SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

SE100130GA

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

This type used advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

- High density cell design for ultra low $R_{DS(ON)}$
- Excellent package for good heat dissipation

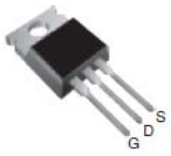
Features

For a single MOSFET

- V_{DS} = 100V
- $R_{DS(ON)}$ = 4mΩ @ V_{GS}=10V

Pin configurations

See Diagram below



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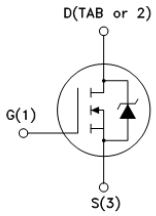


Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current[1]	Continuous	I_D	100	A
	Pulsed		390	
Total Power Dissipation	@TA=25℃	P_D	176	W
Operating Junction Temperature Range		T_J	-55 to 175	℃
Avalanche Energy, Single Pulsed		E_{AS}	400	mJ

Thermal Resistance

Symbol	Parameter	Min	Typ	Units
$R_{\theta JC}$	Junction to Case		0.85	℃/W

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	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	2.8	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=20A		4	5	mΩ
g_{FS}	Transconductance	V_{DS}=5V, I_D=20A		75		S
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=50V, f=1MHz		3650		pF
C_{oss}	Output Capacitance			290		pF
C_{rss}	Reverse Transfer Capacitance			88		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=10V, V_{DS}=50V, I_D=20A		56		nC
Q_{gs}	Gate Source Charge			14		nC
Q_{gd}	Gate Drain Charge			18		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=50V, R_{GEN}=10Ω		17		ns
$t_{d(off)}$	Turn-Off Delay Time			57		ns
$t_{d(r)}$	Turn-On Rise Time			40		ns
$t_{d(f)}$	Turn-Off Fall Time			37		ns
REVERSE DIODE						
I_S	Diode Continuous Forward Current	T_C=25℃			20	A
V_{SD}	Diode Forward Voltage	V_{DS}=0V,I_F=20V,		0.9	1.2	V
Trr	Reverse Recovery Time	VR=50V, IF=IS dI/dT=500A/us		50		ns
Qrr	Reverse Recovery Charge			255		nC

Typical Characteristics

Fig 1. Typical Output Characteristics

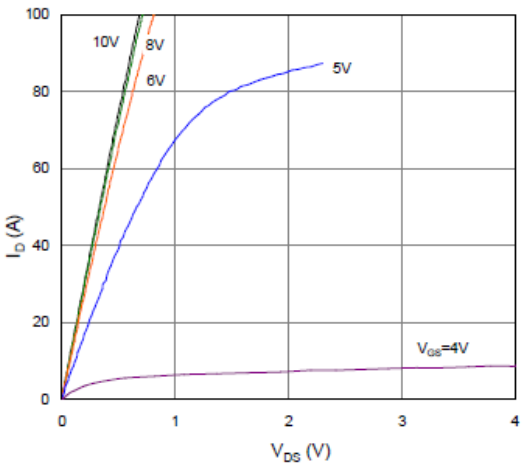


Figure 2. On-Resistance vs. Gate-Source Voltage

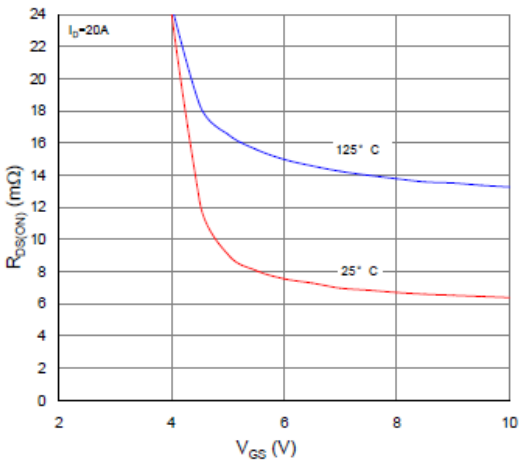


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

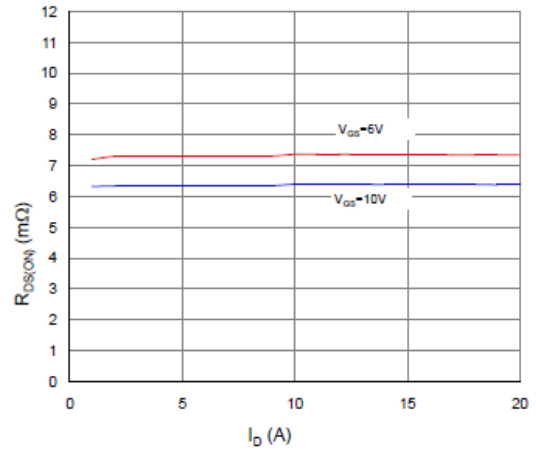


Figure 4. Normalized On-Resistance vs. Junction Temperature

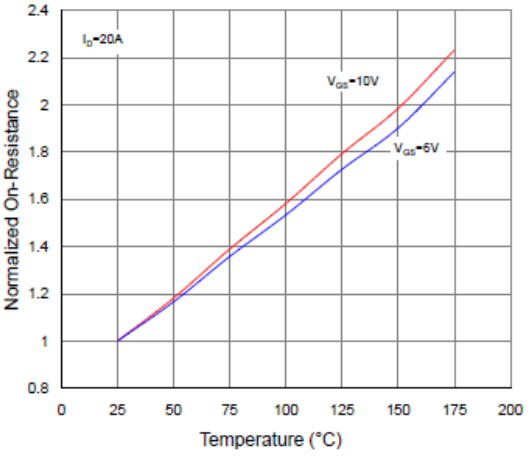


Figure 5. Typical Transfer Characteristics

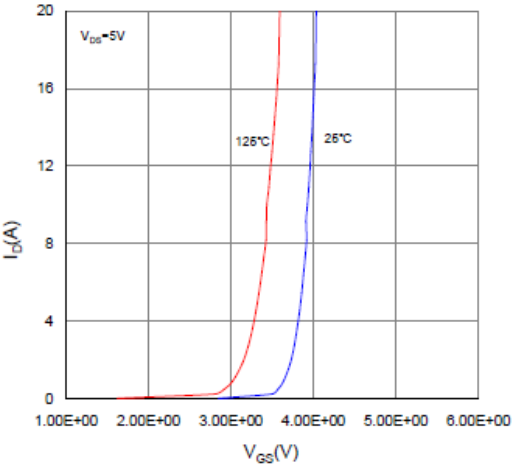
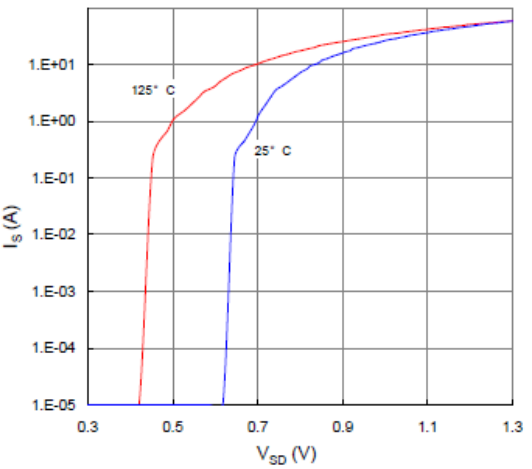


Figure 6. Typical Source-Drain Diode Forward Voltage



Typical Characteristics

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

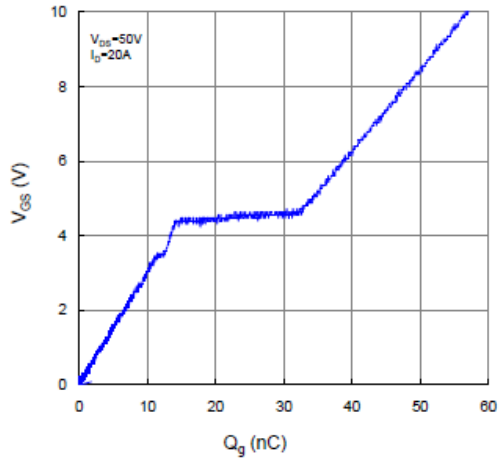


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

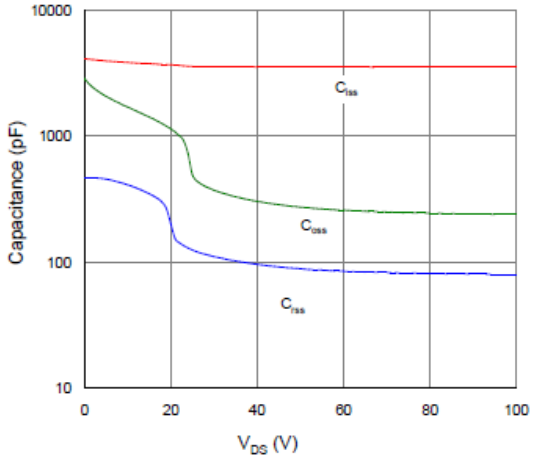


Figure 9. Maximum Safe Operating Area

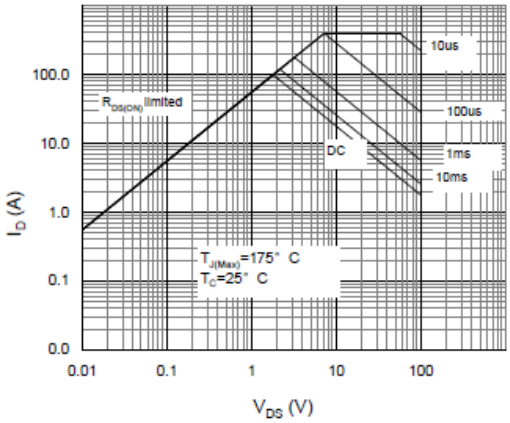


Figure 10. Maximun Drain Current vs. Case Temperature

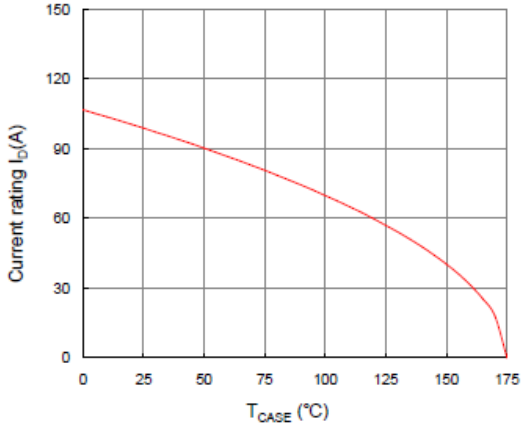
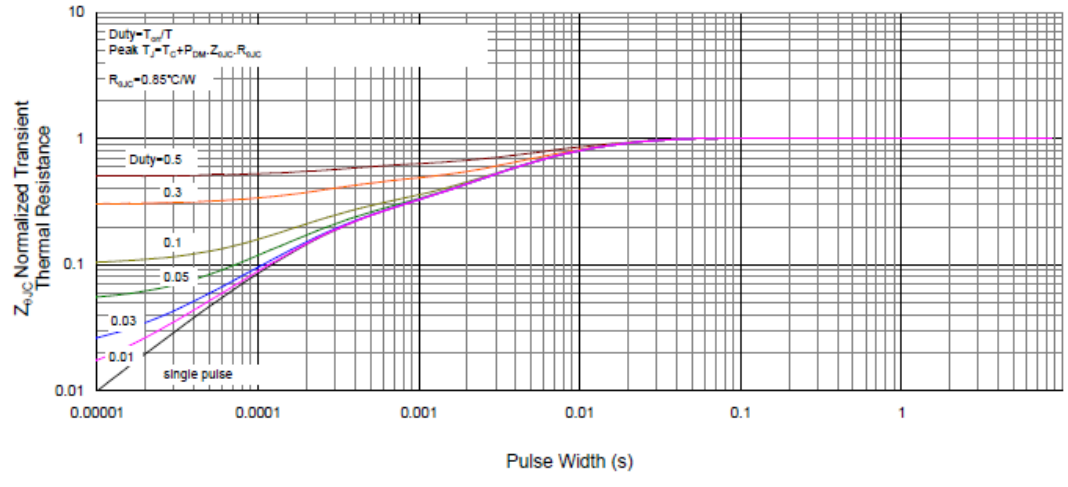


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



Package Outline Dimension

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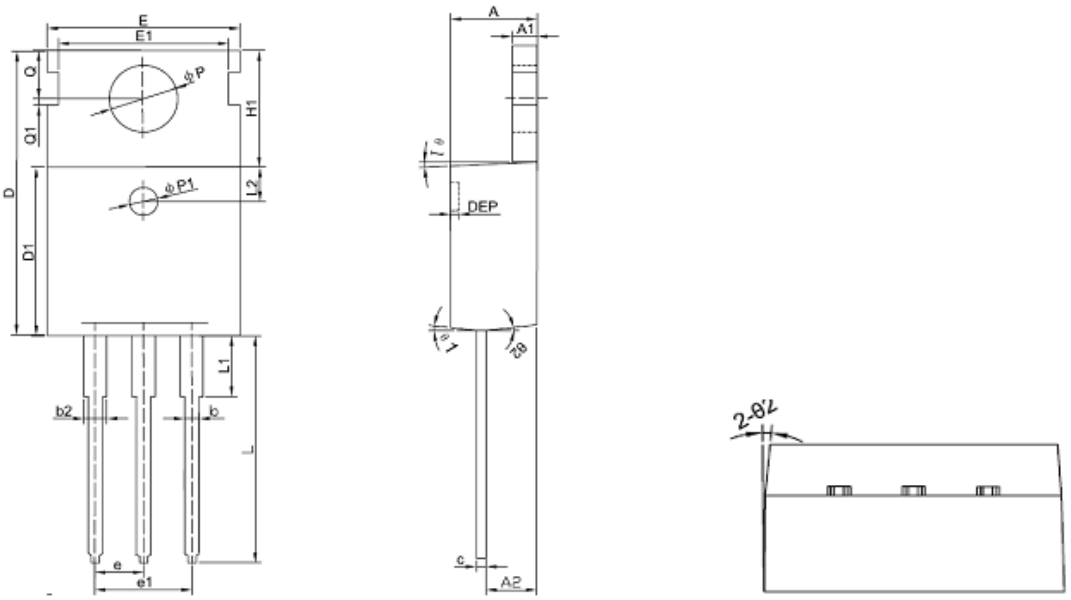

Symbol	Dimension In Millimeters			Dimension In Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.400	4.550	4.700	0.173	0.179	0.185
A1	1.270	1.300	1.330	0.050	0.051	0.052
A2	2.590	2.690	2.790	0.102	0.106	0.110
b	0.770	-	0.900	0.030	-	0.035
b2	1.230	-	1.360	0.048	-	0.054
c	0.480	0.500	0.520	0.019	0.020	0.020
D	15.100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