

SE3050D

**N-Channel Enhancement-Mode MOSFET**

Revision: A

**General Description**

This type used advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of application

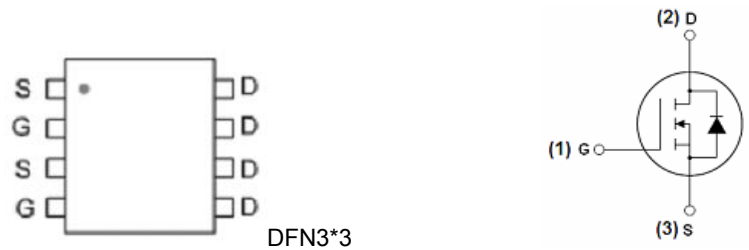
**Features**

For a single MOSFET

- $V_{DS} = 30V$
- $R_{DS(ON)} < 8m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} < 10m\Omega @ V_{GS}=4.5V$

**Pin configurations**

See Diagram below



**Absolute Maximum Ratings**

Parameter		Symbol	Rating	Units
Drain-Source Voltage		$V_{DS}$	30	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	50	A
	Pulsed		170	
Total Power Dissipation	@TA=25°C	$P_D$	83	W
Operating Junction Temperature Range		$T_J$	-55 to 175	°C

<b>Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)</b>						
<b>Symbol</b>	<b>Parameter</b>	<b>Test Conditions</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>
<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	30			V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> = 30V, 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	1	1.6	3	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =18A	-	8	11	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A	-	10	16	mΩ
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		2000		pF
C <sub>oss</sub>	Output Capacitance			280		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			160		pF
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	V <sub>GS</sub> =10V, V <sub>DS</sub> =10V, I <sub>D</sub> =25A		23		nC
Q <sub>gs</sub>	Gate Source Charge			7		nC
Q <sub>gd</sub>	Gate Drain Charge			4.5		nC
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =10V, V <sub>DD</sub> =15V, R <sub>GEN</sub> =1.8Ω I <sub>D</sub> =20A		10		ns
t <sub>d(off)</sub>	Turn-Off Delay Time			30		ns
t <sub>d(r)</sub>	Turn-On Rise Time			8		ns
t <sub>d(f)</sub>	Turn-Off Fall Time			5		ns
<b>Thermal Resistance</b>						
<b>Symbol</b>	<b>Parameter</b>		<b>Typ</b>	<b>Max</b>	<b>Units</b>	
R <sub>θJC</sub>	Thermal Resistance Junction to Case		-	1.8	°C/W	

Typical Characteristics

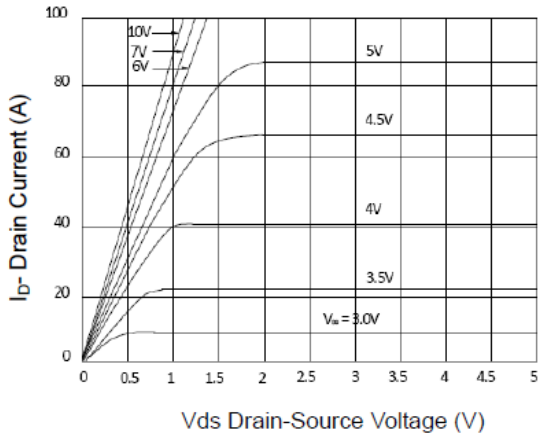


Figure 1 Output Characteristics

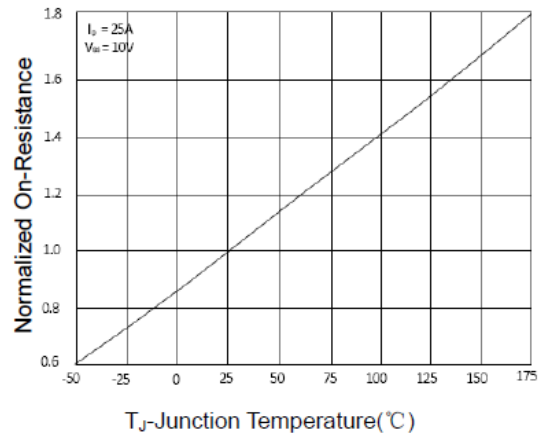


Figure 4  $R_{dson}$ -Junction Temperature

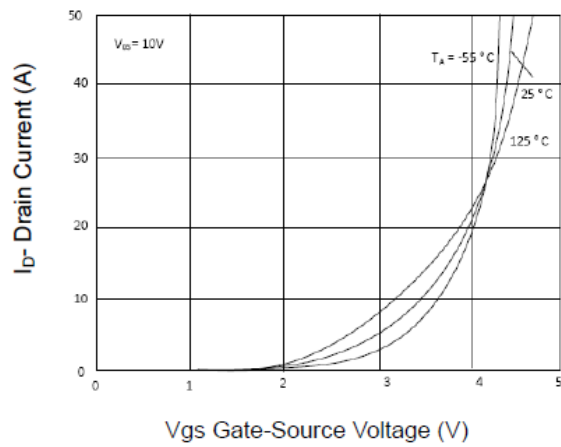


Figure 2 Transfer Characteristics

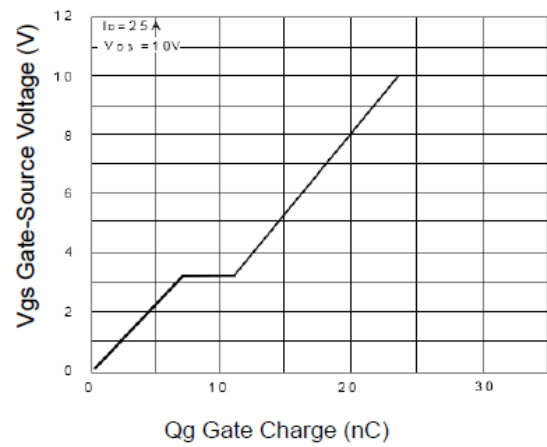


Figure 5 Gate Charge

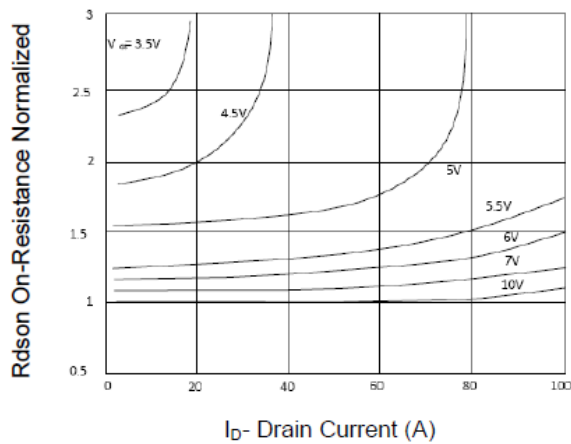


Figure 3  $R_{dson}$ - Drain Current

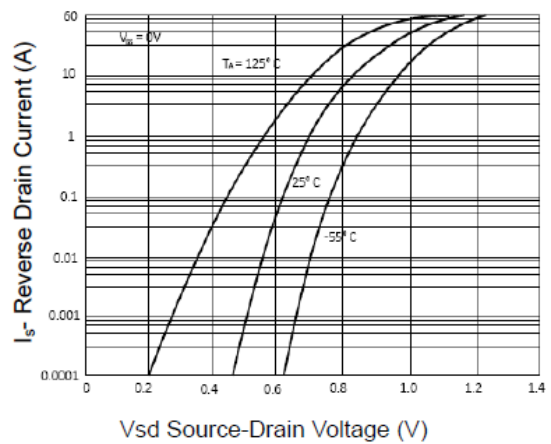
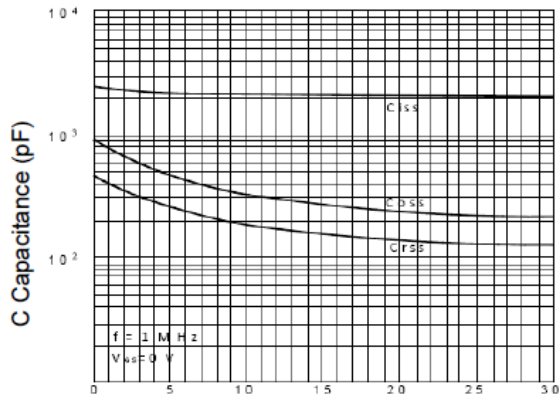
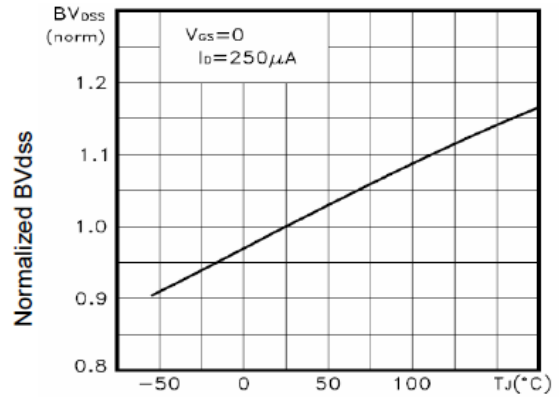


Figure 6 Source- Drain Diode Forward

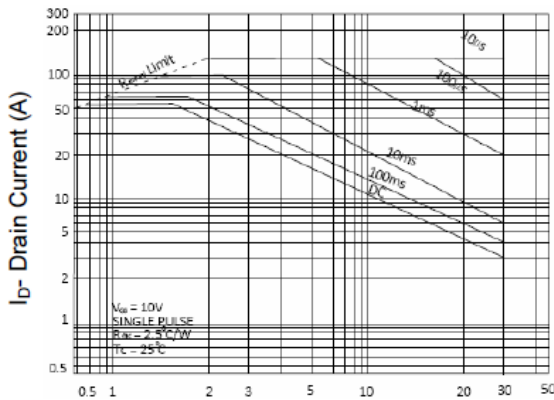
Typical Characteristics



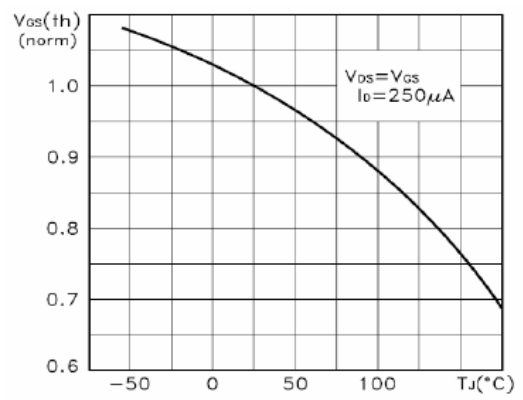
Vds Drain-Source Voltage (V)  
Figure 7 Capacitance vs Vds



$T_J$ -Junction Temperature( $^{\circ}\text{C}$ )  
Figure 9  $BV_{DSS}$  vs Junction Temperature



Vds Drain-Source Voltage (V)  
Figure 8 Safe Operation Area



$T_J$ -Junction Temperature( $^{\circ}\text{C}$ )  
Figure 10  $V_{GS(th)}$  vs Junction Temperature

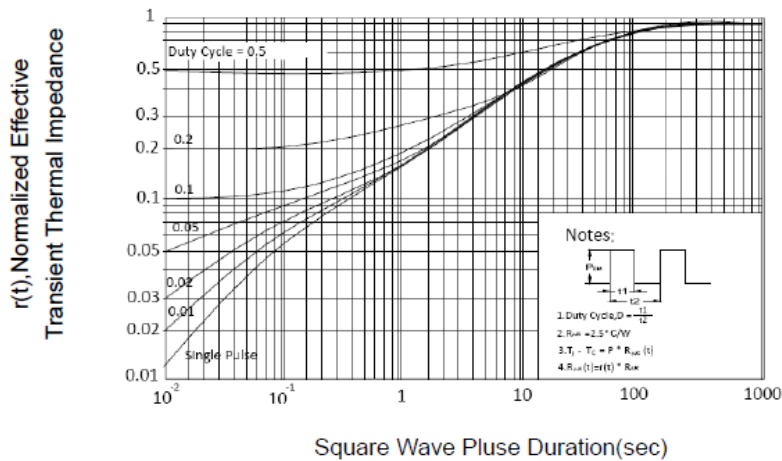
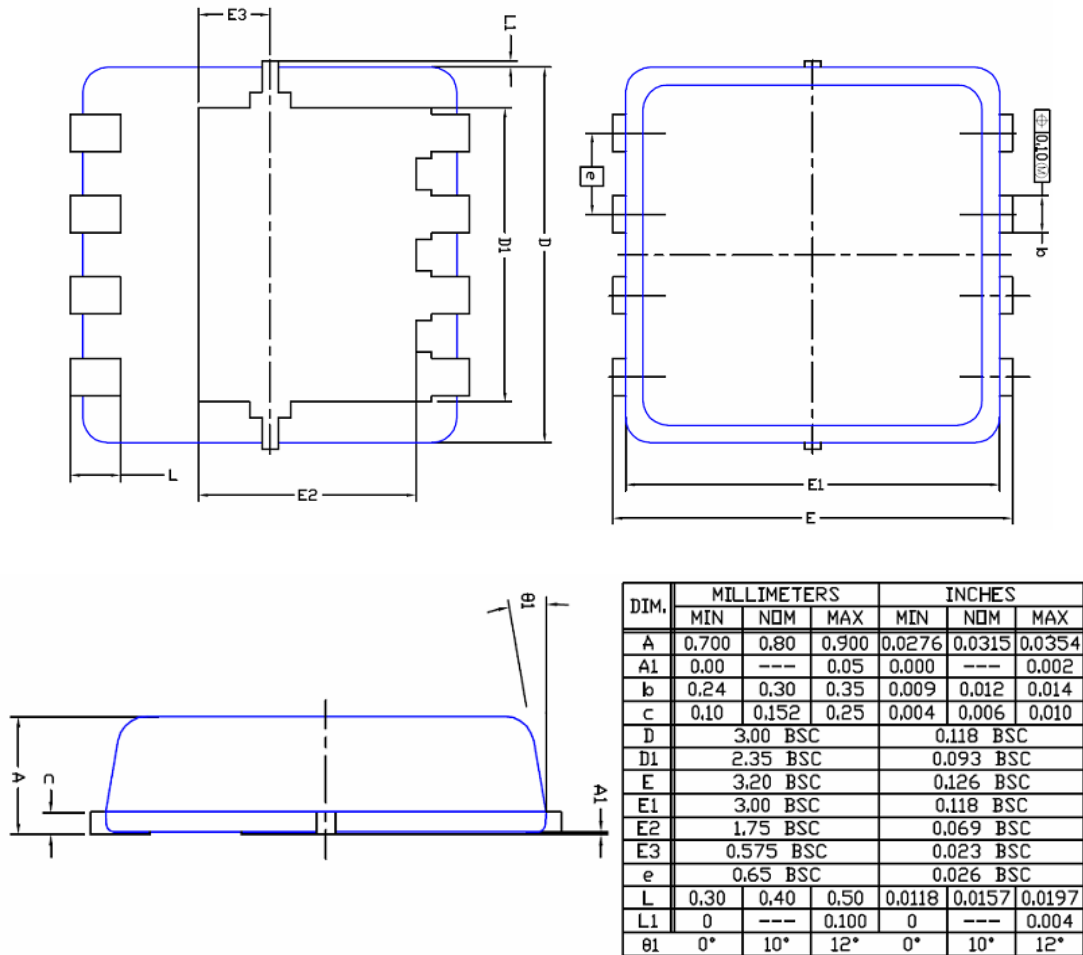


Figure 11 Normalized Maximum Transient Thermal Impedance

SE3050D

Package Outline Dimension

DFN3\*3  
DFN3X3 EP



The SINO-IC logo is a registered trademark of ShangHai Sino-IC Microelectronics Co., Ltd.  
© 2005 SINO-IC – Printed in China – All rights reserved.

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

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