

SE150180G

**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

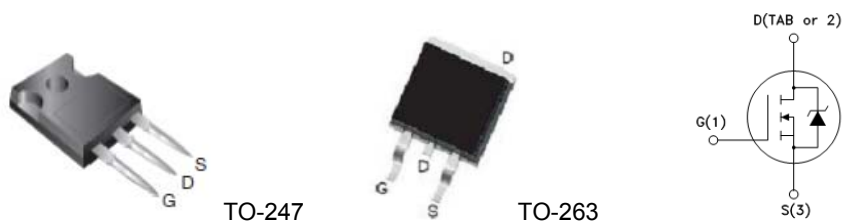
**Features**

For a single MOSFET

- $V_{DS} = 150V$
- $R_{DS(ON)} = 4.4m\Omega @ V_{GS}=10V$

**Pin configurations**

See Diagram below



**Absolute Maximum Ratings**

Parameter		Symbol	Rating	Units
Drain-Source Voltage		$V_{DS}$	150	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	180	A
	Pulsed		720	
Single pulse avalanche energy		$E_{AS}$	3400	mJ
Total Power Dissipation	@TA=25°C	$P_D$	520	W
Operating Junction Temperature Range		$T_J$	-55 to 175	°C

## SE150180G

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>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0 V		150		V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> =100V, 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	3	3.9	5	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =100A	-	4.4	5	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =100A		150		S
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =75V, f=1MHz		19500		pF
C <sub>oss</sub>	Output Capacitance			1100		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			110		pF
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =100A		314		nC
Q <sub>gs</sub>	Gate Source Charge			115		nC
Q <sub>gd</sub>	Gate Drain Charge			80		nC
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, R <sub>GEN</sub> =1.8Ω I <sub>D</sub> =100A		30		ns
t <sub>d(off)</sub>	Turn-Off Delay Time			95		ns
t <sub>d(r)</sub>	Turn-On Rise Time			85		ns
t <sub>d(f)</sub>	Turn-Off Fall Time			38		ns
<b>Thermal Resistance</b>						
Symbol	Parameter		Typ	Max	Units	
R <sub>θJC</sub>	Thermal Resistance Junction to Case(t≤10s)		-	0.29	°C/W	

Typical Characteristics

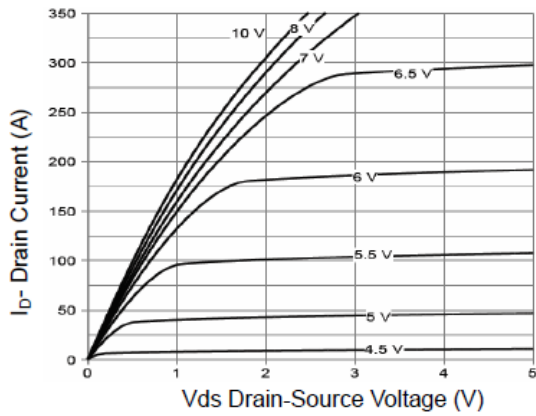


Figure 1 Output Characteristics

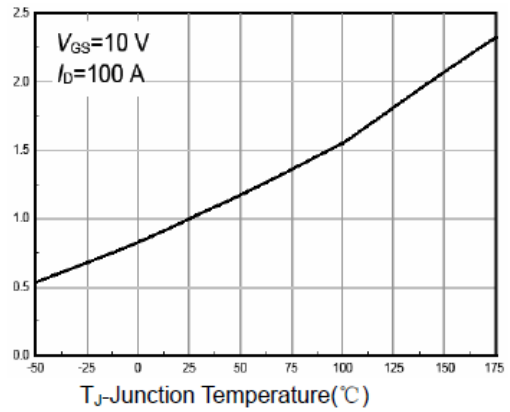


Figure 4 Rds(on)-Junction Temperature

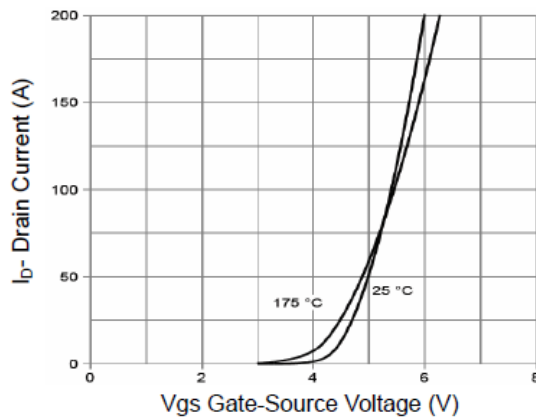


Figure 2 Transfer Characteristics

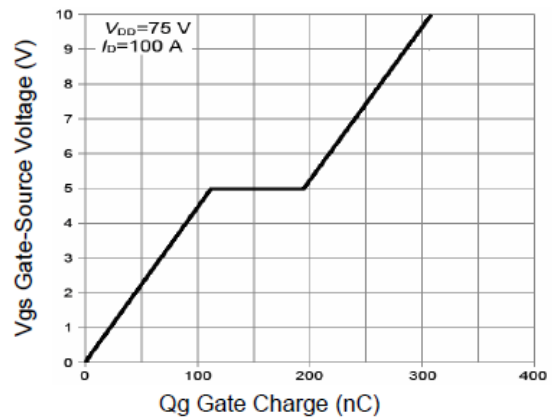


Figure 5 Gate Charge

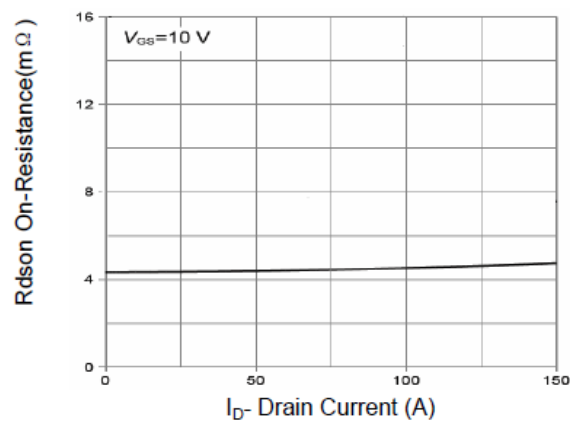


Figure 3 Rds(on)- Drain Current

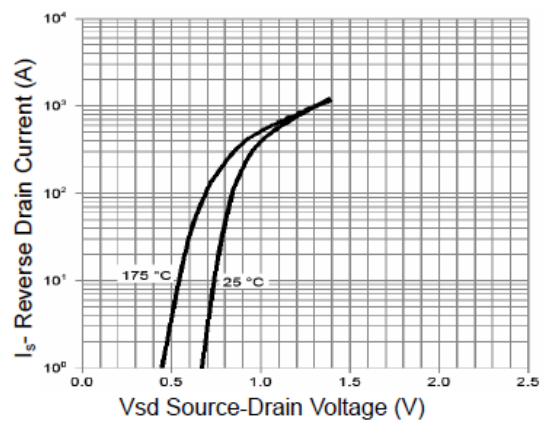


Figure 6 Source- Drain Diode Forward

Typical Characteristics

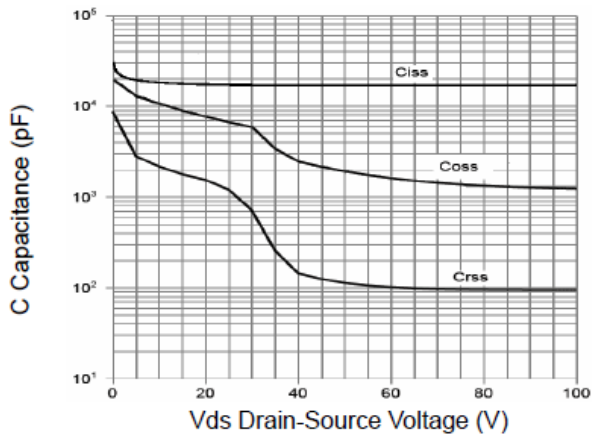


Figure 7 Capacitance vs Vds

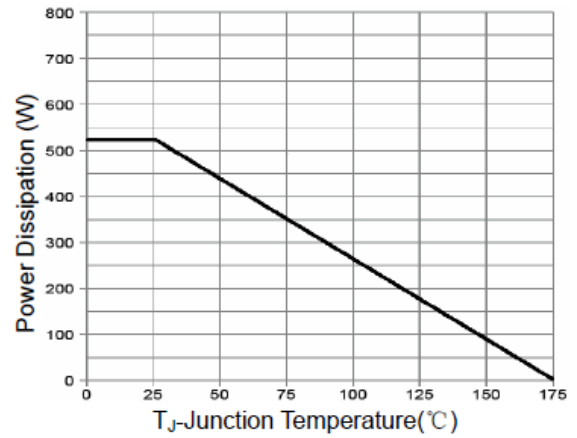


Figure 9 Power De-rating

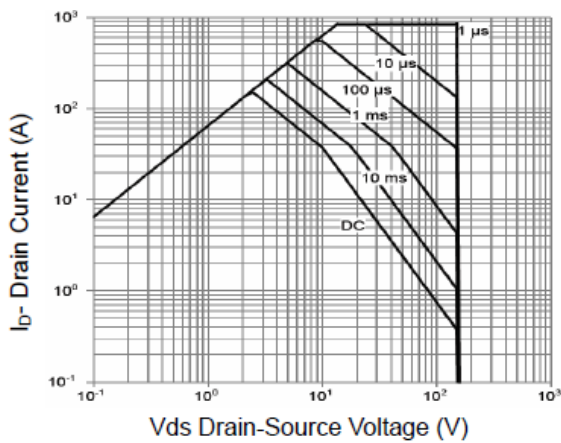


Figure 8 Safe Operation Area

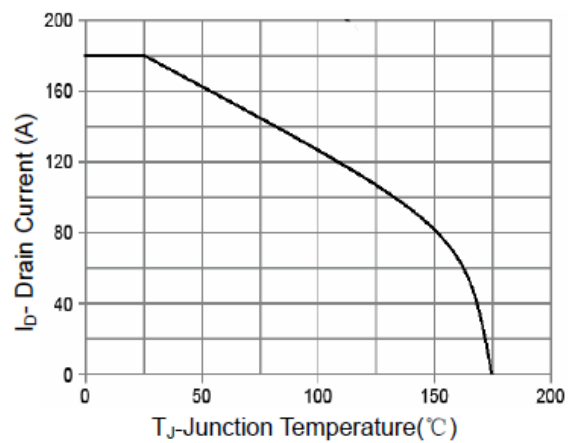


Figure 10 Current De-rating

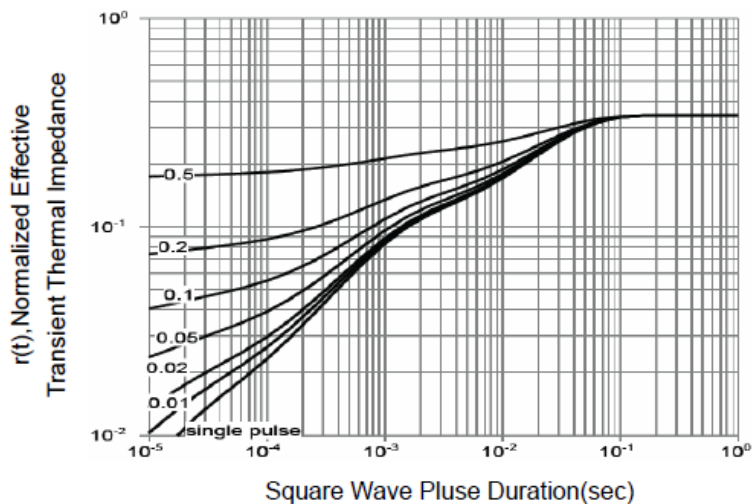
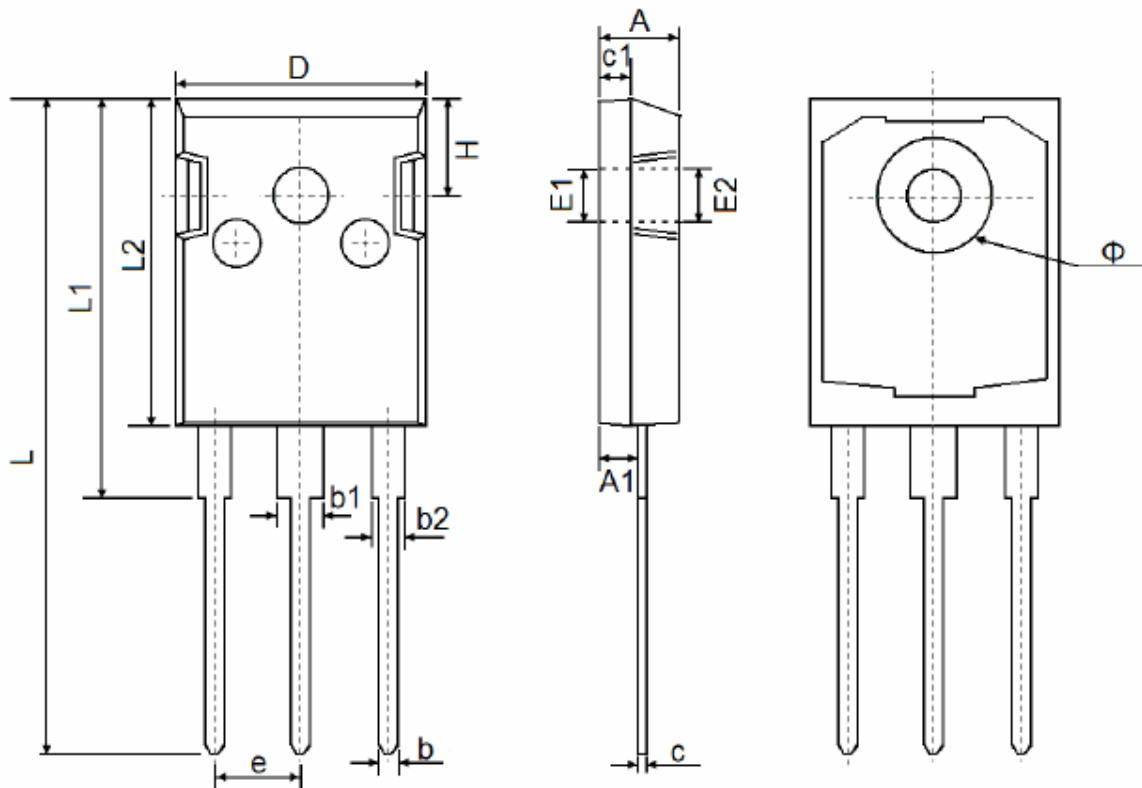


Figure 11 Normalized Maximum Transient Thermal Impedance

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## Package Outline Dimension

### TO-247

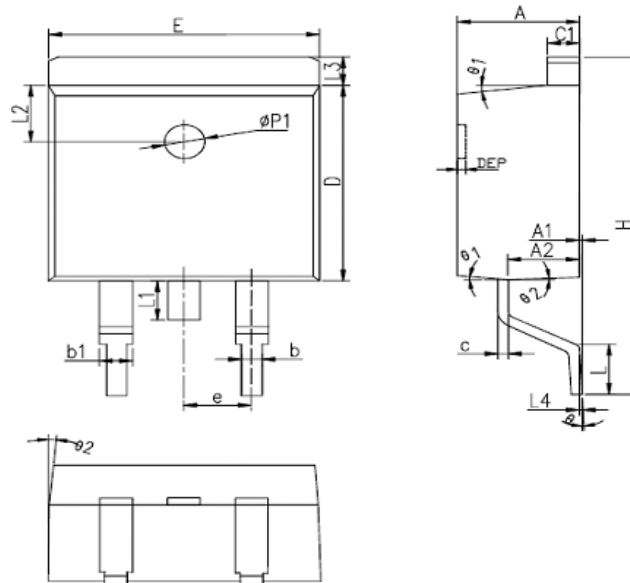


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		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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## Package Outline Dimension

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SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185	L	2.00	2.30	2.60	0.079	0.090	0.102
A1	0	0.10	0.25	0	0.004	0.010	L3	1.17	1.27	1.40	0.046	0.050	0.055
A2	2.59	2.69	2.79	0.102	0.106	0.110	L1	-	-	1.70	-	-	0.067
b	0.77	-	0.90	0.030	-	0.035	L4	0.25BSC			0.01BSC		
b1	1.23	-	1.36	0.048	-	0.052	L2	2.50REF.			0.098REF.		
c	0.34	-	0.47	0.013	-	0.019	$\theta$	0°	-	8°	0°	-	8°
C1	1.22	-	1.32	0.048	-	0.052	$\theta 1$	5°	7°	9°	5°	7°	9°
D	8.60	8.70	8.80	0.338	0.343	0.346	$\theta 2$	1°	3°	5°	1°	3°	5°
E	10.00	10.16	10.26	0.394	0.4	0.404	DEP	0.05	0.10	0.20	0.002	0.004	0.008
e	2.54BSC			0.1BSC			$\phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
H	14.70	15.10	15.50	0.579	0.594	0.610							

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**SHANGHAI SINO-IC MICROELECTRONICS CO., LTD**

**Add:** Building 3, Room 3401-03, No.200 Zhangheng Road, ZhangJiang Hi-Tech Park, Pudong,  
Shanghai 201203, China

**Phone:** +86-21-33932402 33932403 33932405 33933508 33933608

**Fax:** +86-21-33932401

**Email:** [webmaster@sino-ic.net](mailto:webmaster@sino-ic.net)

**Website:** <http://www.sino-ic.net>

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