

SE3018

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

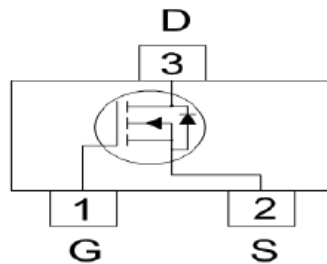
Features

For a single MOSFET

- $V_{DS} = 50V$
- $R_{DS(ON)} = 2.3\Omega @ V_{GS}=4.5$

Pin configurations

See Diagram below



SOT-323

Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	50	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	0.3	A
	Pulsed		14	
Total Power Dissipation	@TA=25°C	P_D	0.35	W
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)						
B _V DSS	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0 V	50			V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 50V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =12V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1		2.5	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =4.5V, I _D =20A	-	2.3	4	Ω
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, f=1MHz	3080	3860	4630	pF
C _{oss}	Output Capacitance		520	740	960	pF
C _{rss}	Reverse Transfer Capacitance		350	580	810	pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =10V, V _{DS} =10V, I _D =20A	28	36	43	nC
Q _{gs}	Gate Source Charge		7	9	11	nC
Q _{gd}	Gate Drain Charge		7	12	17	nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V, V _{DS} =10V, R _{GEN} =3Ω		7		ns
t _{d(off)}	Turn-Off Delay Time			70		ns
t _{d(r)}	Turn-On Rise Time			8		ns
t _{d(f)}	Turn-Off Fall Time			18		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJC}	Thermal Resistance Junction to Case(t≤10s)		30	40	°C/W	

Typical Characteristics

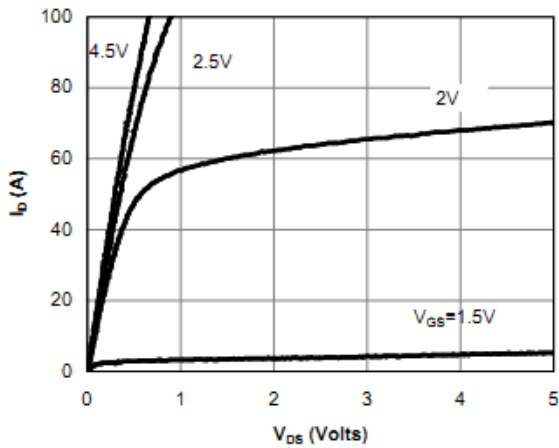


Fig 1: On-Region Characteristics (Note E)

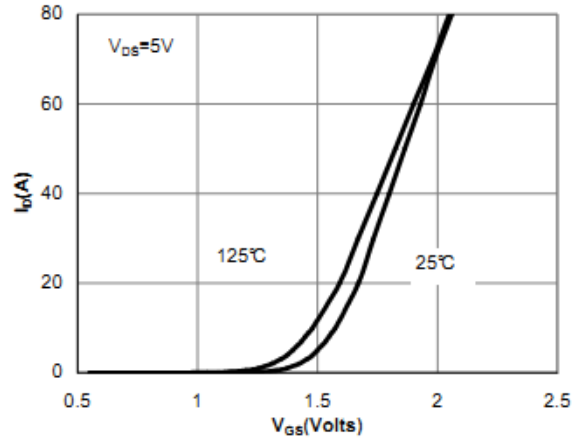


Figure 2: Transfer Characteristics (Note E)

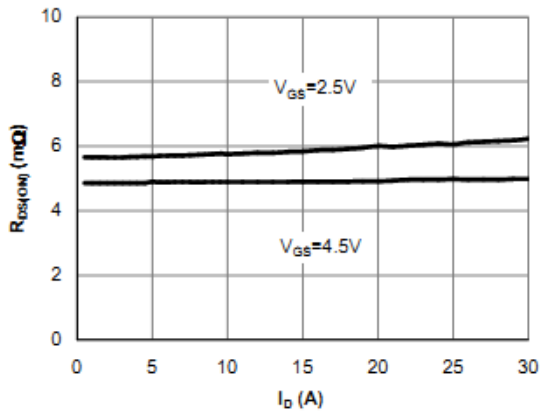


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

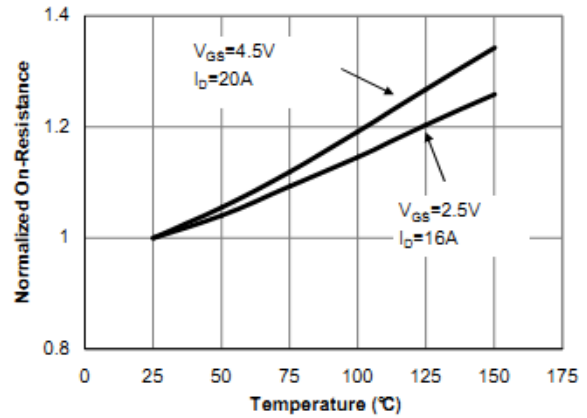


Figure 4: On-Resistance vs. Junction Temperature (Note E)

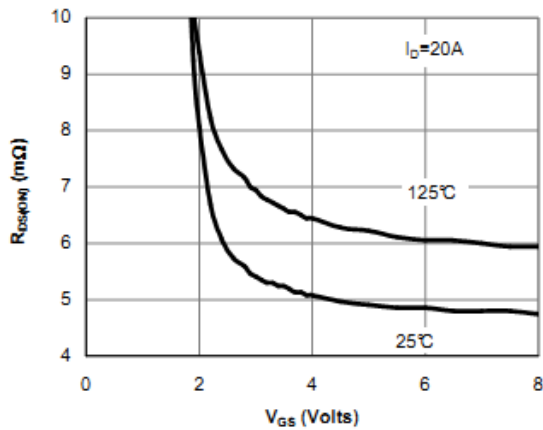


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

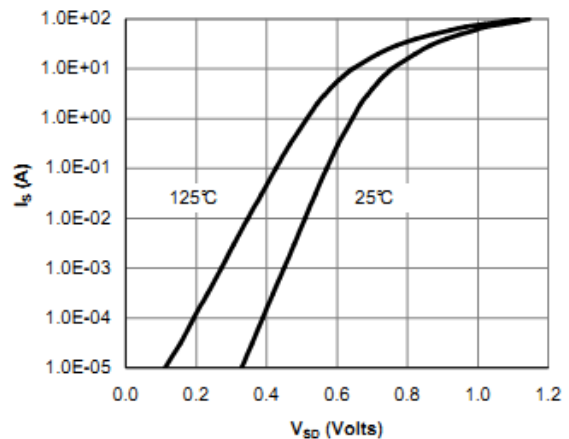


Figure 6: Body-Diode Characteristics (Note E)

Typical Characteristics

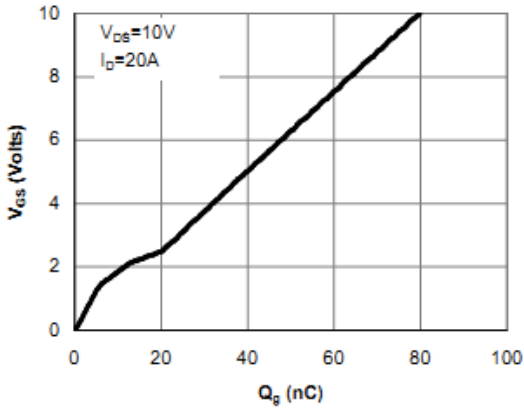


Figure 7: Gate-Charge Characteristics

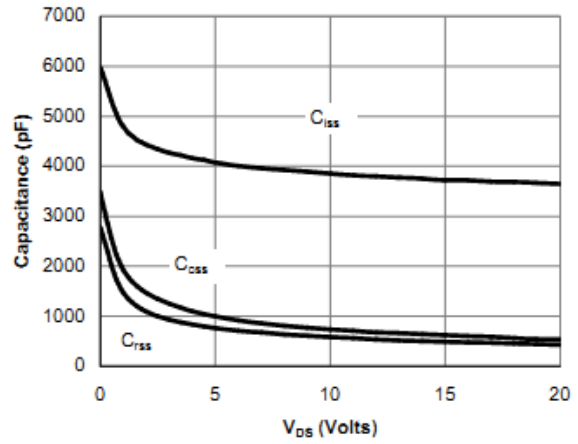


Figure 8: Capacitance Characteristics

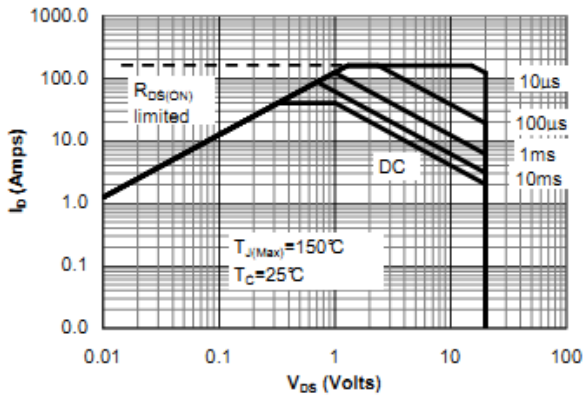


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

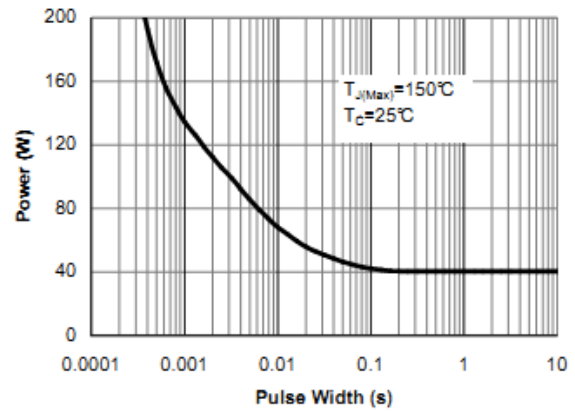


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

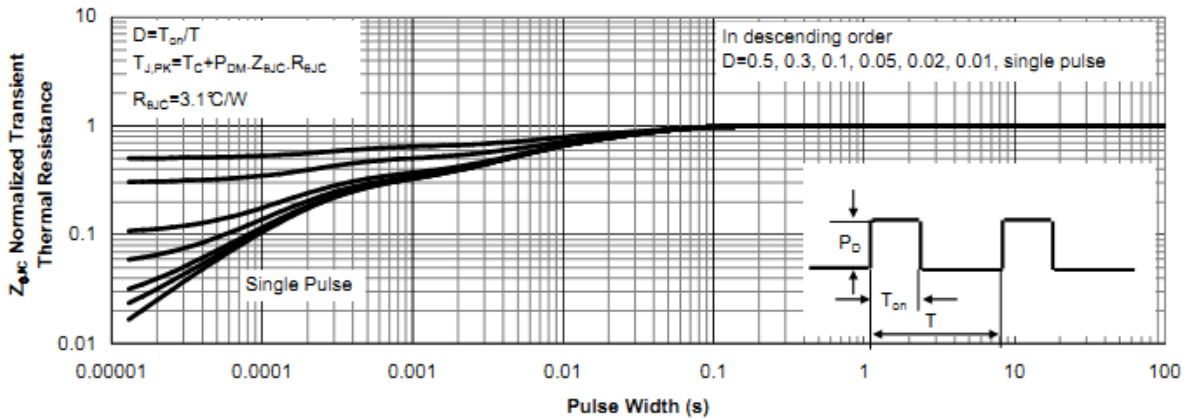
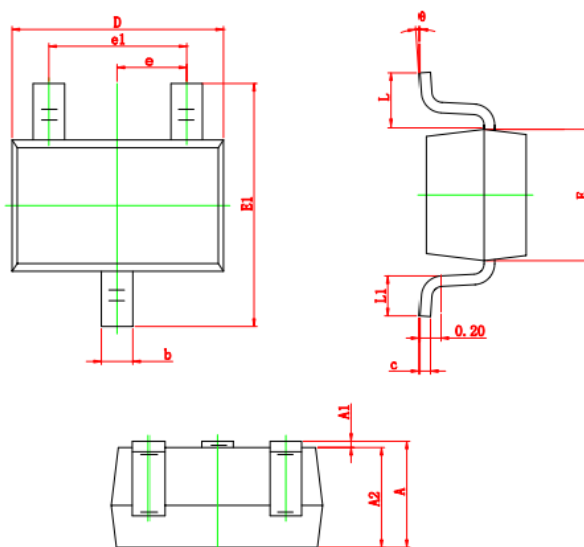


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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Package Outline Dimension

SOT-323



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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