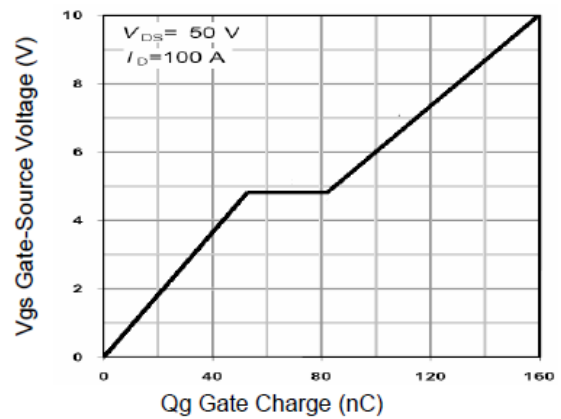


Figure 5 Gate Charge

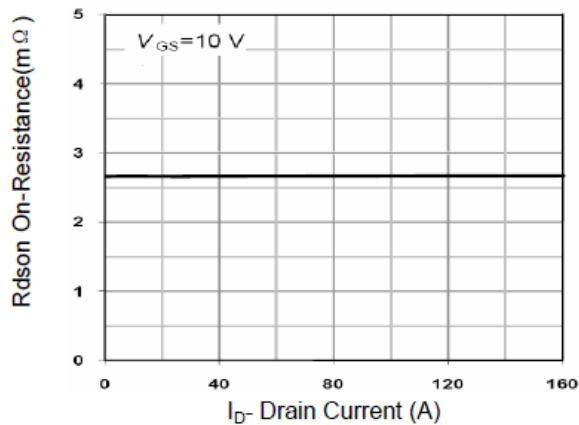


Figure 3 R_{Dson} - Drain Current

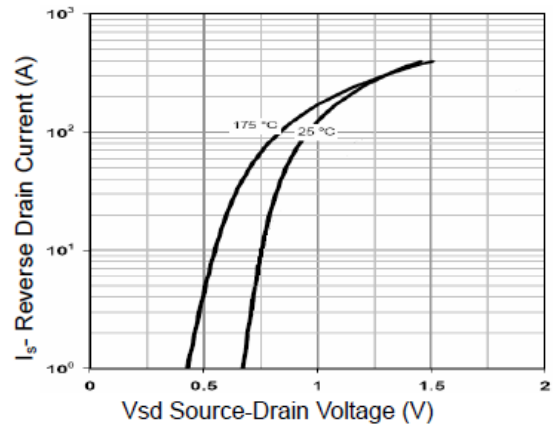


Figure 6 Source- Drain Diode Forward

Typical Characteristics

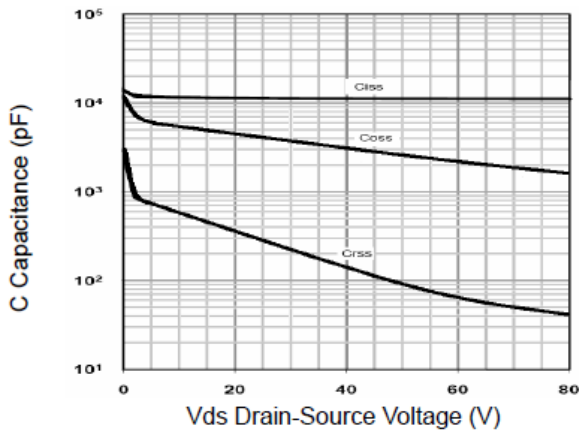


Figure 7 Capacitance vs Vds

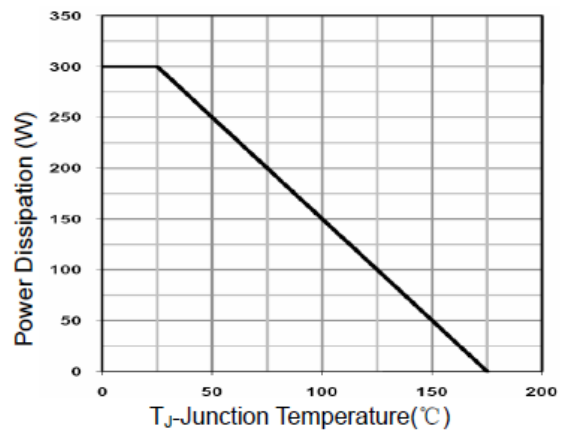


Figure 9 Power De-rating

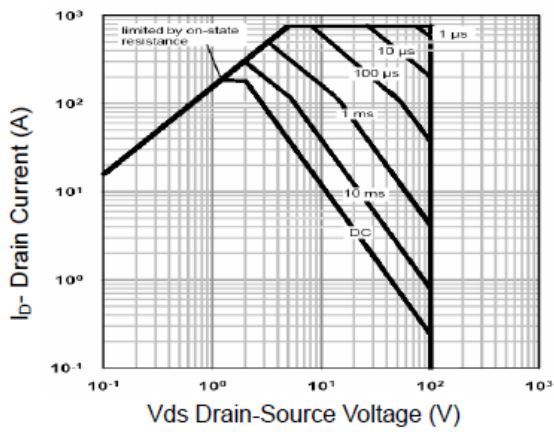


Figure 8 Safe Operation Area

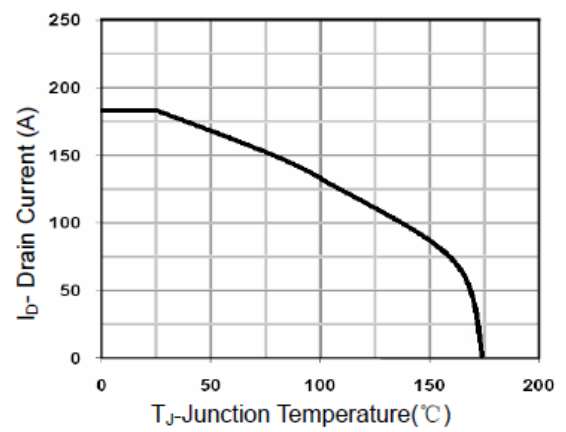


Figure 10 Current De-rating

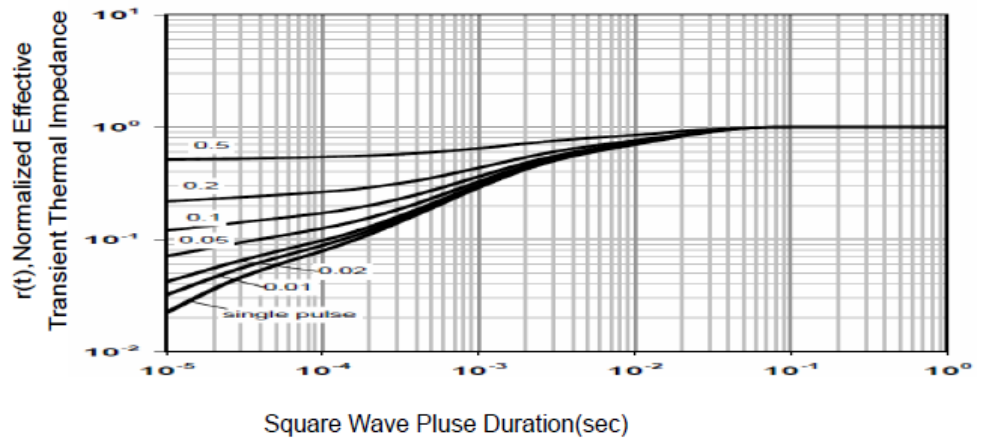
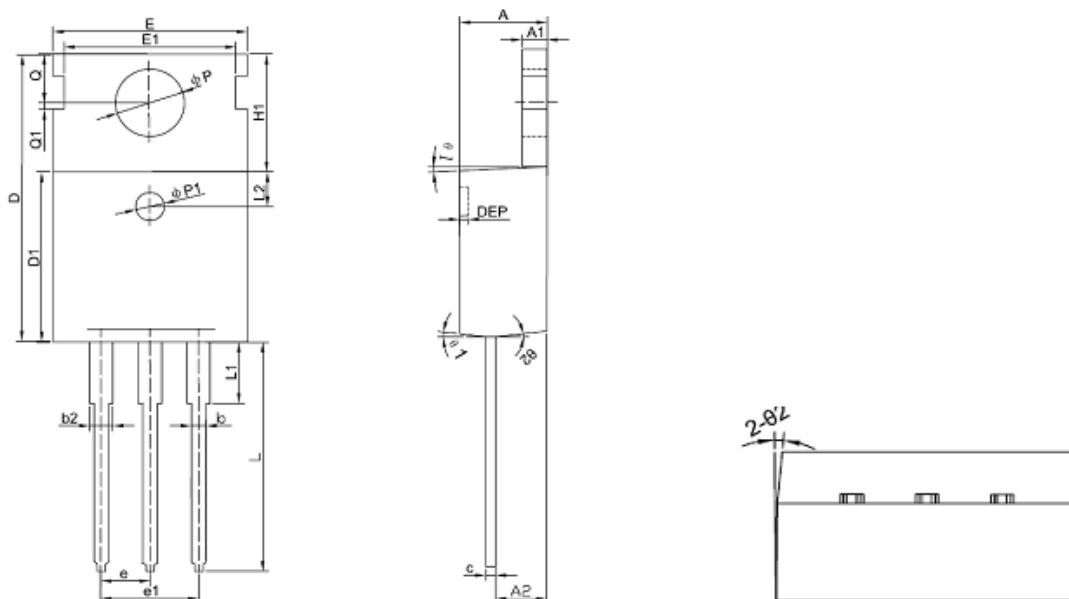


Figure 11 Normalized Maximum Transient Thermal Impedance

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Package Outline Dimension

TO-220

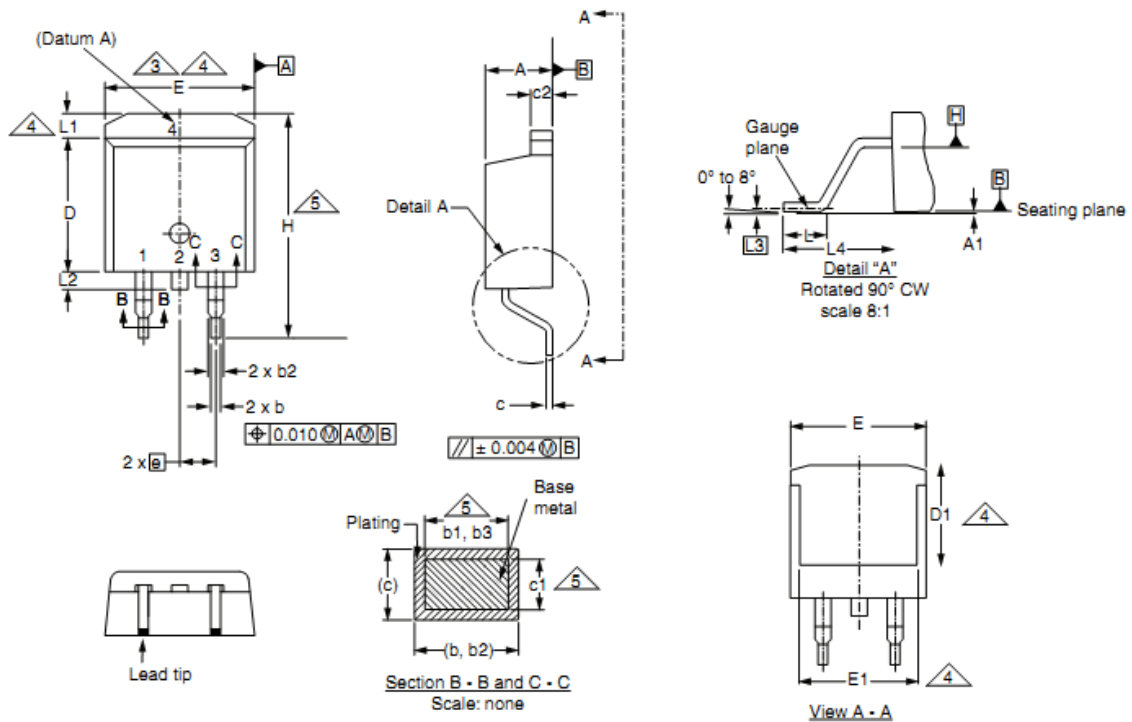


Symbol	Dimension In Millimeters			Dimension In Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.400	4.550	4.700	0.173	0.179	0.185
A1	1.270	1.300	1.330	0.050	0.051	0.052
A2	2.590	2.690	2.790	0.102	0.106	0.110
b	0.770	-	0.900	0.030	-	0.035
b2	1.230	-	1.360	0.048	-	0.054
c	0.480	0.500	0.520	0.019	0.020	0.020
D	15.100	15.400	15.700	-	0.606	-
D1	9.000	9.100	9.200	0.354	0.358	0.362
DEP	0.050	0.285	0.520	0.002	0.011	0.020
E	10.060	10.160	10.260	0.396	0.400	0.404
E1	-	8.700	-	-	0.343	-
$\Phi P1$	1.400	1.500	1.600	0.055	0.059	0.063
e	2.54BSC			0.1BSC		
e1	5.08BSC			0.2BSC		
H1	6.100	6.300	6.500	0.240	0.248	0.256
L	12.750	12.960	13.170	0.502	0.510	0.519
L1	-	-	3.950	-	-	0.156
L2	1.85REF			0.073REF		
ΦP	3.570	3.600	3.630	0.141	0.142	0.143
Q	2.730	2.800	2.870	0.107	0.110	0.113
Q1	-	0.200	-	-	0.008	-
$\theta 1$	5 ⁰	7 ⁰	9 ⁰	5 ⁰	7 ⁰	9 ⁰
$\theta 2$	1 ⁰	3 ⁰	5 ⁰	1 ⁰	3 ⁰	5 ⁰

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Package Outline Dimension

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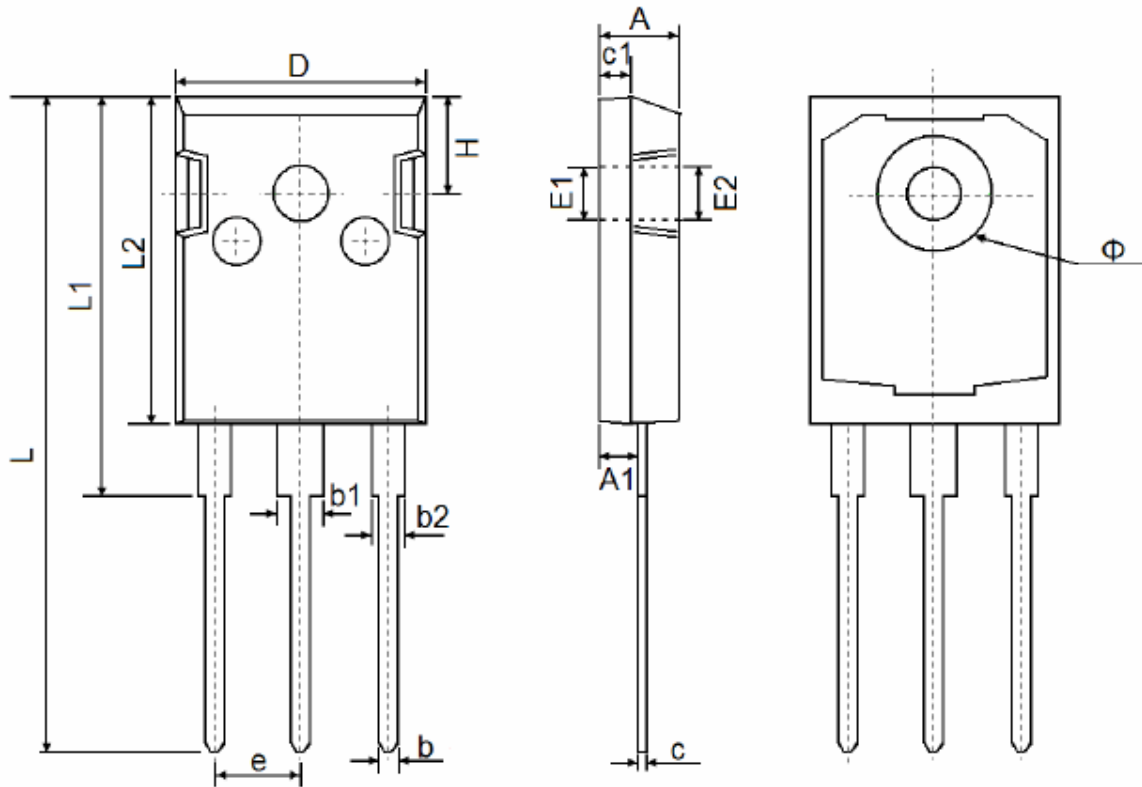
DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.06	4.83	0.160	0.190
A1	0.00	0.25	0.000	0.010
b	0.51	0.99	0.020	0.039
b1	0.51	0.89	0.020	0.035
b2	1.14	1.78	0.045	0.070
b3	1.14	1.73	0.045	0.068
c	0.38	0.74	0.015	0.029
c1	0.38	0.58	0.015	0.023
c2	1.14	1.65	0.045	0.065
D	8.38	9.65	0.330	0.380

DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
D1	6.86	-	0.270	-
E	9.65	10.67	0.380	0.420
E1	6.22	-	0.245	-
e	2.54 BSC		0.100 BSC	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	-	1.65	-	0.066
L2	-	1.78	-	0.070
L3	0.25 BSC		0.010 BSC	
L4	4.78	5.28	0.188	0.208

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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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