SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

SE80250G

N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

Thigh Density Cell Design For Ultra Low On-Resistance Fully Characterized Avalanche Voltage and Current Improved Shoot-Through FOM

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

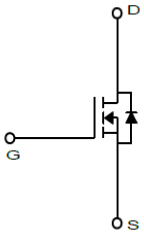
Features

For a single MOSFET

- V_{DS} = 80V
- $R_{DS(ON)}$ = 2.0mΩ @ V_{GS}=10V

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	Continuous	I_D	250	A
	Pulsed		480	
Single Pulse Avalanche Energy		E_{AS}	612.5	mJ
Total Power Dissipation	@TC=25℃	P_D	312.5	W
Operating Junction Temperature Range		T_J	-55 to 150	℃

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	80			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		4.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=50A	-	2.0	2.5	mΩ
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=50A		115		S
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, f=1MHz		12222		pF
C_{oss}	Output Capacitance			51		pF
C_{rss}	Reverse Transfer Capacitance			2123		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=10V, V_{DS}=40V, I_D=50A		186.3		nC
Q_{gs}	Gate Source Charge			56.3		nC
Q_{gd}	Gate Drain Charge			38.5		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=40V, R_{GEN}=3Ω I_D=50A		39.6		ns
$t_{d(off)}$	Turn-Off Delay Time			141		ns
$t_{d(r)}$	Turn-On Rise Time			24.2		ns
$t_{d(f)}$	Turn-Off Fall Time			54.2		ns

Thermal Resistance

Symbol	**Parameter**	**Typ**	**Max**	**Units**
$R_{\theta JC}$	Thermal Resistance Junction to Case(t≤10s)	-	0.4	℃/W

Typical Characteristics

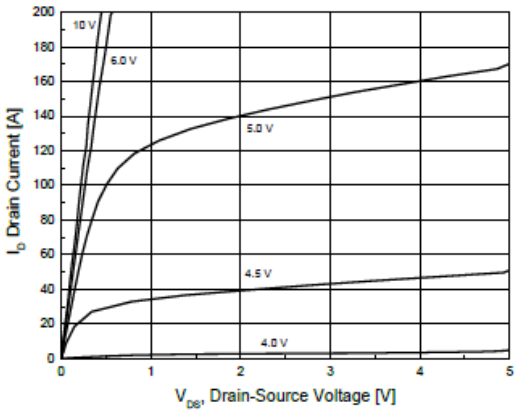


Fig.1 On-Region Characteristics

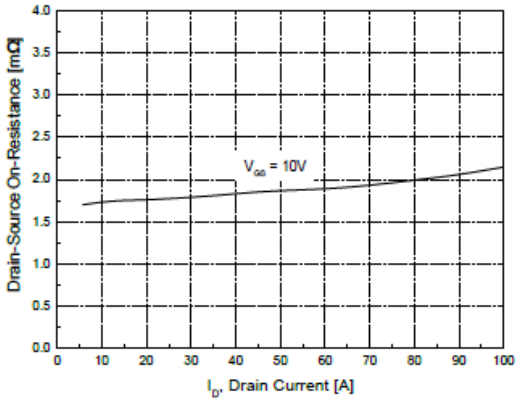


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

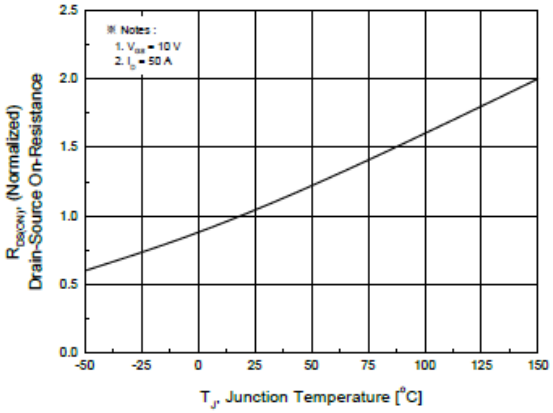


Fig.3 On-Resistance Variation with Temperature

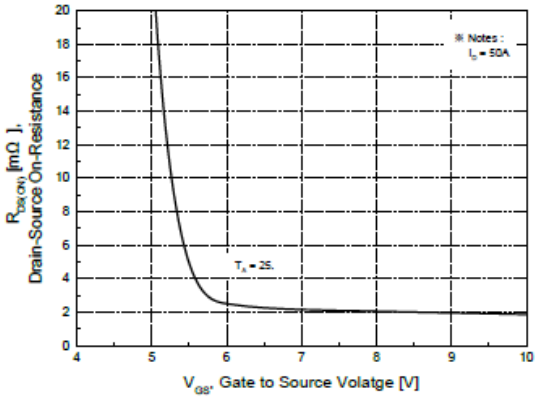


Fig.4 On-Resistance Variation with Gate to Source Voltage

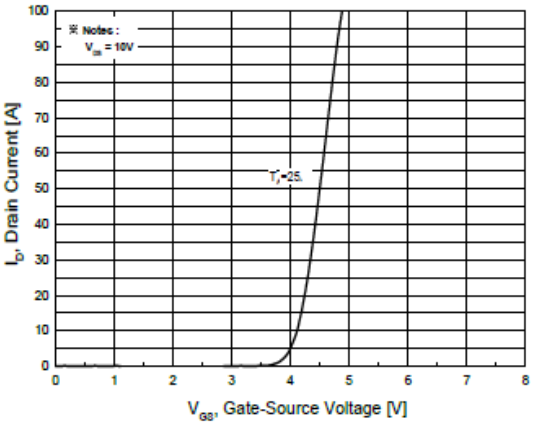


Fig.5 Transfer Characteristics

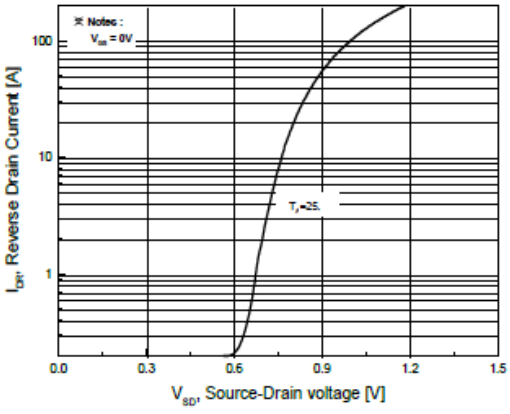


Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Characteristics

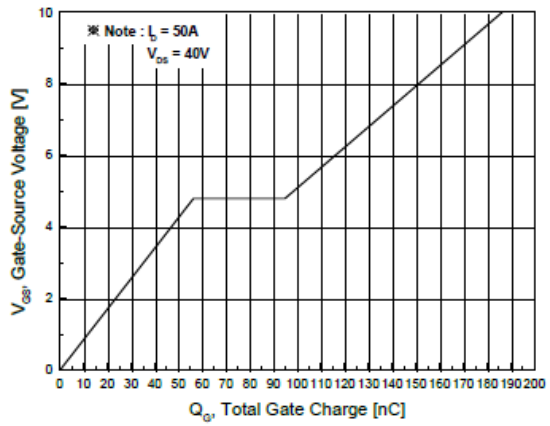


Fig.7 Gate Charge Characteristics

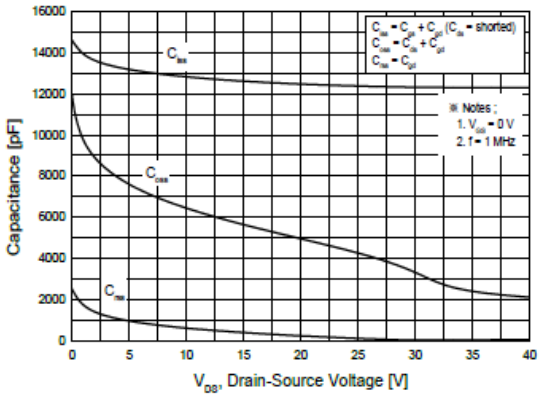


Fig.8 Capacitance Characteristics

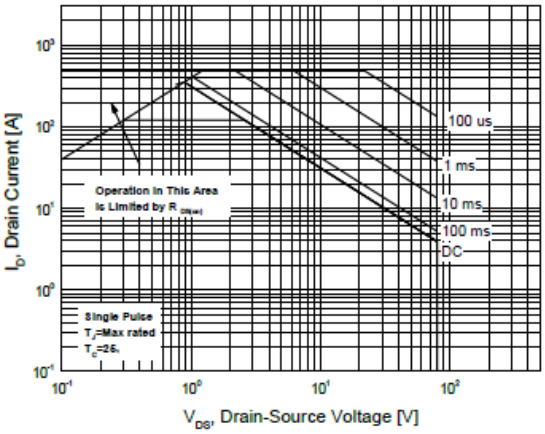


Fig.9 Maximum Safe Operating Area

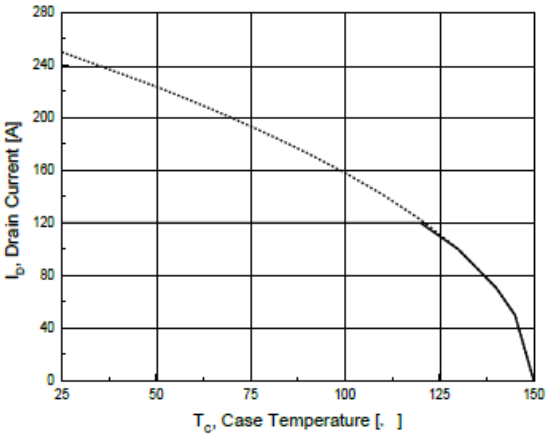


Fig.10 Maximum Drain Current vs. Case Temperature

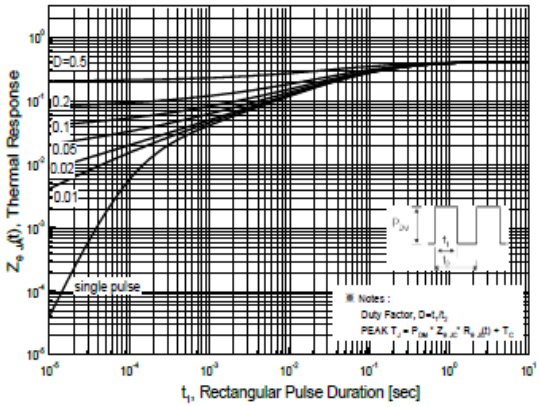
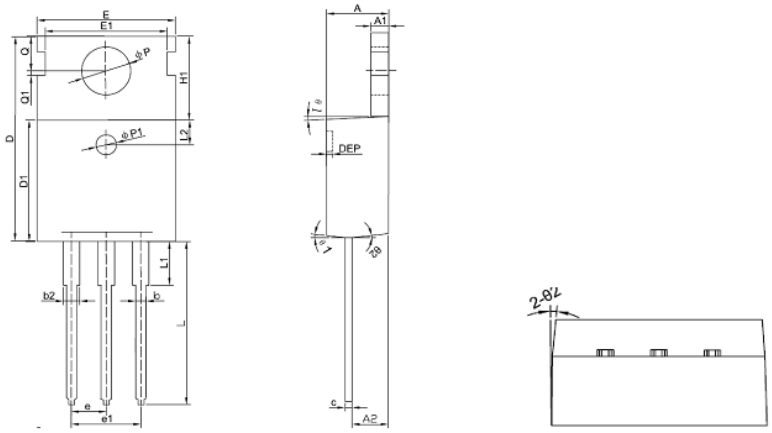


Fig.11 Transient Thermal Response Curve

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	-
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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