



**AO4620**

**Complementary Enhancement Mode Field Effect Transistor**

**General Description**

The AO4620 uses advanced trench technology MOSFETs to provide excellent  $R_{DS(ON)}$  and low gate charge. The complementary MOSFETs may be used in inverter and other applications.

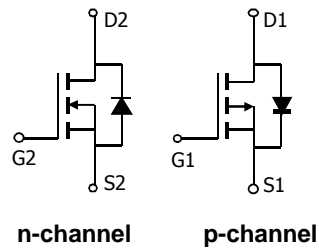
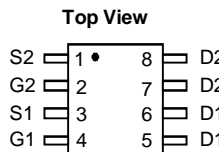
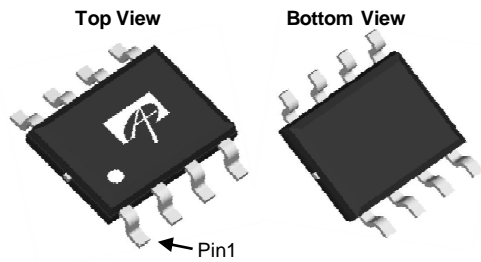
**Features**

n-channel	p-channel
$V_{DS} (V) = 30V$	-30V
$I_D = 7.2A (V_{GS}=10V)$	-5.3A ( $V_{GS} = -10V$ )
$R_{DS(ON)}$	$R_{DS(ON)}$
< 24m $\Omega$ ( $V_{GS}=10V$ )	< 32m $\Omega$ ( $V_{GS} = -10V$ )
< 36m $\Omega$ ( $V_{GS}=4.5V$ )	< 55m $\Omega$ ( $V_{GS} = -4.5V$ )

100% UIS tested  
100% Rg tested



SOIC-8



**Absolute Maximum Ratings  $T_A=25^\circ\text{C}$  unless otherwise noted**

Parameter	Symbol	Max n-channel	Max p-channel	Units
Drain-Source Voltage	$V_{DS}$	30	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	$\pm 20$	V
Continuous Drain Current <sup>F</sup>	$I_D$	$T_A=25^\circ\text{C}$	7.2	-5.3
		$T_A=70^\circ\text{C}$	6.2	-4.5
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	64	-40	A
Power Dissipation <sup>F</sup>	$P_D$	$T_A=25^\circ\text{C}$	2	2
		$T_A=70^\circ\text{C}$	1.44	1.44
Avalanche Current <sup>B</sup>	$I_{AR}$	9	17	A
Repetitive avalanche energy 0.3mH <sup>B</sup>	$E_{AR}$	12	43	mJ
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	-55 to 150	$^\circ\text{C}$

**Thermal Characteristics: n-channel and p-channel**

Parameter	Symbol	Device	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	n-ch	50	62.5	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A</sup>		n-ch	80	100	$^\circ\text{C/W}$
Maximum Junction-to-Lead <sup>C</sup>	$R_{\theta JL}$	n-ch	32	40	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	p-ch	50	62.5	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A</sup>		p-ch	80	100	$^\circ\text{C/W}$
Maximum Junction-to-Lead <sup>C</sup>	$R_{\theta JL}$	p-ch	32	40	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			1 5	μA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250μA	1.5	2.1	2.6	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	64			A
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =7.2A T <sub>J</sub> =125°C		17.7 25	24 32	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A		24.8	36	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =7.2A		20		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.74	1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				2.5	A
I <sub>SM</sub>	Pulsed Body-Diode Current <sup>B</sup>				64	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		373	448	pF
C <sub>oss</sub>	Output Capacitance			67		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			41		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.8	2.8	Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub> (10V)	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =7.2A		7.2	11	nC
Q <sub>g</sub> (4.5V)	Total Gate Charge			3.5		nC
Q <sub>gs</sub>	Gate Source Charge			1.3		nC
Q <sub>gd</sub>	Gate Drain Charge			1.7		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =2.1Ω, R <sub>GEN</sub> =3Ω		4.5		ns
t <sub>r</sub>	Turn-On Rise Time			2.7		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			14.9		ns
t <sub>f</sub>	Turn-Off Fall Time			2.9		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =7.2A, di/dt=100A/μs		10.5	12.6	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =7.2A, di/dt=100A/μs		4.5		nC

A: The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25° C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C: The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

D: The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25° C. The SOA curve provides a single pulse rating.

F: The power dissipation and current rating are based on the t ≤ 10s thermal resistance rating.

Rev 8: May 2012

THIS PRODUCT HAS BEEN DESIGNED AND QUALIFIED FOR THE CONSUMER MARKET. APPLICATIONS OR USES AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN, FUNCTIONS AND RELIABILITY WITHOUT NOTICE.

N-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

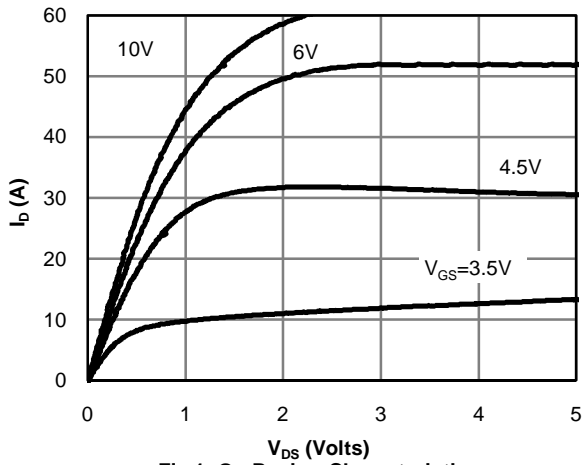


Fig 1: On-Region Characteristics

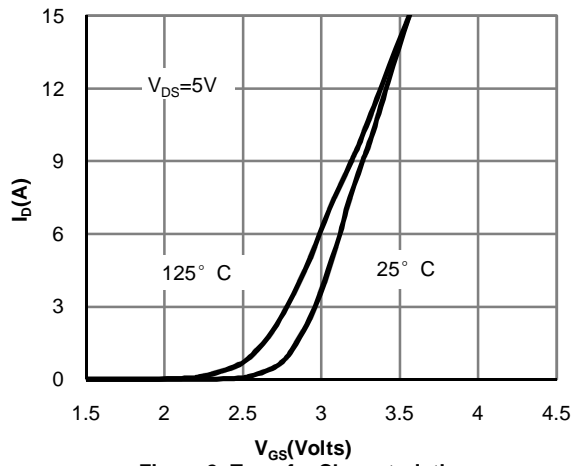


Figure 2: Transfer Characteristics

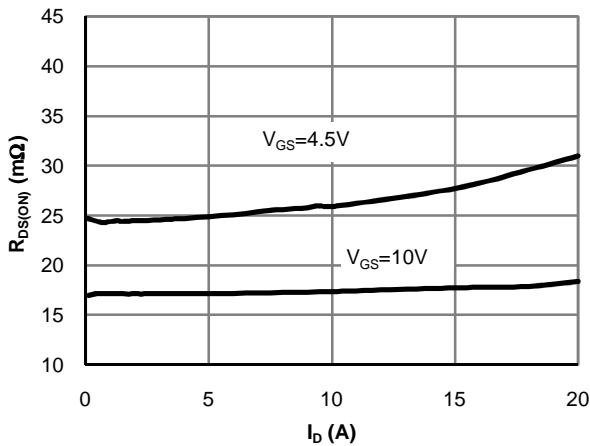


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

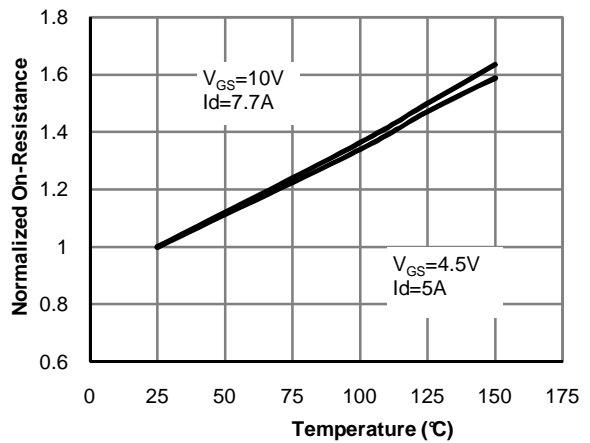


Figure 4: On-Resistance vs. Junction Temperature

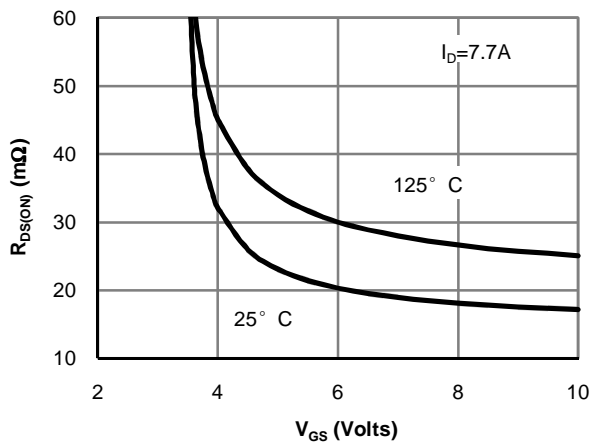


Figure 5: On-Resistance vs. Gate-Source Voltage

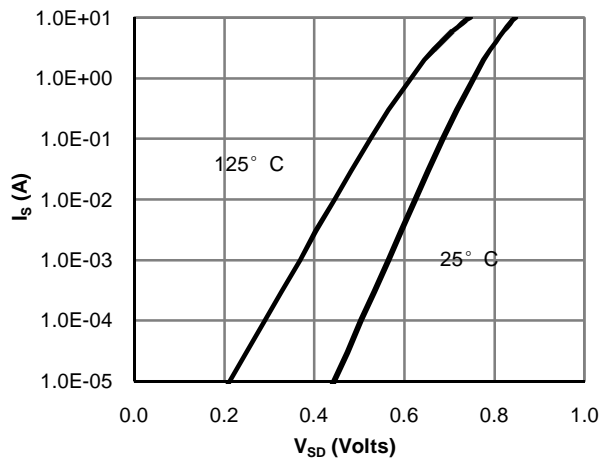


Figure 6: Body-Diode Characteristics

N-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

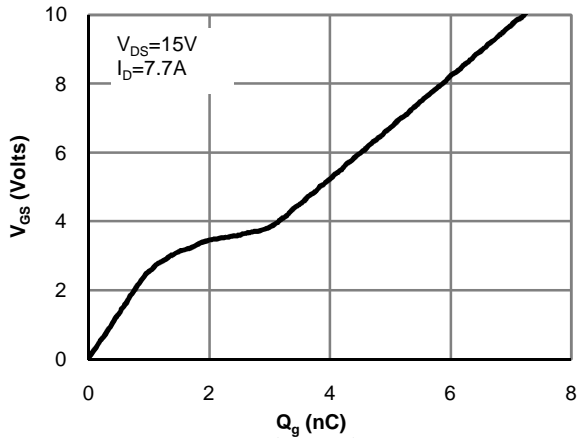


Figure 7: Gate-Charge Characteristics

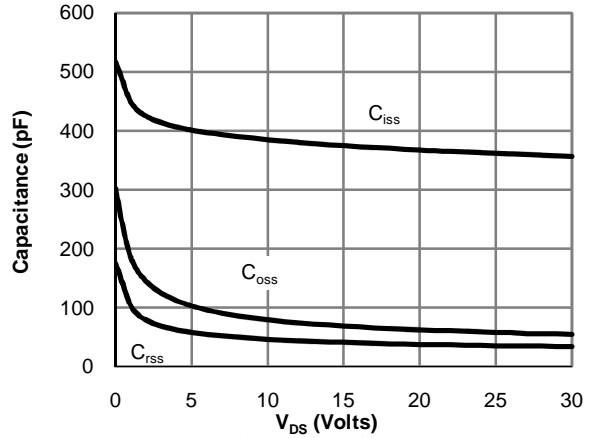


Figure 8: Capacitance Characteristics

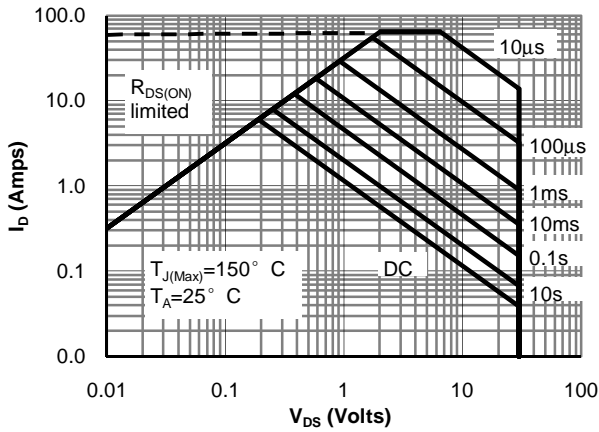


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

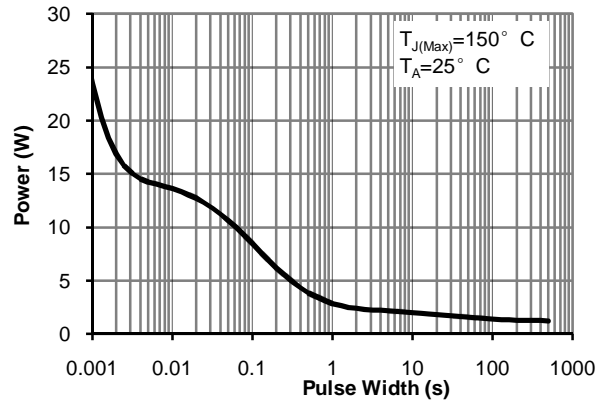


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

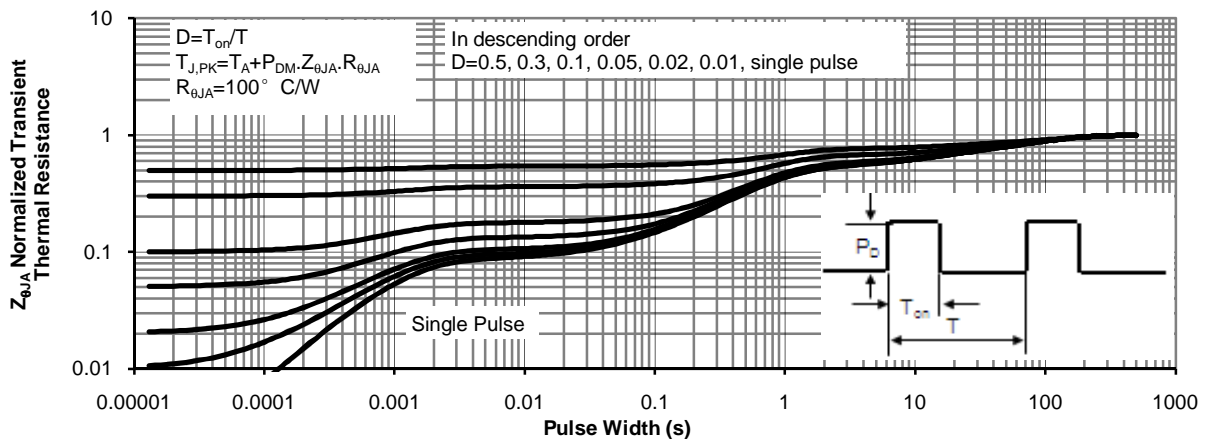


Figure 11: Normalized Maximum Transient Thermal Impedance

P-CHANNEL Electrical Characteristics ( $T_J=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$I_D=-250\mu\text{A}$ , $V_{GS}=0\text{V}$	-30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-30\text{V}$ , $V_{GS}=0\text{V}$ $T_J=55^\circ\text{C}$			-1 -5	$\mu\text{A}$
$I_{GSS}$	Gate-Body leakage current	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=-250\mu\text{A}$	-1.3	-1.85	-2.4	V
$I_{D(ON)}$	On state drain current	$V_{GS}=-10\text{V}$ , $V_{DS}=-5\text{V}$	-40			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10\text{V}$ , $I_D=-5.3\text{A}$ $T_J=125^\circ\text{C}$		23 31.5	32	m $\Omega$
		$V_{GS}=-4.5\text{V}$ , $I_D=-4.5\text{A}$		33	55	m $\Omega$
$g_{FS}$	Forward Transconductance	$V_{DS}=-5\text{V}$ , $I_D=-5.3\text{A}$		19		S
$V_{SD}$	Diode Forward Voltage	$I_S=-1\text{A}$ , $V_{GS}=0\text{V}$		-0.8	-1	V
$I_S$	Maximum Body-Diode Continuous Current				-3.5	A
$I_{SM}$	Pulsed Body-Diode Current <sup>B</sup>				-40	A
<b>DYNAMIC PARAMETERS</b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0\text{V}$ , $V_{DS}=-15\text{V}$ , $f=1\text{MHz}$		760		pF
$C_{oss}$	Output Capacitance			140		pF
$C_{rss}$	Reverse Transfer Capacitance			95		pF
$R_g$	Gate resistance	$V_{GS}=0\text{V}$ , $V_{DS}=0\text{V}$ , $f=1\text{MHz}$		3.2	5	$\Omega$
<b>SWITCHING PARAMETERS</b>						
$Q_g(10\text{V})$	Total Gate Charge (10V)	$V_{GS}=-10\text{V}$ , $V_{DS}=-15\text{V}$ , $I_D=-5.3\text{A}$		13.6	16	nC
$Q_g(4.5\text{V})$	Total Gate Charge (4.5V)			6.7		nC
$Q_{gs}$	Gate Source Charge			2.5		nC
$Q_{gd}$	Gate Drain Charge			3.2		nC
$t_{D(on)}$	Turn-On DelayTime	$V_{GS}=-10\text{V}$ , $V_{DS}=-15\text{V}$ , $R_L=2.8\Omega$ , $R_{GEN}=3\Omega$		8		ns
$t_r$	Turn-On Rise Time			6		ns
$t_{D(off)}$	Turn-Off DelayTime			17		ns
$t_f$	Turn-Off Fall Time			5		ns
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=-5.3\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		15		ns
$Q_{rr}$	Body Diode Reverse Recovery Charge	$I_F=-5.3\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		9.7		nC

A: The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The value in any given application depends on the user's specific board design. The current rating is based on the  $t \leq 10\text{s}$  thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C: The  $R_{\theta JA}$  is the sum of the thermal impedance from junction to lead  $R_{\theta JL}$  and lead to ambient.

D: The static characteristics in Figures 1 to 6 are obtained using  $<300\mu\text{s}$  pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in <sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The SOA curve provides a single pulse rating.

F: The current rating is based on the  $t \leq 10\text{s}$  thermal resistance rating.

Rev8: May 2012

THIS PRODUCT HAS BEEN DESIGNED AND QUALIFIED FOR THE CONSUMER MARKET. APPLICATIONS OR USES AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN, FUNCTIONS AND RELIABILITY WITHOUT NOTICE.

P-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

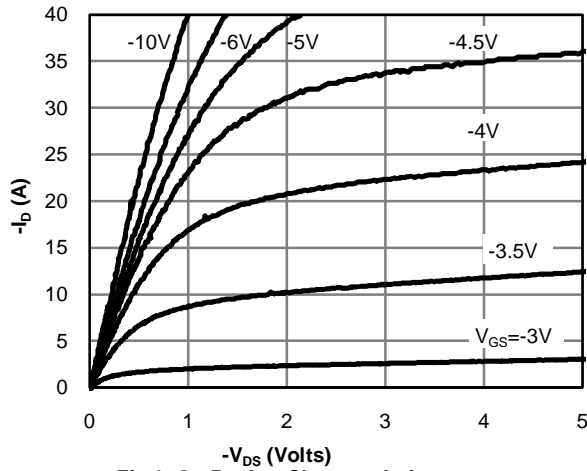


Fig 1: On-Region Characteristics

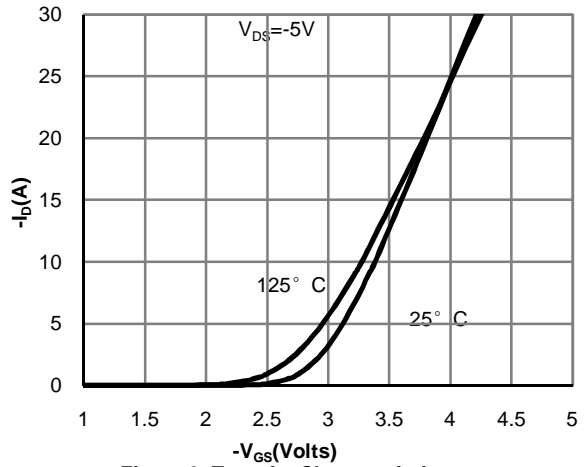


Figure 2: Transfer Characteristics

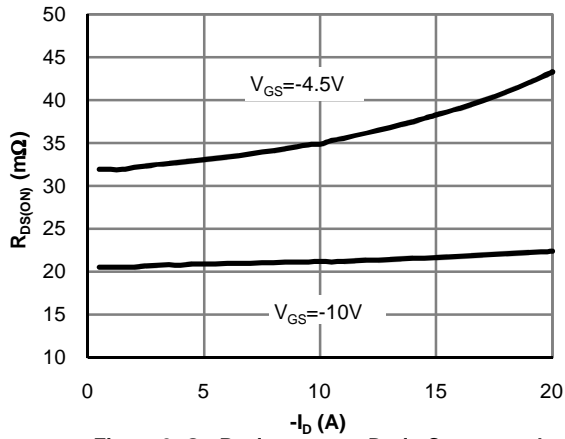


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

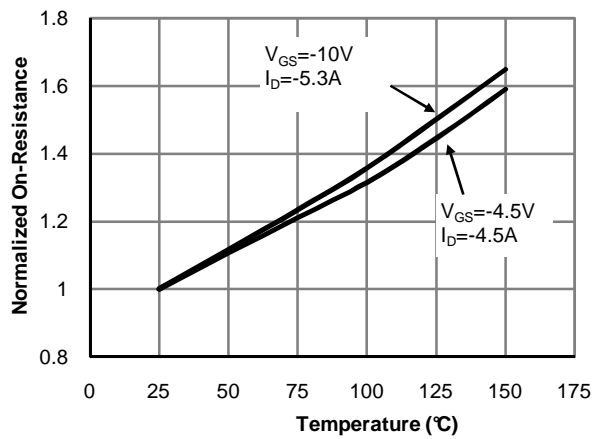


Figure 4: On-Resistance vs. Junction Temperature

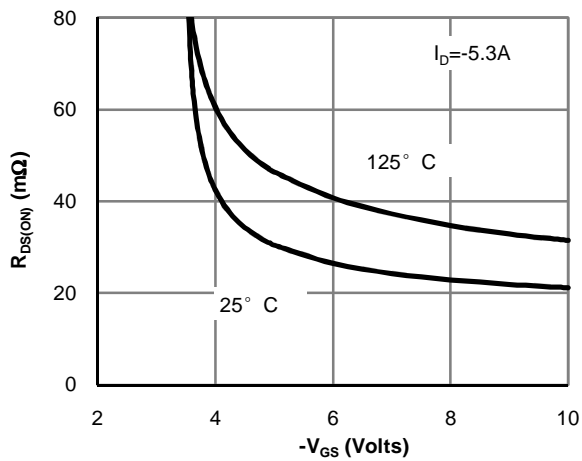


Figure 5: On-Resistance vs. Gate-Source Voltage

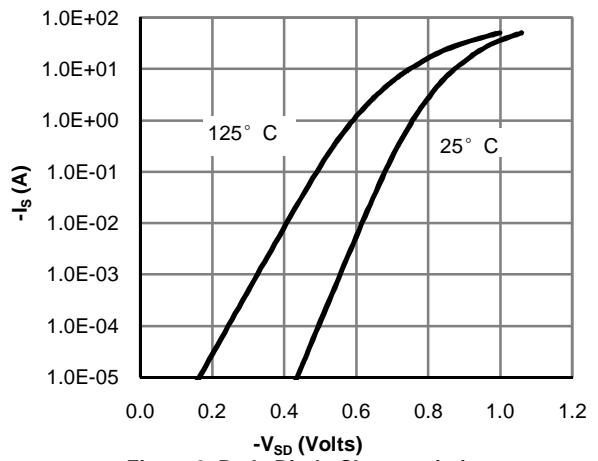


Figure 6: Body-Diode Characteristics

P-CHANNEL TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

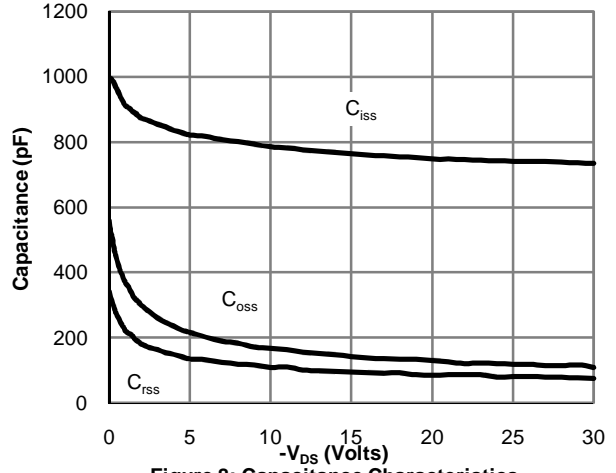
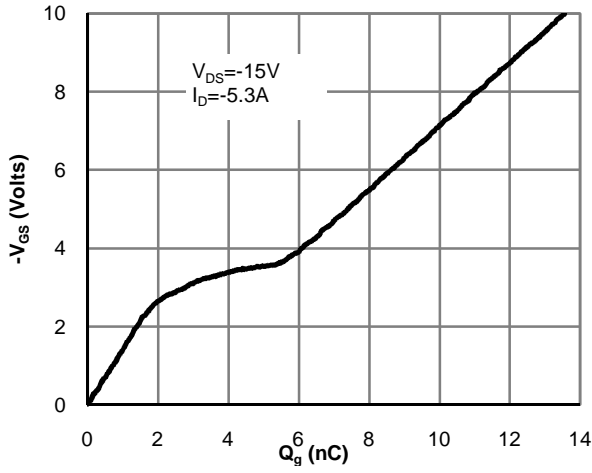


Figure 8: Capacitance Characteristics

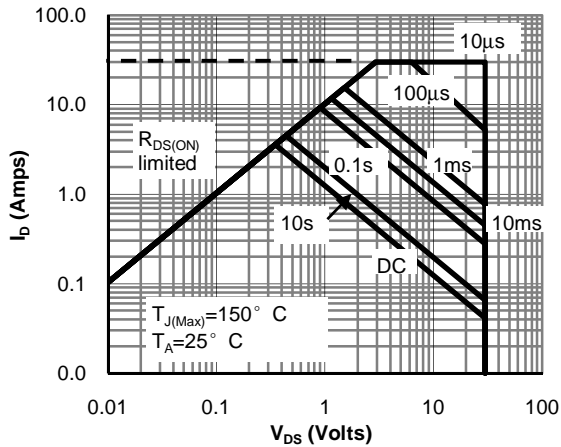


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

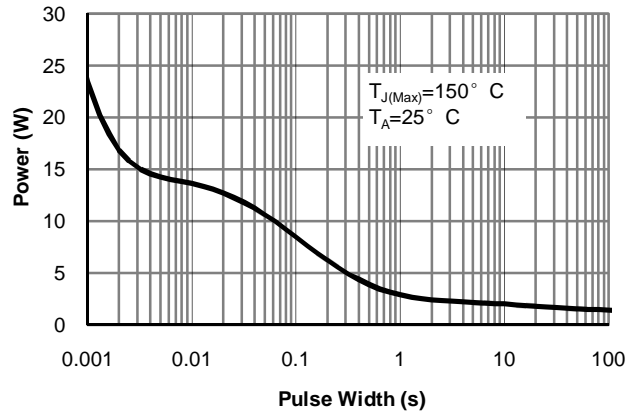


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

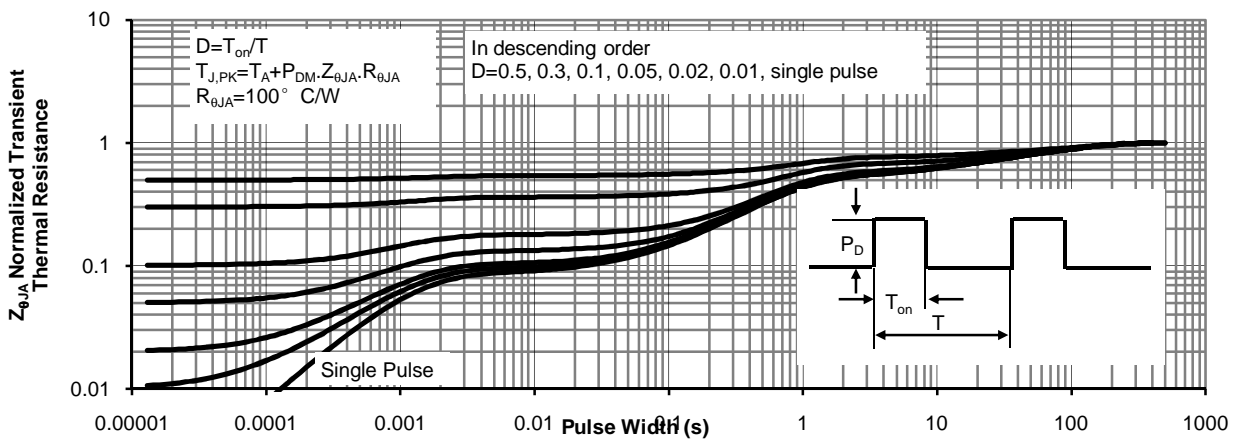


Figure 11: Normalized Maximum Transient Thermal Impedance

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)