SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

SE3080A/K

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

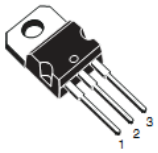
Features

For a single MOSFET

- V_{DS} = 30V
- $R_{DS(ON)}$ = 4.5mΩ @ V_{GS}=10V(SE3080A)
- $R_{DS(ON)}$ = 4.5mΩ @ V_{GS}=10V(SE3080K)

Pin configurations

See Diagram below



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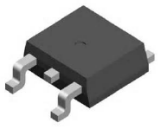

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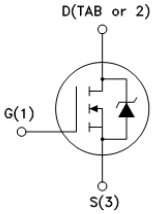

Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	Continuous	I_D	80	A
	Pulsed		170	
Total Power Dissipation	@TA=25℃	P_D	83	W
Derating factor			0.56	W/℃
Single pulse avalanche energy		E_{AS}	285	mJ
Operating Junction Temperature Range		T_J	-55 to 175	℃

Thermal Resistance

Symbol	Parameter	Typ	Max	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	-	1.8	℃/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	30			V
I_{DSS}	Drain to Source Leakage Current	V_{DS}= 30V, 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	1	1.6	3	V
$R_{DS(ON)}$ SE3080A	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=30A	-	4.5	6.5	mΩ
		V_{GS}=4.5V, I_D=24A	-	7	9.5	mΩ
$R_{DS(ON)}$ SE3080K	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=30A	-	4.5	6.5	mΩ
		V_{GS}=4.5V, I_D=24A	-	7.5	10	mΩ
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz		2330		pF
C_{oss}	Output Capacitance			460		pF
C_{rss}	Reverse Transfer Capacitance			230		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	V_{GS}=10V, V_{DS}=30V, I_D=30A		51		nC
Q_{gs}	Gate Source Charge			14		nC
Q_{gd}	Gate Drain Charge			11		nC
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=10V, R_{GEN}=2.7Ω I_D=30A		20		ns
$t_{d(off)}$	Turn-Off Delay Time			60		ns
$t_{d(r)}$	Turn-On Rise Time			15		ns
$t_{d(f)}$	Turn-Off Fall Time			10		ns

Typical Characteristics

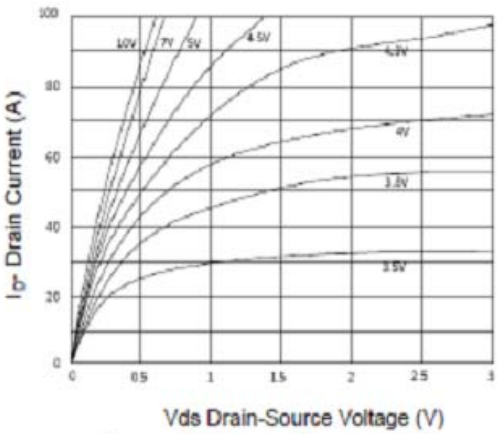

Figure 1 Output Characteristics

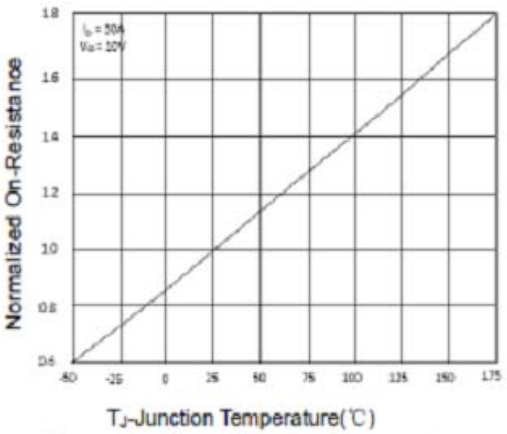

Figure 4 Rdson-JunctionTemperature

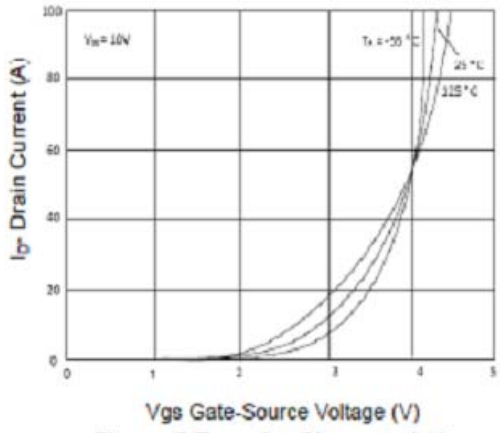

Figure 2 Transfer Characteristics

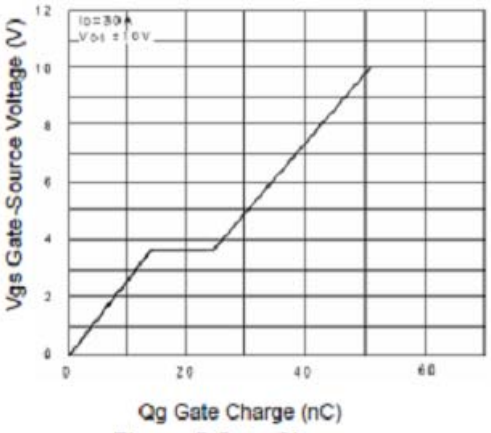

Figure 5 Gate Charge

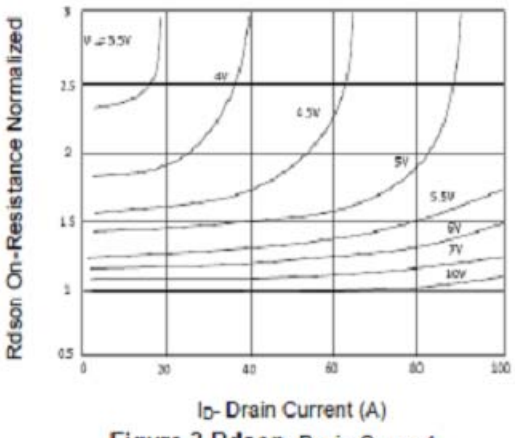

Figure 3 Rdson- Drain Current

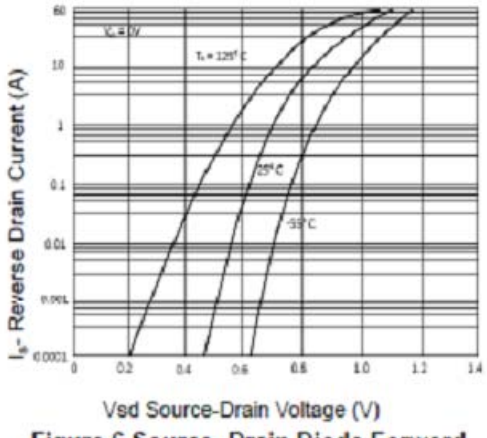

Figure 6 Source- Drain Diode Forward

Typical Characteristics

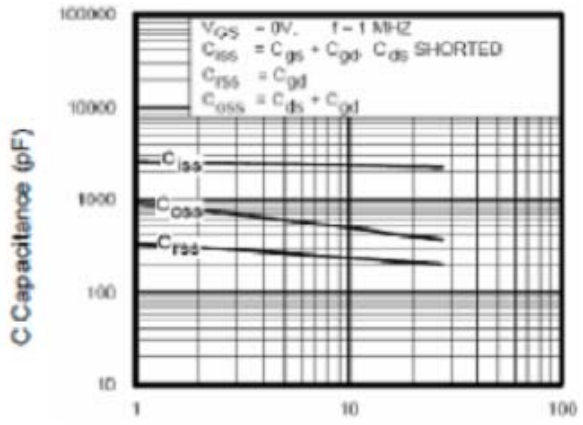

Figure 7 Capacitance vs Vds

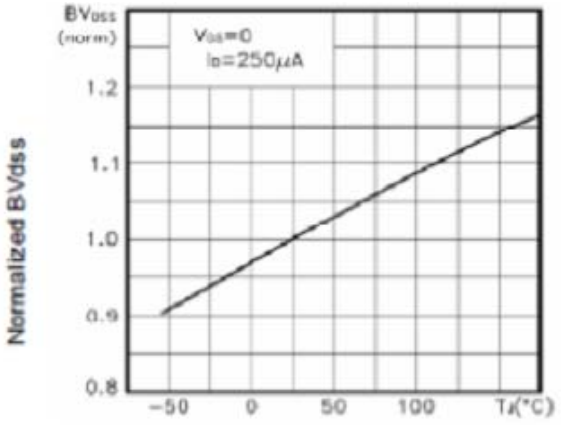

Figure 9 BV_{DSS} vs Junction Temperature

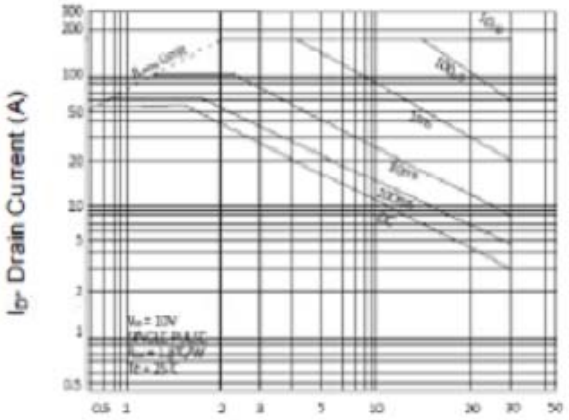

Figure 8 Safe Operation Area

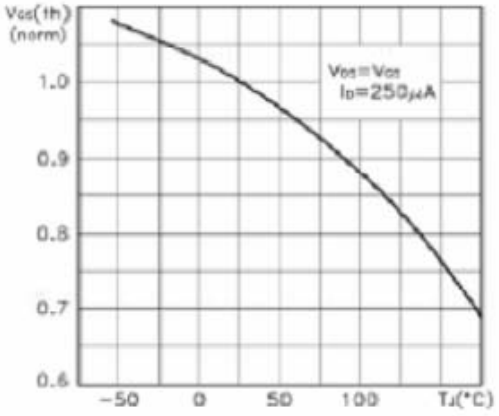

Figure 10 $V_{GS(th)}$ vs Junction Temperature

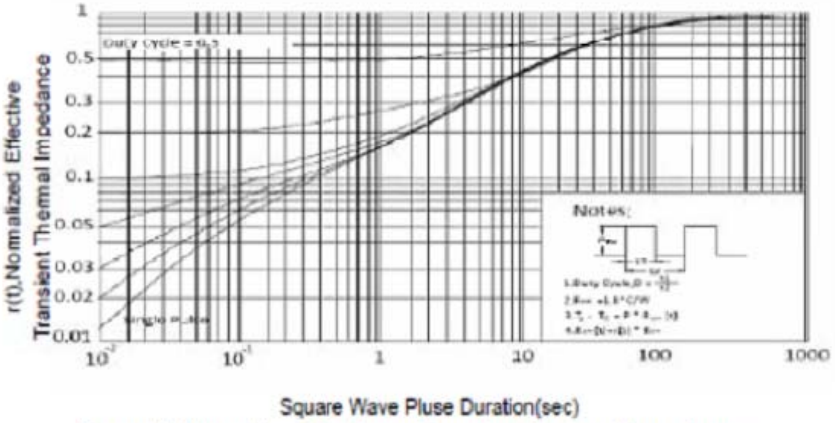

Figure 11 Normalized Maximum Transient Thermal Impedance

Package Outline Dimension

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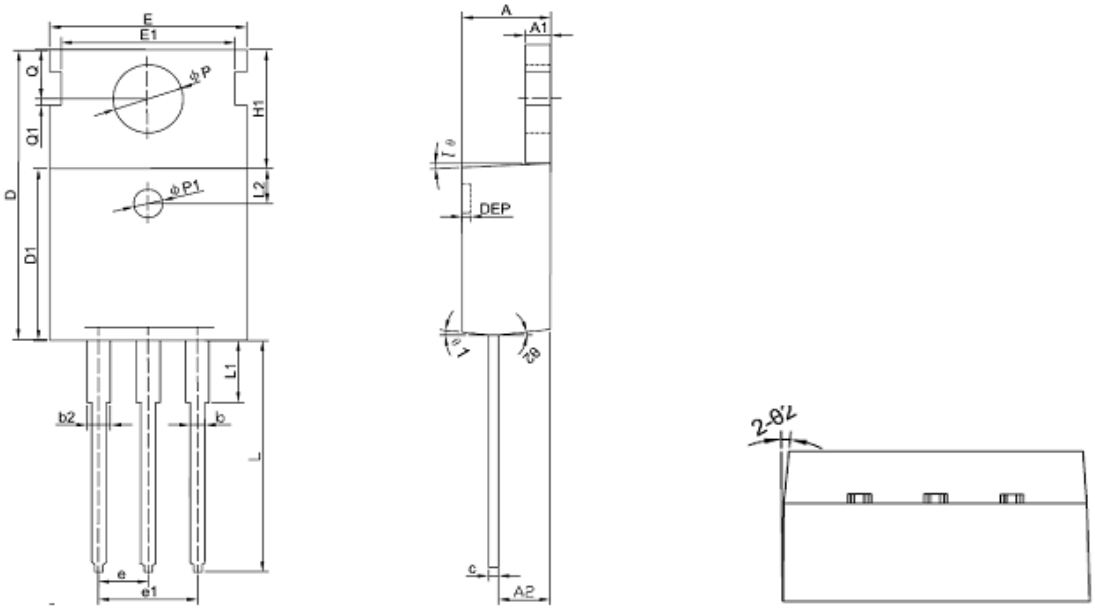

Symbol	Dimension In Millimeters			Dimension In Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.400	4.550	4.700	0.173	0.179	0.185
A1	1.270	1.300	1.330	0.050	0.051	0.052
A2	2.590	2.690	2.790	0.102	0.106	0.110
b	0.770	-	0.900	0.030	-	0.035
b2	1.230	-	1.360	0.048	-	0.054
c	0.480	0.500	0.520	0.019	0.020	0.020
D	15.100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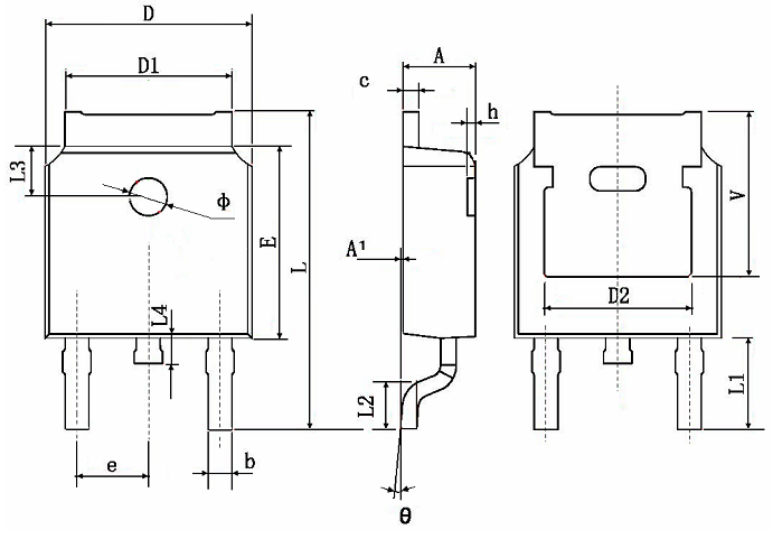

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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