

### General Description

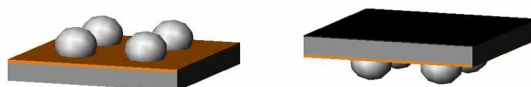
The AOC2800 uses advanced trench technology to provide excellent  $R_{SS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V while retaining a 12V  $V_{GS(MAX)}$  rating. It is ESD protected. This device is suitable for use as a uni-directional or bi-directional load switch, facilitated by its common-drain configuration.

### Product Summary

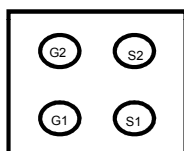
$V_{SS}$	30V
$I_D$ (at $V_{GS}=4.5V$ )	6A
$R_{SS(ON)}$ (at $V_{GS}=4.5V$ )	< 42m $\Omega$
$R_{SS(ON)}$ (at $V_{GS}=4.0V$ )	< 44m $\Omega$
$R_{SS(ON)}$ (at $V_{GS}=3.1V$ )	< 49m $\Omega$
$R_{SS(ON)}$ (at $V_{GS}=2.5V$ )	< 61m $\Omega$



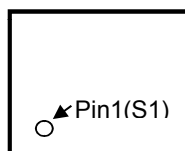
WLCSP 1.57x1.57\_4



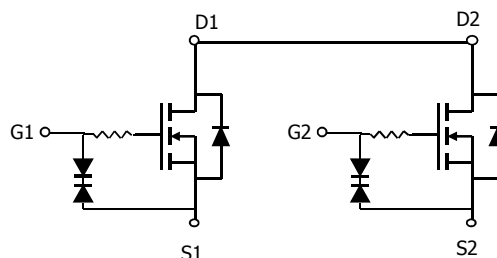
Bottom View



Top View



Equivalent Circuit



### Absolute Maximum Ratings $T_A=25^\circ C$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Source-Source Voltage	$V_{SS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Source Current (DC) <sup>Note1</sup>	$T_A=25^\circ C$ $I_S$	6	A
Source Current (Pulse) <sup>Note2</sup>		60	
Power Dissipation <sup>Note1</sup>	$T_A=25^\circ C$ $P_D$	1.3	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

**Note 1.** Mounted on minimum pad PCB

**Note 2.** PW <300  $\mu s$  pulses, duty cycle 0.5% max

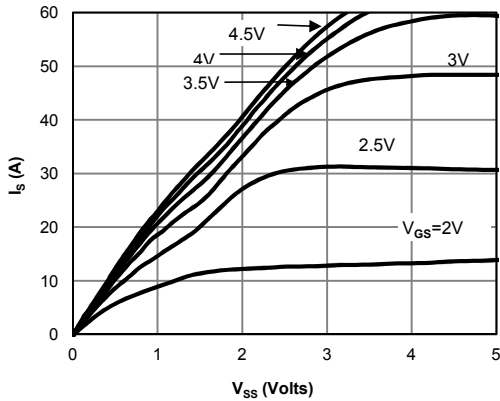
**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>SSS</sub>	Source-Source Breakdown Voltage	I <sub>S</sub> =250μA, V <sub>GS</sub> =0V, Test Circuit 6	30			V
I <sub>SSS</sub>	Zero Gate Voltage Source Current	V <sub>SS</sub> =20V, V <sub>GS</sub> =0V, Test Circuit 1			1	μA
		T <sub>J</sub> =55°C			5	
I <sub>GSS</sub>	Gate leakage current	V <sub>SS</sub> =0V, V <sub>GS</sub> = ±10V, Test Circuit 2		1	10	
BV <sub>GSO</sub>	Gate-Source Breakdown Voltage	V <sub>SS</sub> =0V, I <sub>G</sub> =±250μA, Test Circuit 7	±12			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>SS</sub> =V <sub>GS</sub> I <sub>S</sub> =250μA, Test Circuit 3	0.5	1	1.5	V
R <sub>SS(ON)</sub>	Static Source to Source On-Resistance <sup>Note</sup>	V <sub>GS</sub> =4.5V, I <sub>S</sub> =3A, Test Circuit 4		35	42	mΩ
		T <sub>J</sub> =125°C		53	63	
		V <sub>GS</sub> =4.0V, I <sub>S</sub> =3A, Test Circuit 4		37	44	
		V <sub>GS</sub> =3.1V, I <sub>S</sub> =3A, Test Circuit 4		41	49	
		V <sub>GS</sub> =2.5V, I <sub>S</sub> =3A, Test Circuit 4		49	61	
g <sub>FS</sub>	Forward Transconductance <sup>Note</sup>	V <sub>SS</sub> =5V, I <sub>S</sub> =3A, Test Circuit 3		21		S
V <sub>FSS</sub>	Diode Forward Voltage <sup>Note</sup>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V, Test Circuit 5		0.7	1	V
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>SS</sub> =15V, f=1MHz,		984	1180	pF
C <sub>oss</sub>	Output Capacitance			93		pF
C <sub>riss</sub>	Reverse Transfer Capacitance			57		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>SS</sub> =0V, f=1MHz		1.5		kΩ
<b>SWITCHING PARAMETERS</b>						
t <sub>D(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =10V, V <sub>SS</sub> =15V, R <sub>L</sub> =2.4Ω, R <sub>GEN</sub> =6Ω,		320		ns
t <sub>r</sub>	Turn-On Rise Time			800		ns
t <sub>D(off)</sub>	Turn-Off Delay Time			3.8		μs
t <sub>f</sub>	Turn-Off Fall Time			3.6		μs
Q <sub>g</sub>	Total Gate Charge	V <sub>G1S1</sub> =4.5V, V <sub>SS</sub> =15V, I <sub>S</sub> =6A		9.1		nC

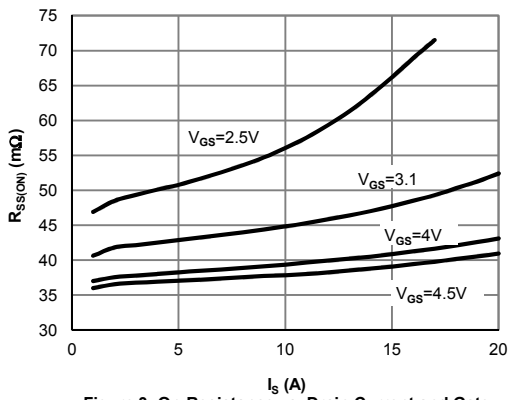
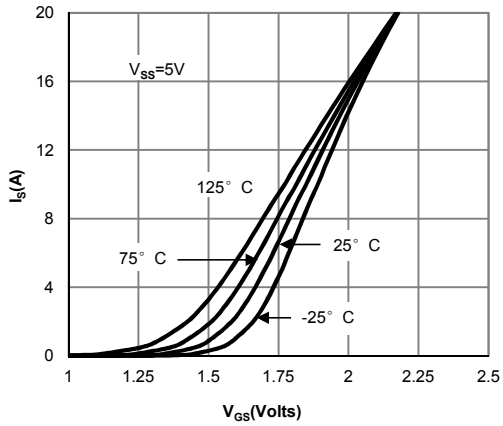
**Note: Pulsed**

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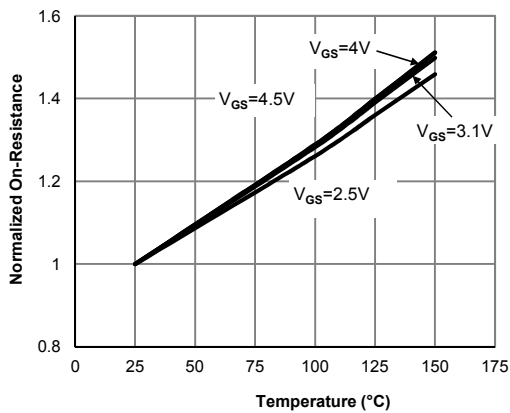
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



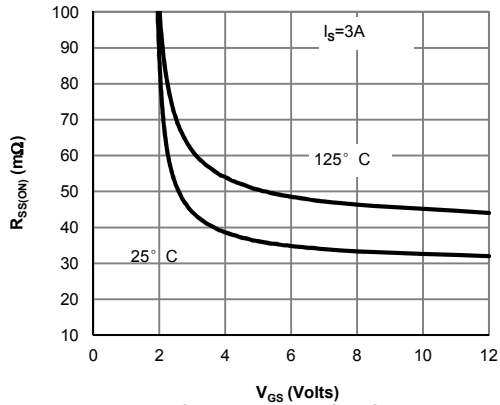
**Fig 1: On-Region Characteristics**



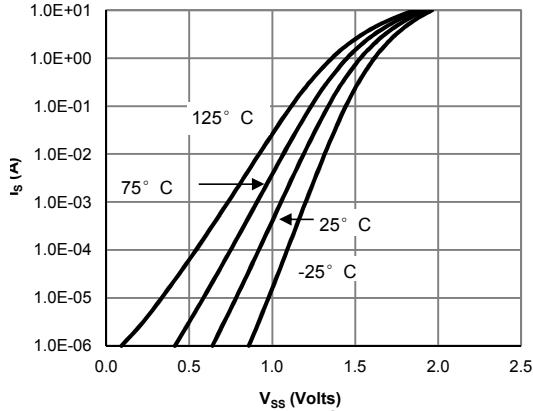
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



**Figure 4: On-Resistance vs. Junction Temperature**



**Figure 5: On-Resistance vs. Gate-Source Voltage**



**Figure 6: Body-Diode Characteristics**

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

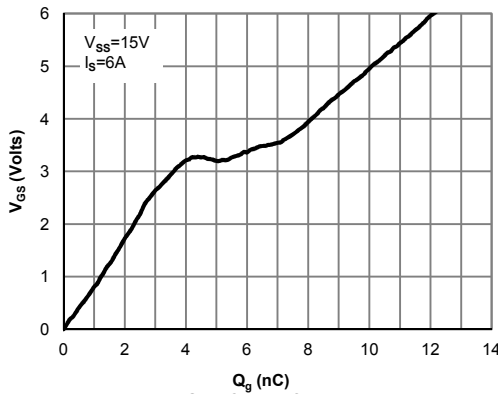


Figure 7: Gate-Charge Characteristics

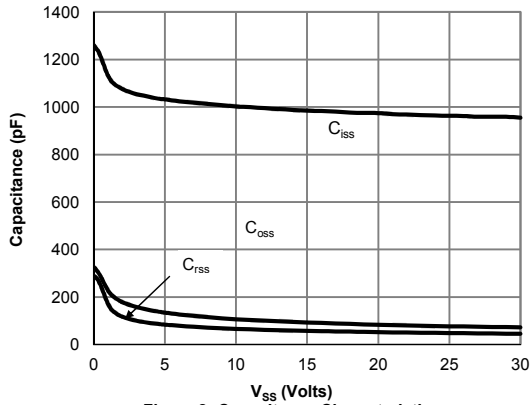


Figure 8: Capacitance Characteristics

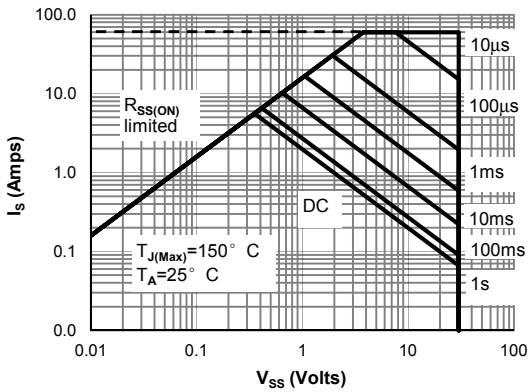


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

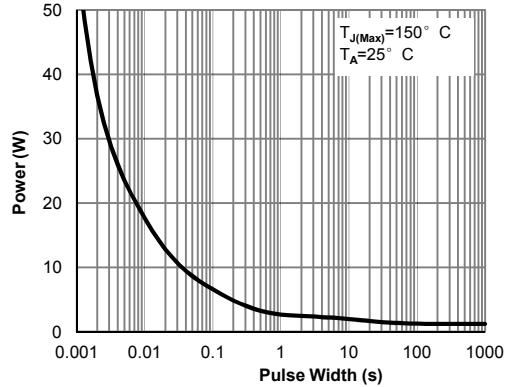


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

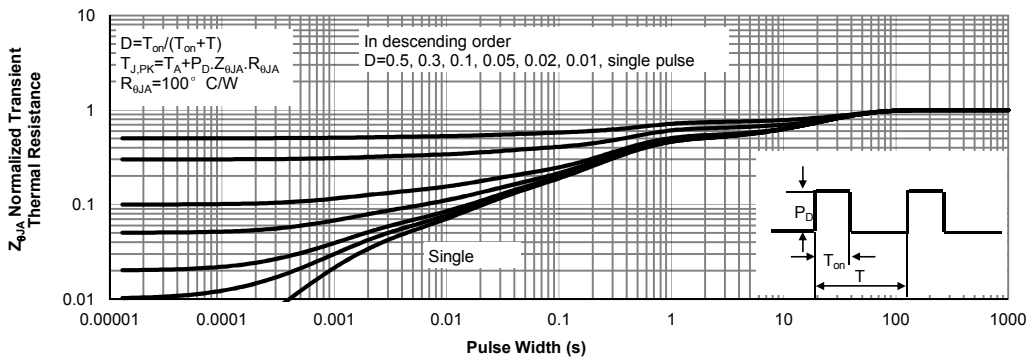


Figure 11: Normalized Maximum Transient Thermal Impedance

