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

SE150100

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

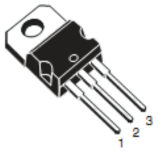
Features

For a single MOSFET

- V_{DS} = 150V
- $R_{DS(ON)}$ = 9.8mΩ @ V_{GS}=10V

Pin configurations

See Diagram below



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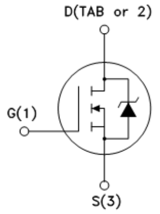


Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	Continuous	I_D	100	A
	Pulsed		390	
Single pulse avalanche energy		E_{AS}	1100	mJ
Total Power Dissipation	@TA=25℃	P_D	370	W
Operating Junction Temperature Range		T_J	-55 to 175	℃

Electrical Characteristics (TJ=25℃ unless otherwise noted)

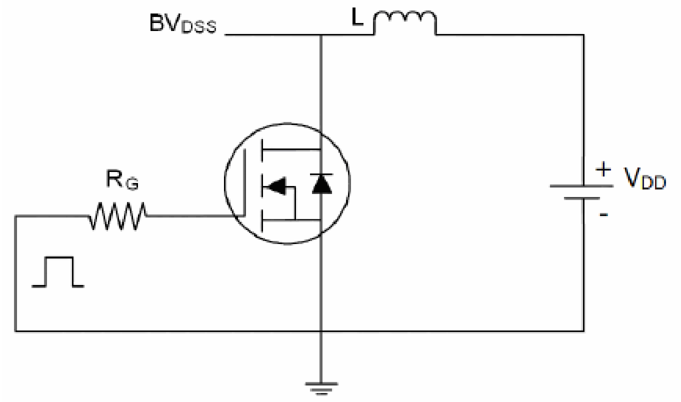
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS}=0 V	150	170		V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=150V, V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=20V			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	2	3.2	4	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=40A	-	9.8	12	mΩ
g_{FS}	Forward Transconductance	V_{DS}=25V, I_D=40A	150			S
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, f=1MHz		13000		pF
C_{oss}	Output Capacitance			640		pF
C_{rss}	Reverse Transfer Capacitance			556		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=10V, V_{DS}=30V, I_D=30A		326		nC
Q_{gs}	Gate Source Charge			62		nC
Q_{gd}	Gate Drain Charge			128		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=30V, R_{GEN}=2.5Ω I_D=2A		32.5		ns
$t_{d(off)}$	Turn-Off Delay Time			113		ns
$t_{d(r)}$	Turn-On Rise Time			30		ns
$t_{d(f)}$	Turn-Off Fall Time			48		ns

Thermal Resistance

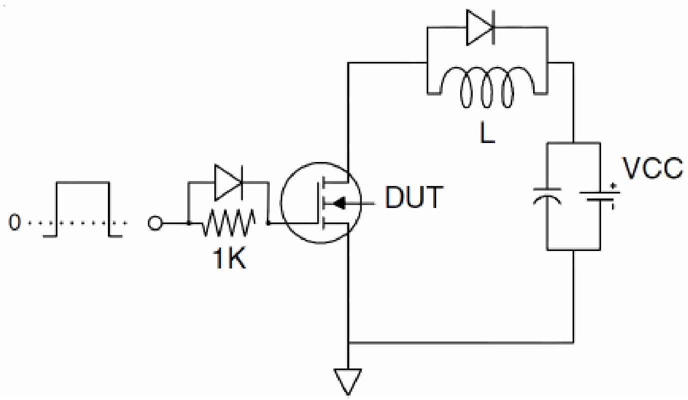
Symbol	Parameter	Typ	Max	Units
$R_{θJC}$	Thermal Resistance Junction to Case(t≤10s)	-	0.41	℃/W

Test Circuits and Waveform

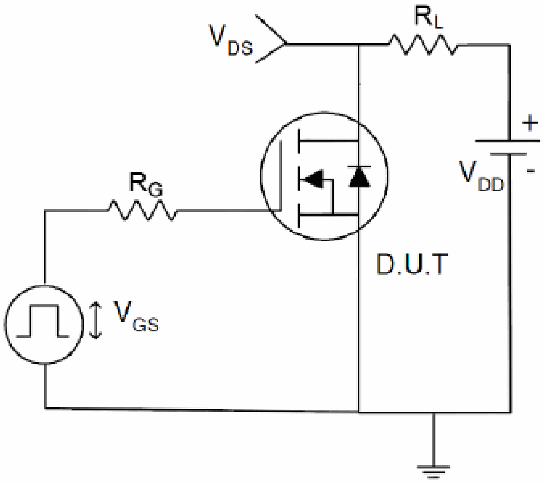
1）E_{AS} test Circuits



2）Gate charge test Circuit:



3）Switch Time Test Circuit：



Typical Characteristics

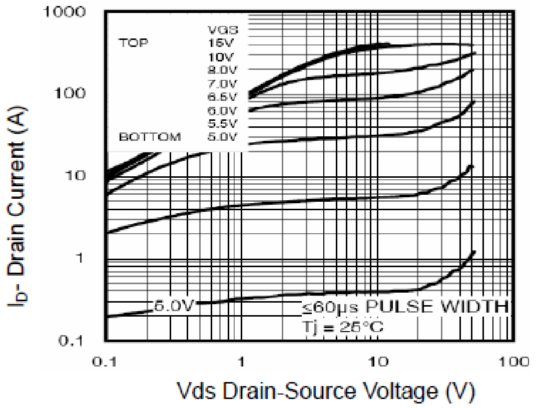


Figure 1 Output Characteristics

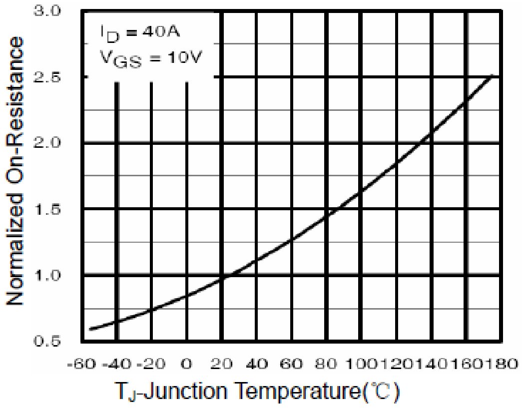


Figure 4 Rdson-JunctionTemperature

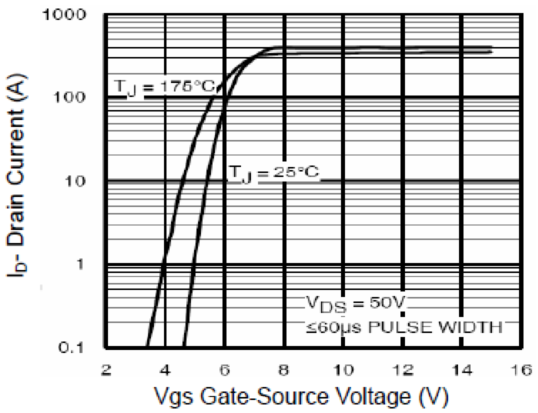


Figure 2 Transfer Characteristics

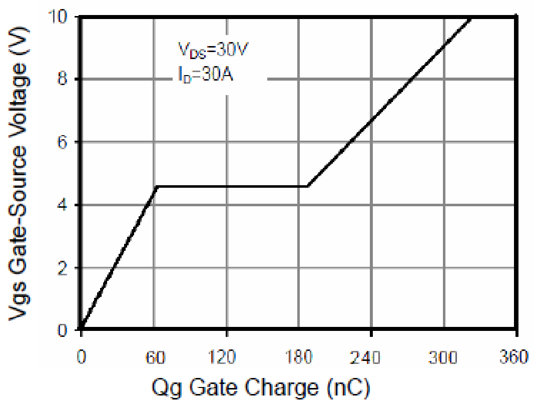


Figure 5 Gate Charge

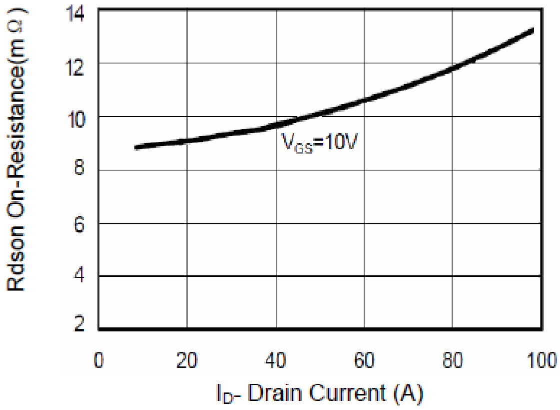


Figure 3 Rdson- Drain Current

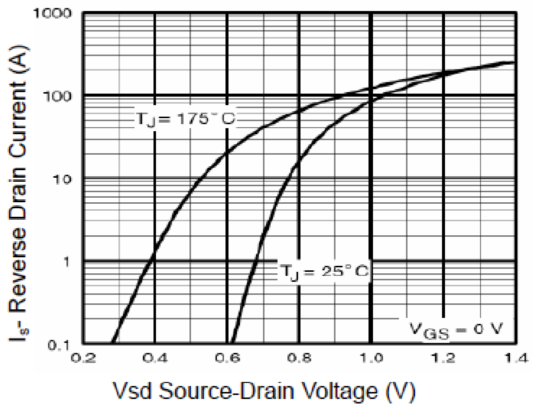


Figure 6 Source- Drain Diode Forward

Typical Characteristics

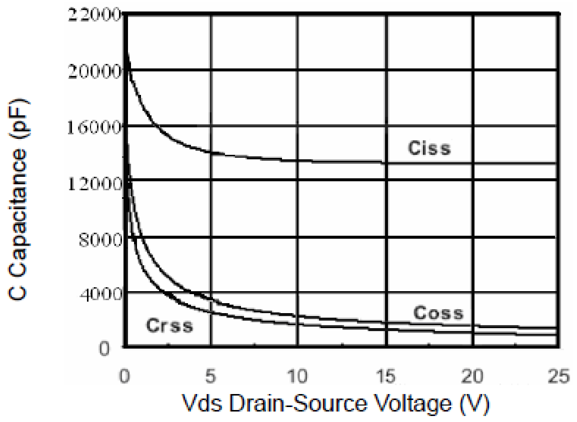


Figure 7 Capacitance vs Vds

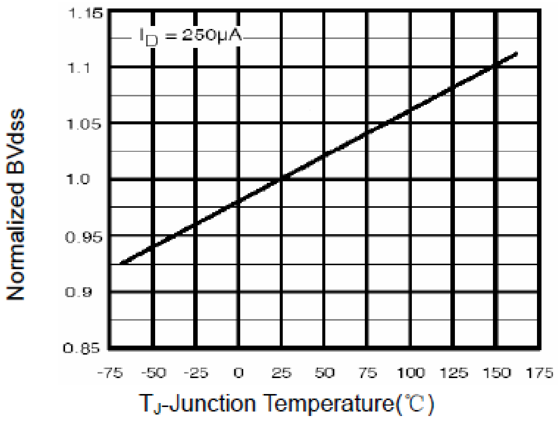


Figure 9 BV_{DSS} vs Junction Temperature

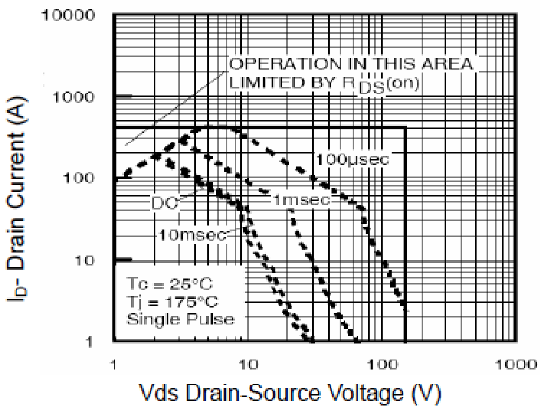


Figure 8 Safe Operation Area

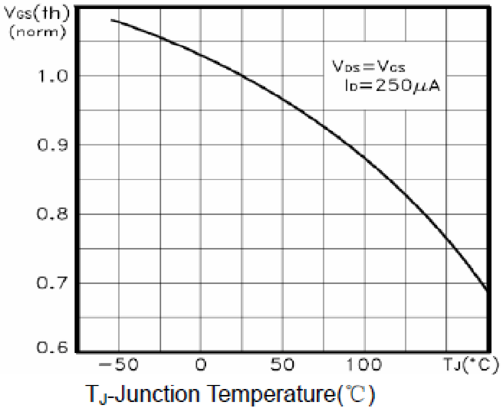


Figure 10 $V_{GS(th)}$ vs Junction Temperature

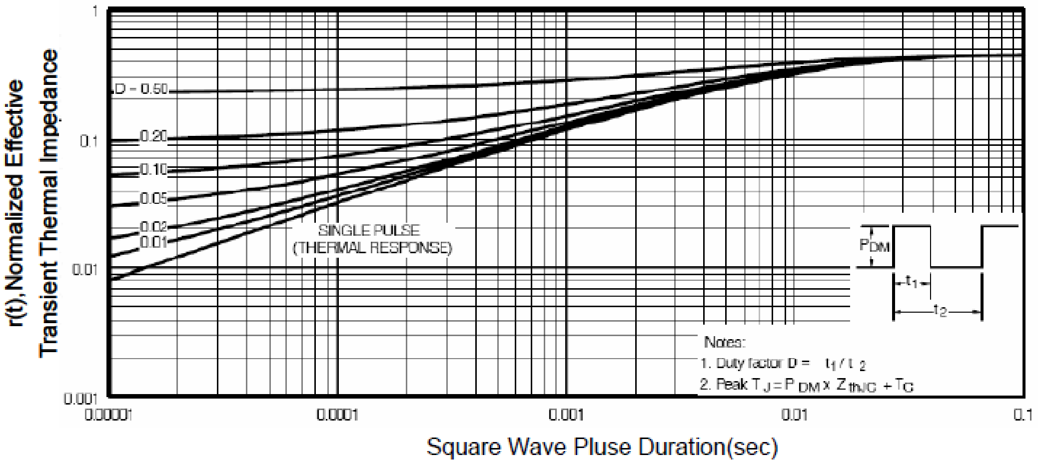


Figure 11 Normalized Maximum Transient Thermal Impedance

Package Outline Dimension

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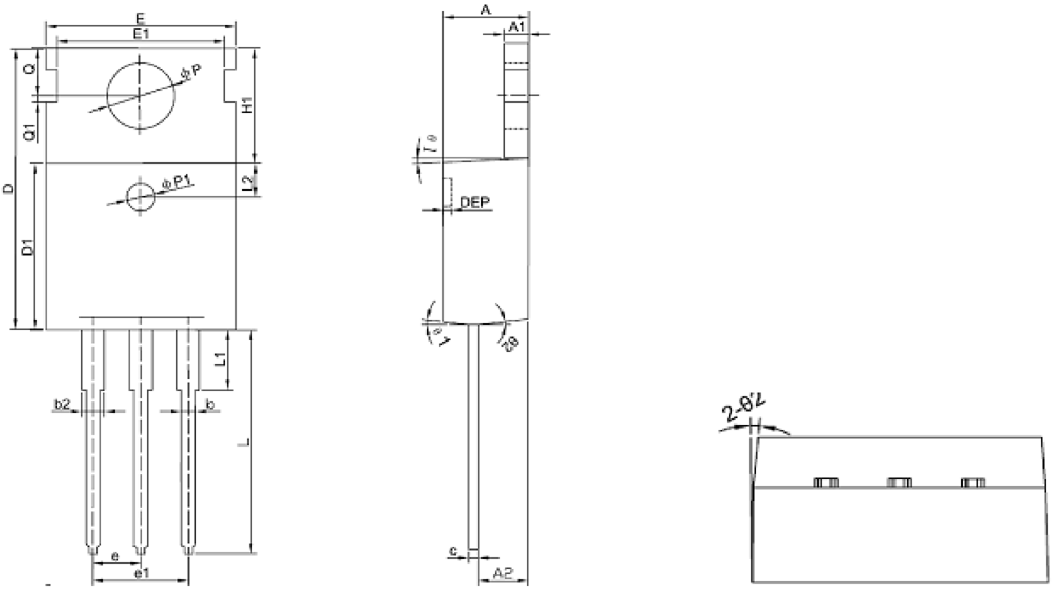

Symbol	Dimension In Millimeters			Dimension In Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.400	4.550	4.700	0.173	0.179	0.185
A1	1.270	1.300	1.330	0.050	0.051	0.052
A2	2.590	2.690	2.790	0.102	0.106	0.110
b	0.770	-	0.900	0.030	-	0.035
b2	1.230	-	1.360	0.048	-	0.054
c	0.480	0.500	0.520	0.019	0.020	0.020
D	15.100	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	-
ΦP1	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	-
Θ1	5^0	7^0	9^0	5^0	7^0	9^0
Θ2	1^0	3^0	5^0	1^0	3^0	5^0

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