SE7314
Dual-20V P-Channel Enhancement-Mode MOSFET

Revision:A

General Description

SE7314 is produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance. This device particularly suits low voltage applications such as portable equipment, power management and other battery powered circuits, and low in-line power dissipation are needed in a very small outline surface mount

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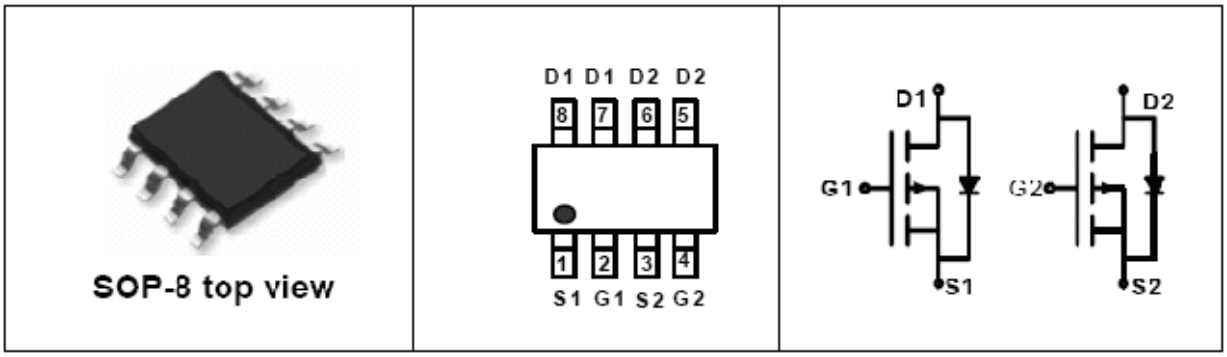
Features

- V_{DS}= -20V
- $R_{DS(on)}$= 68mΩ @V_{GS}= -1.8V，I_D = -2A
- $R_{DS(on)}$= 52mΩ @V_{GS}= -2.5V，I_D = -4.1A
- $R_{DS(on)}$ = 39mΩ@V_{GS}= -4.5V ，I_D = -4.7A

Application

- Load Switch
- A Switch and Battery Switch for Portable Devices

Pin configurations(SOP8)

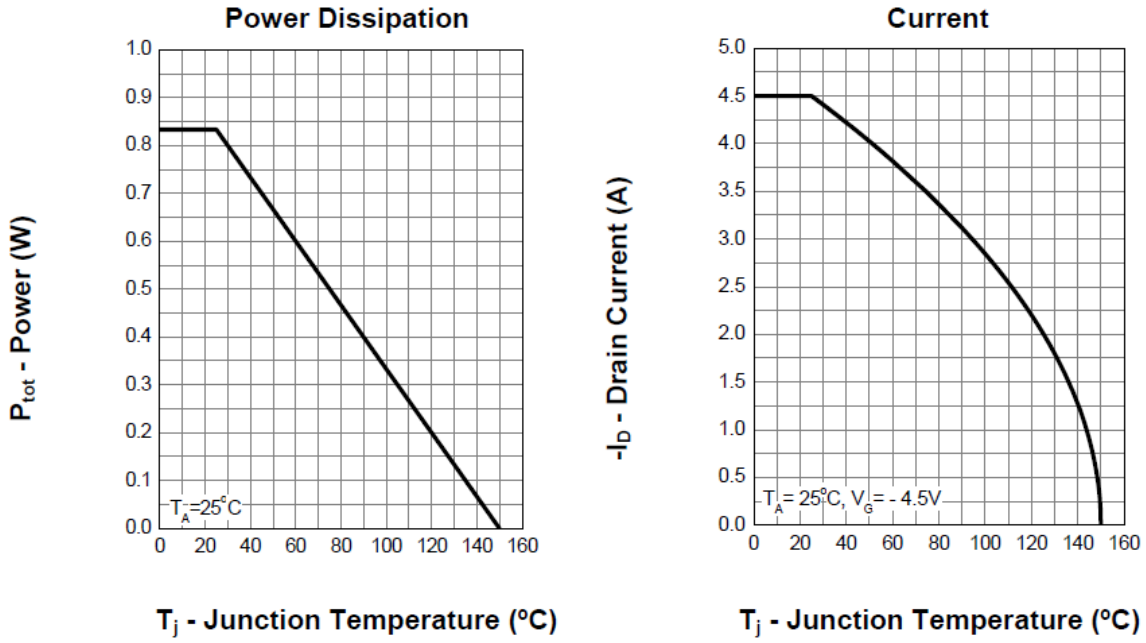


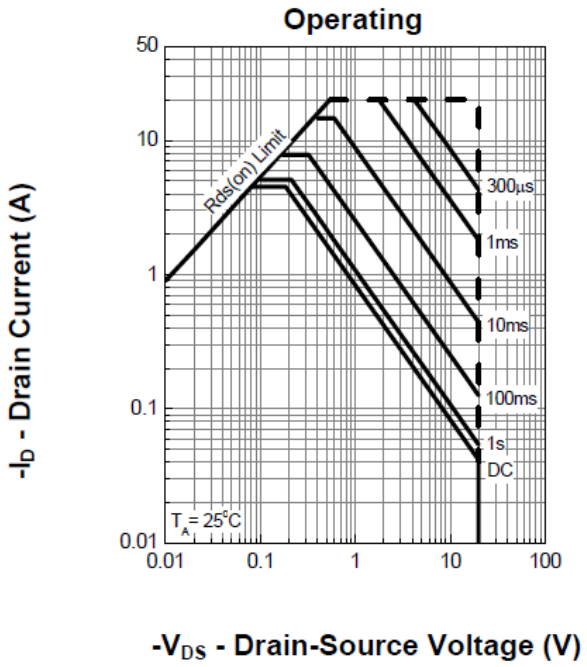
Absolute Maximum Ratings

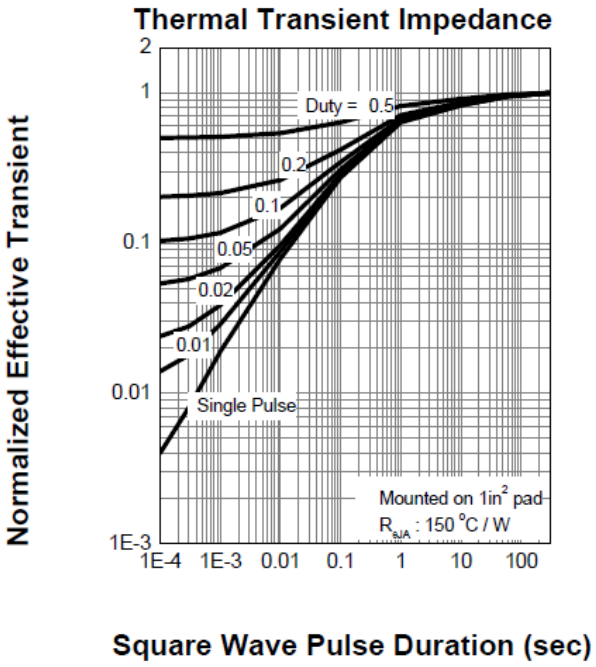
Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current (Note 1)	Continuous	I_D	-4.7	A
	Pulsed		-20	
Total Power Dissipation	@TA=25°C	P_D	1.25	W
	@TA=75°C		0.8	
Operating Junction Temperature Range		T_J	-55 to 150	°C

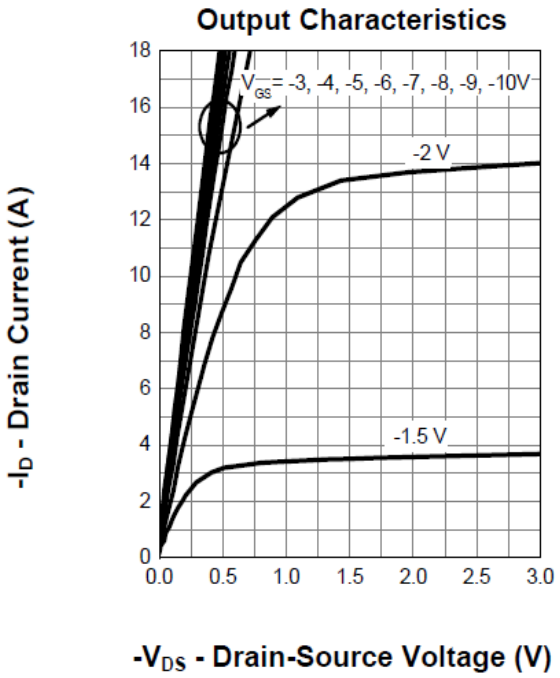
Electrical Characteristics (T_J=25°C unless otherwise noted)						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ**	**Max**	**Units**
OFF CHARACTERISTICS (Note 2)						
BVDSS	Drain-Source Breakdown Voltage	I_D=-250μA, V_{GS}=0 V	-20	-	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}=-16 V, V_{GS}=0 V	-	-	1	μA
IGSS	Gate-Body leakage current	V_{DS}=0 V, V_{GS}=±8 V	-	-	±100	μA
V_{GS}(th)	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=-250μA	-0.4	-	-1	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-1.8V, I_D=-2A	-	45	68	mΩ
		V_{GS}=-2.50V, I_D=-4.1A		35	52	
		V_{GS}=-4.5V, I_D=-4.7A	-	30	39	
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-10V, f=1MHz	-	1020	-	pF
C_{oss}	Output Capacitance		-	191	-	pF
C_{rss}	Reverse Transfer Capacitance		-	140	-	pF
SWITCHING PARAMETERS						
$t_{d(on)}$	Turn-On DelayTime[2]	V_{GS}=-10V, V_{GEN}=-4.5V, R_L=10Ω, R_G=6Ω I_D=-1A	-	25	50	ns
$t_{d(off)}$	Turn-Off DelayTime		-	71	142	
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V,I_S=-1		-	-1.2	V

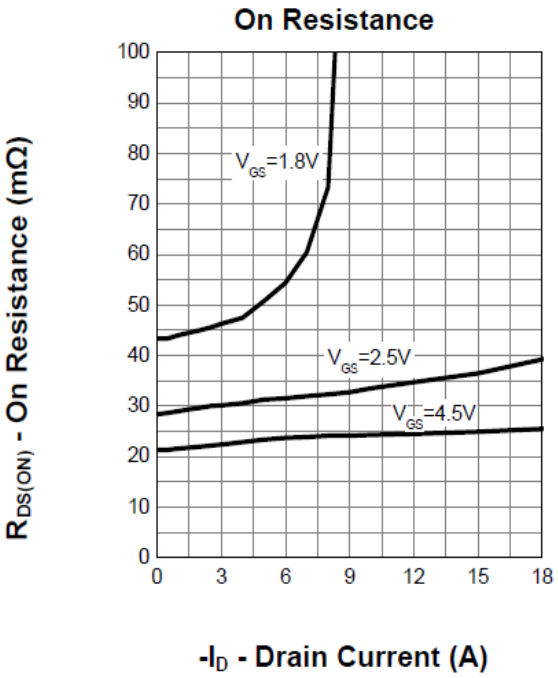
Typical Characteristics

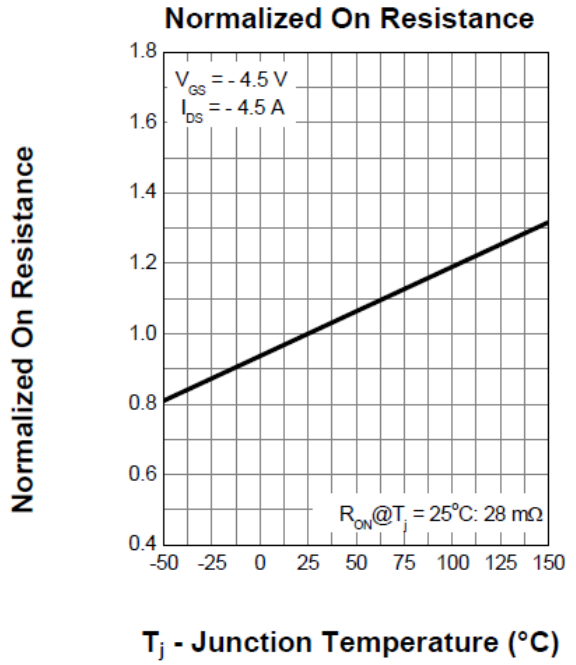


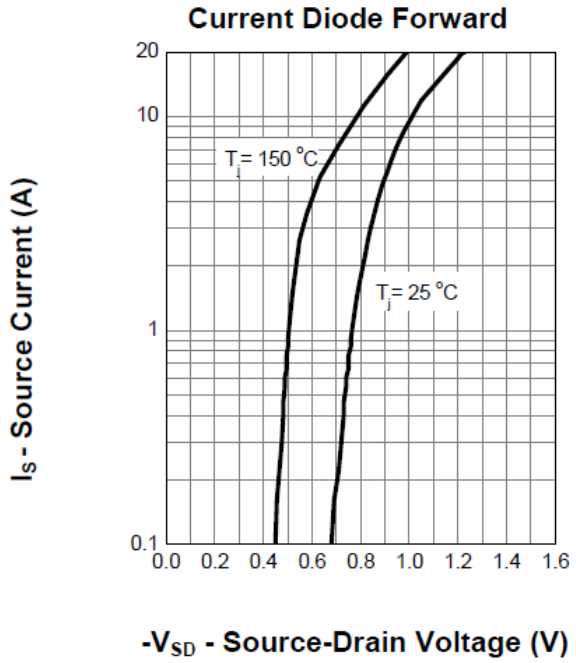

Operating
-I_D - Drain Current (A)
-V_DS - Drain-Source Voltage (V)
Rds(on) Limit
300µs
1ms
10ms
100ms
1s
DC
T_A = 25°C
50
10
1
0.1
0.01
0.01
0.1
1
10
100

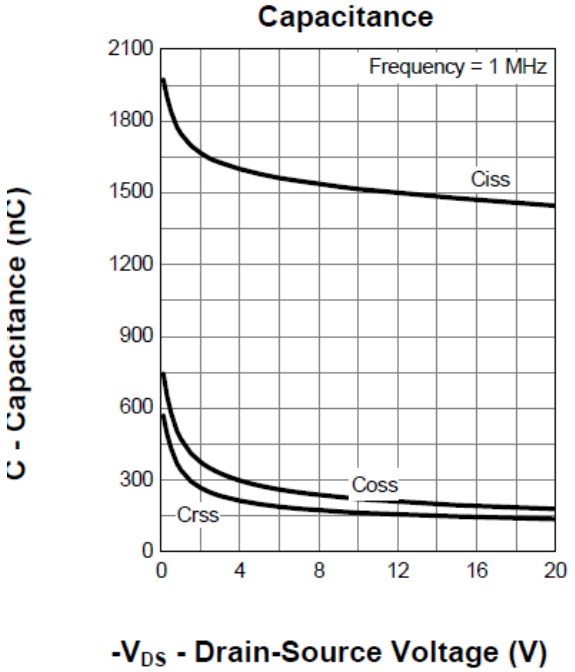

Thermal Transient Impedance
Normalized Effective Transient
Square Wave Pulse Duration (sec)
Duty = 0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Mounted on 1in² pad
R_θJA : 150 °C / W
2
1
0.1
0.01
1E-3
1E-4
1E-3
0.01
0.1
1
10
100

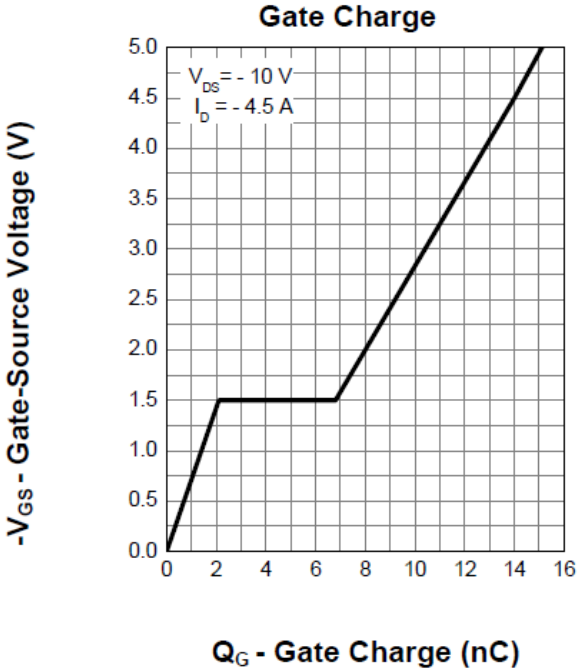

Output Characteristics
-I_D - Drain Current (A)
-V_DS - Drain-Source Voltage (V)
V_GS = -3, -4, -5, -6, -7, -8, -9, -10V
-2 V
-1.5 V
18
16
14
12
10
8
6
4
2
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0


On Resistance
R_DS(ON) - On Resistance (mΩ)
-I_D - Drain Current (A)
V_GS=1.8V
V_GS=2.5V
V_GS=4.5V
100
90
80
70
60
50
40
30
20
10
0
0
3
6
9
12
15
18


Normalized On Resistance
Normalized On Resistance
V_{GS} = - 4.5 V
I_{DS} = - 4.5 A
R_{ON}@T_j = 25°C: 28 mΩ
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
-50 -25 0 25 50 75 100 125 150
T_j - Junction Temperature (°C)

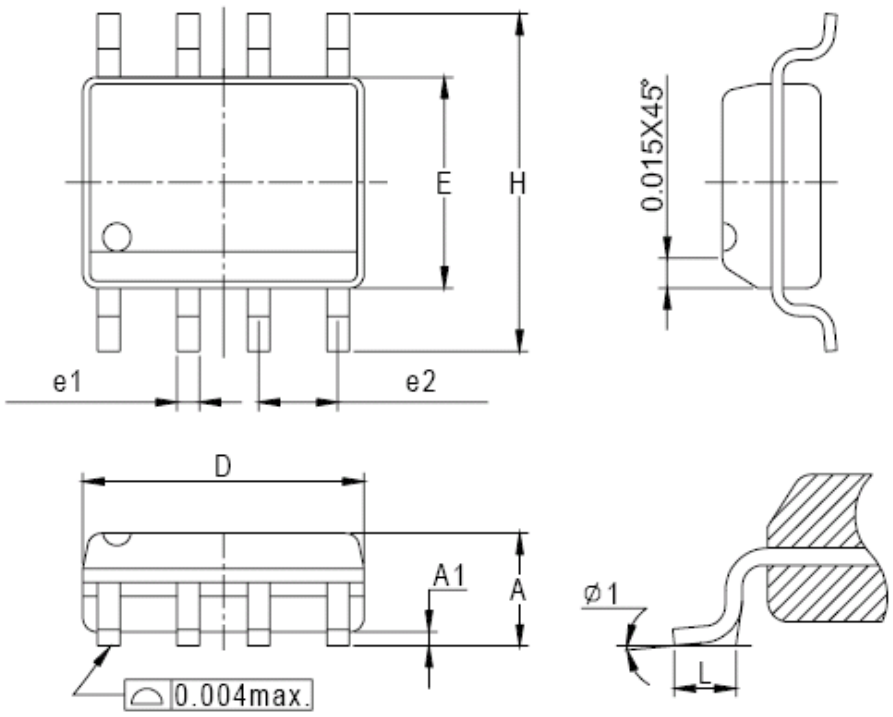

Current Diode Forward
I_S - Source Current (A)
T_j= 150 °C
T_j= 25 °C
20
10
1
0.1
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6
$-V_{SD}$ - Source-Drain Voltage (V)


Capacitance
C - Capacitance (nC)
Frequency = 1 MHz
Ciss
Coss
Crss
2100
1800
1500
1200
900
600
300
0
0 4 8 12 16 20
$-V_{DS}$ - Drain-Source Voltage (V)


Gate Charge
$-V_{GS}$ - Gate-Source Voltage (V)
V_{DS} = - 10 V
I_D = - 4.5 A
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0 2 4 6 8 10 12 14 16
Q_G - Gate Charge (nC)

Packaging Information

SOP-8 pin



Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
ϕ 1	8°		8°	

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