

### General Description

The WSD2098 is the highest performance trench N-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

The WSD2098 meet the RoHS and Green Product requirement with full function reliability approved.

### Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available

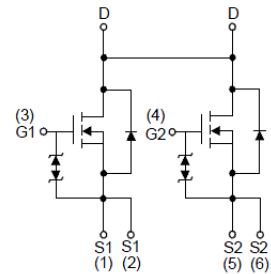
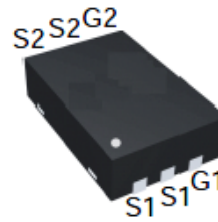
### Product Summary

BV <sub>DSS</sub>	R <sub>DSON</sub>	I <sub>D</sub>
20V	7.0mΩ	9.7A

### Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- DC-DC Power System
- ESD:2KV

### DFN2X3A-6\_EP Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	20	V
V <sub>GS</sub>	Gate-Source Voltage	± 12	V
I <sub>D</sub> @T <sub>A</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ 4.5V <sup>1</sup>	9.7	A
I <sub>D</sub> @T <sub>A</sub> =70°C	Continuous Drain Current, V <sub>GS</sub> @ 4.5V <sup>1</sup>	7.5	A
I <sub>DM</sub>	Pulsed Drain Current <sup>2</sup>	38	A
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation <sup>3</sup>	1.0	W
P <sub>D</sub> @T <sub>A</sub> =70°C	Total Power Dissipation <sup>3</sup>	0.6	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient <sup>1</sup> (Steady State)	---	127	°C/W
R <sub>θJA</sub>	Thermal Resistance Junction-ambient <sup>1</sup> (t<10S)	---	80	°C/W

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BVDSS Temperature Coefficient	Reference to 25°C, I <sub>D</sub> =1mA	---	0.022	---	V/°C
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.5A	---	7.0	9.0	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =5.5A	---	10.5	13.5	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.5	0.7	1.0	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	-2.32	---	mV/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C	---	---	5	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =10A	---	65	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	---	11	---	Ω
Q <sub>g</sub>	Total Gate Charge (4.5V)	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.5A	10	23.2	15	nC
Q <sub>gs</sub>	Gate-Source Charge		---	1.9	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	4.8	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =10V, V <sub>GS</sub> =10V, R <sub>G</sub> =1Ω, I <sub>D</sub> =1A, RL=10Ω	---	8	---	ns
T <sub>r</sub>	Rise Time		---	20	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	935	---	
T <sub>f</sub>	Fall Time		---	410	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz	1000	1470	1920	pF
C <sub>oss</sub>	Output Capacitance		150	258	295	
C <sub>rss</sub>	Reverse Transfer Capacitance		100	202	288	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1,4</sup>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	2	A
I <sub>SM</sub>	Pulsed Source Current <sup>2,4</sup>		---	---	8	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	0.7	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =5.5A, dI/dt=100A/μs, T <sub>J</sub> =25°C	---	445	---	nS
Q <sub>rr</sub>	Reverse Recovery Charge		---	2175	---	nC

Note :

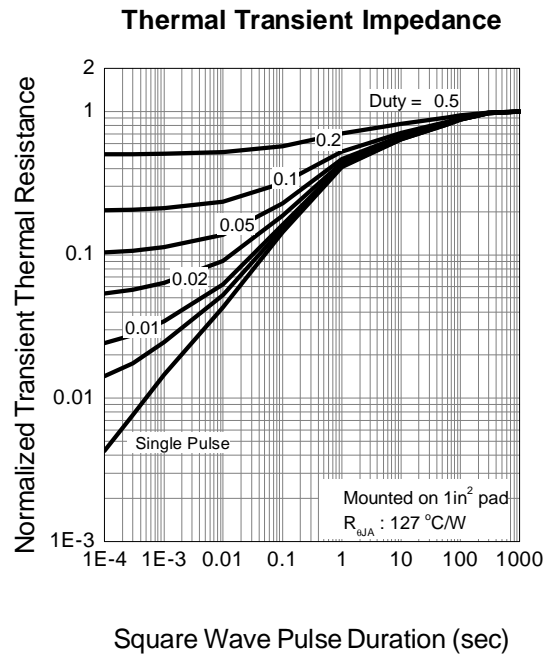
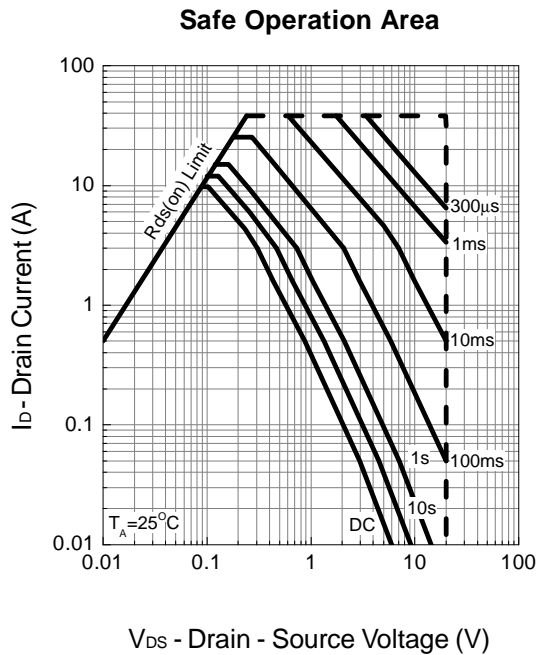
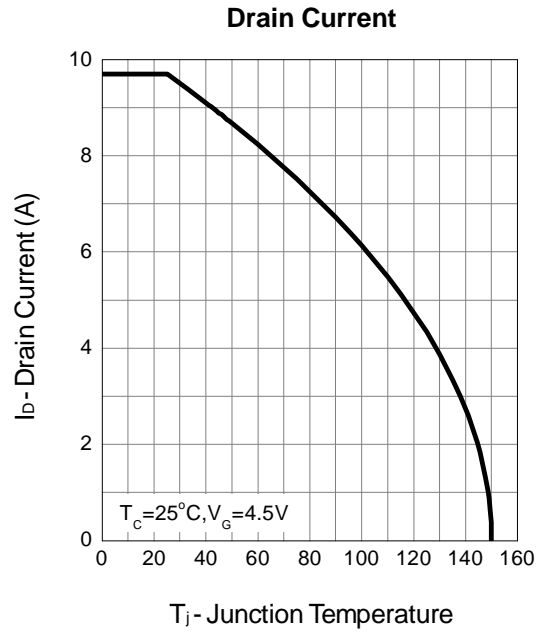
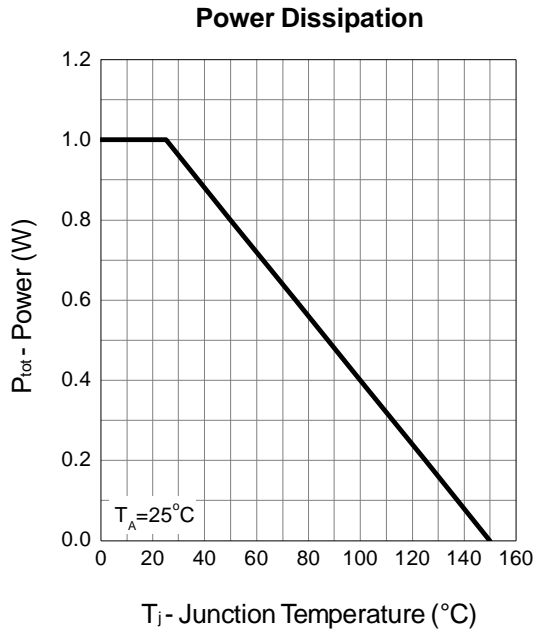
 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper, t<10sec.

2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

3.The power dissipation is limited by 150°C junction temperature

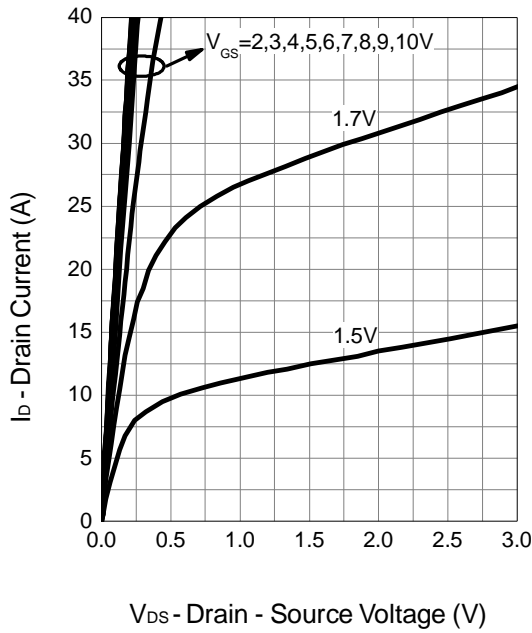
 4.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub>, in real applications, should be limited by total power dissipation.

**Typical Characteristics**

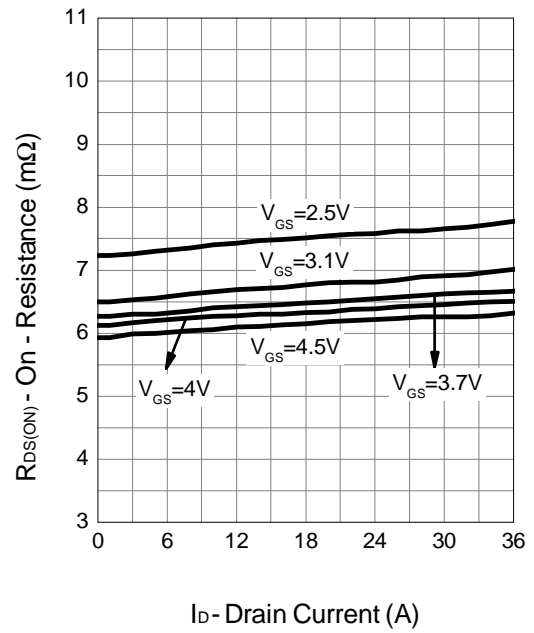


**Typical Characteristics**

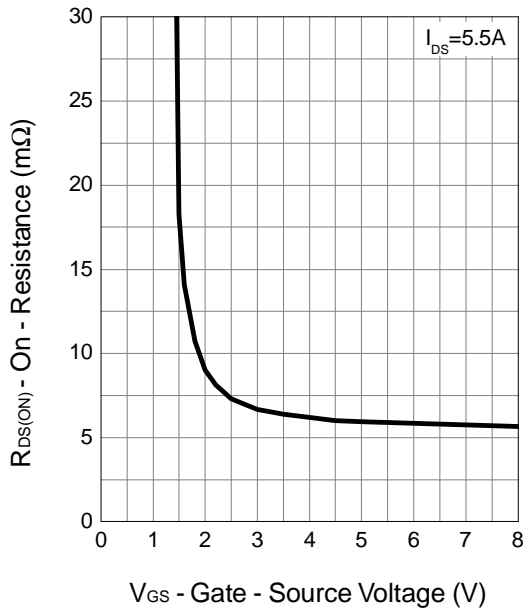
**Output Characteristics**



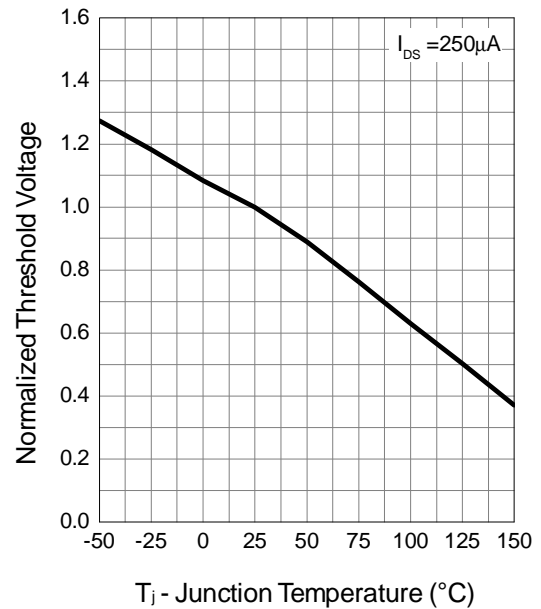
**Drain-Source On Resistance**



**Gate-Source On Resistance**

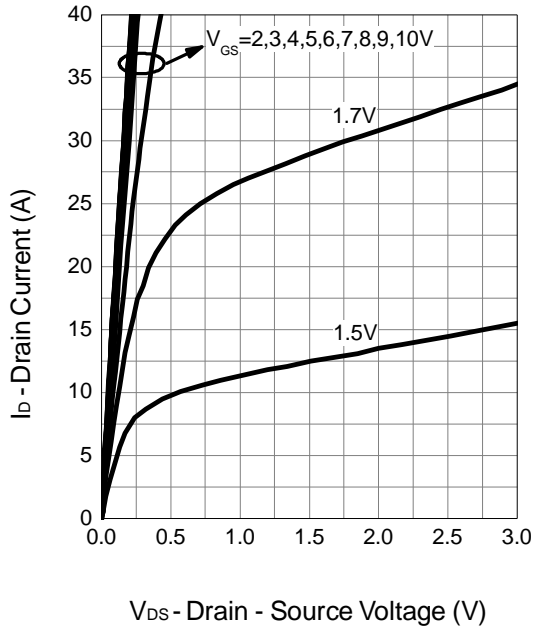


**Gate Threshold Voltage**

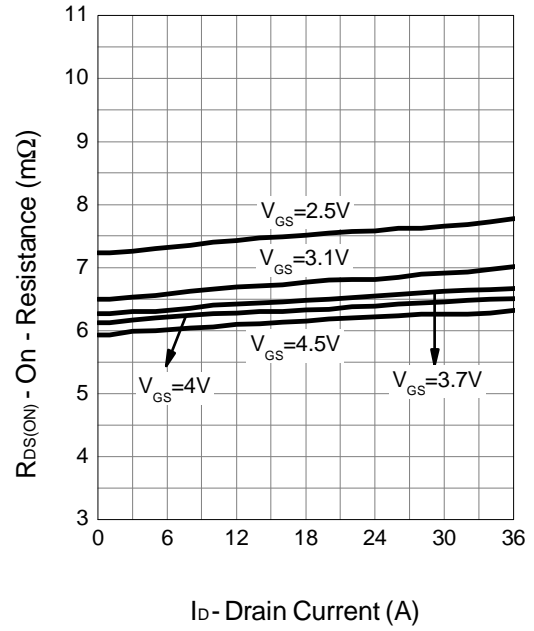


**Typical Characteristics**

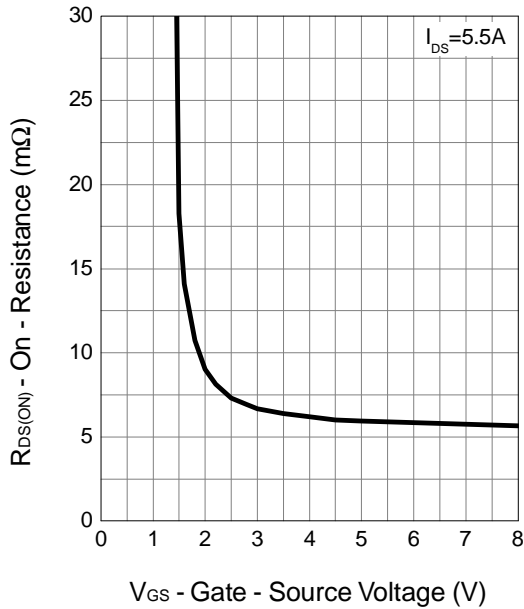
**Output Characteristics**



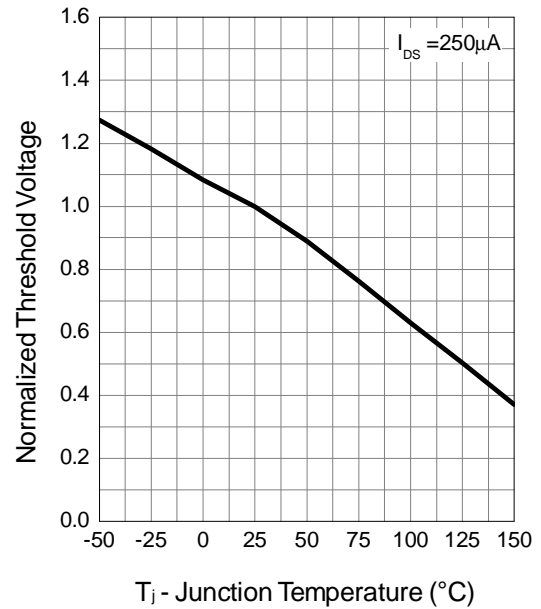
**Drain-Source On Resistance**



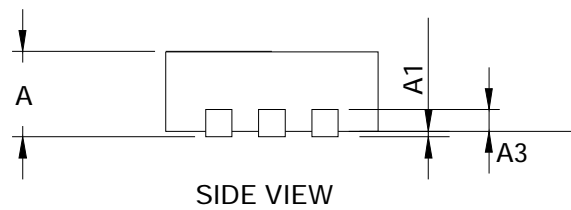
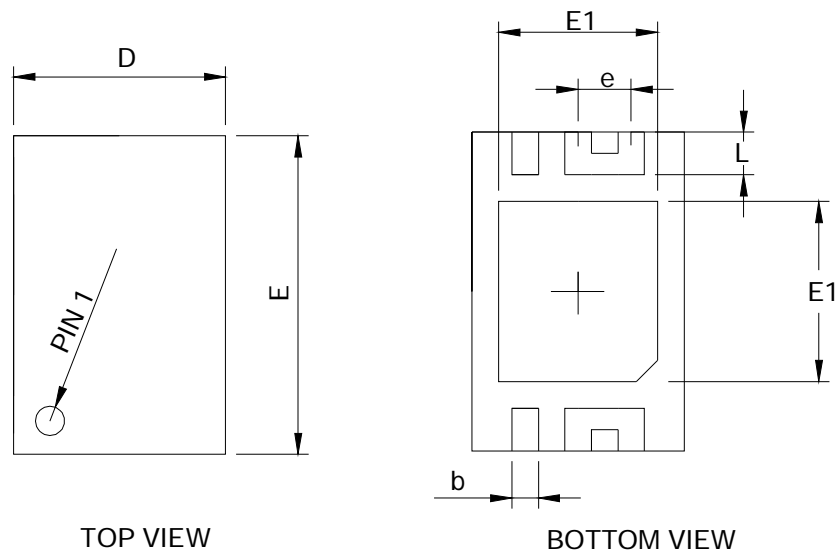
**Gate-Source On Resistance**



**Gate Threshold Voltage**

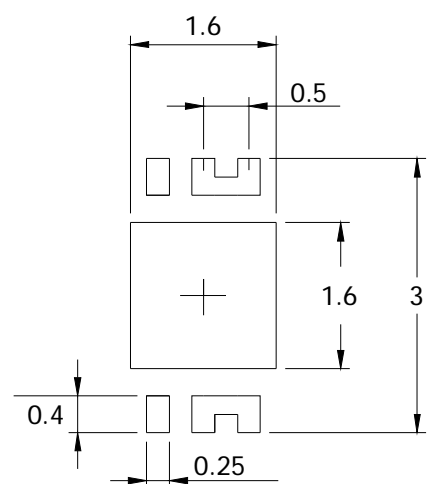


**Package Information DFN2x3A-6\_EP**



SYMBOL	DFN2x3A-6_EP			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
A3	0.203 REF		0.008 REF	
b	0.20	0.30	0.008	0.012
D	1.90	2.10	0.075	0.083
E1	1.60	1.80	0.063	0.071
E	2.90	3.10	0.114	0.122
D1	1.40	1.60	0.055	0.063
e	0.50 BSC		0.02 BSC	
L	0.30	0.50	0.012	0.020

**RECOMMENDED LAND PATTERN**



UNIT: mm



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