

General Description

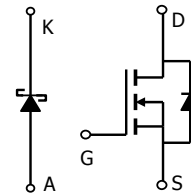
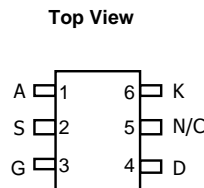
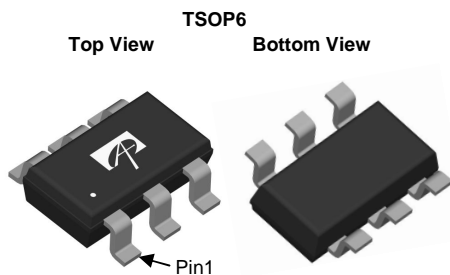
The AO6701 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. A Schottky diode is provided to facilitate the implementation of a bidirectional blocking switch, or for DC-DC conversion applications.

Product Summary

$V_{DS} (V) = -30V$
 $I_D = -2.3A (V_{GS} = -10V)$
 $R_{DS(ON)} < 135m\Omega (V_{GS} = -10V)$
 $R_{DS(ON)} < 185m\Omega (V_{GS} = -4.5V)$
 $R_{DS(ON)} < 265m\Omega (V_{GS} = -2.5V)$

SCHOTTKY

$V_{DS} (V) = 20V$
 $I_F = 1A$
 $V_F < 0.5V @ 0.5A$



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

Parameter	Symbol	MOSFET	Schottky	Units
Drain-Source Voltage	V_{DS}	-30		V
Gate-Source Voltage	V_{GS}	± 12		V
Continuous Drain Current ^A	$T_A=25^\circ C$	-2.3		A
	$T_A=70^\circ C$	-1.8		
Pulsed Drain Current ^B	I_{DM}	-15		
Schottky reverse voltage	V_{KA}		20	V
Continuous Forward Current ^A	$T_A=25^\circ C$		2	A
	$T_A=70^\circ C$		1	
Pulsed Forward Current ^B	I_{FM}		10	
Power Dissipation	$T_A=25^\circ C$	1.15	0.92	W
	$T_A=70^\circ C$	0.7	0.59	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	-55 to 150	$^\circ C$

Parameter: Thermal Characteristics MOSFET		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$t \leq 10s$	$R_{\theta JA}$	78	110	$^\circ C/W$
Maximum Junction-to-Ambient ^A	Steady-State		106	150	
Maximum Junction-to-Lead ^C	Steady-State	$R_{\theta JL}$	64	80	
Thermal Characteristics Schottky					
Maximum Junction-to-Ambient ^A	$t \leq 10s$	$R_{\theta JA}$	109.4	135	$^\circ C/W$
Maximum Junction-to-Ambient ^A	Steady-State		136.5	175	
Maximum Junction-to-Lead ^C	Steady-State	$R_{\theta JL}$	58.5	80	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
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	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$ $T_J=55^\circ\text{C}$			-1 -5	μA
I_{GSS}	Gate-Body leakage current	$V_{DS}=0\text{V}$, $V_{GS}=\pm 12\text{V}$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-0.6	-1	-1.4	V
$I_{D(ON)}$	On state drain current	$V_{GS}=-4.5\text{V}$, $V_{DS}=-5\text{V}$	-15			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10\text{V}$, $I_D=-2.3\text{A}$ $T_J=125^\circ\text{C}$		107 154	135 190	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}$, $I_D=-2\text{A}$		135	185	$\text{m}\Omega$
		$V_{GS}=-2.5\text{V}$, $I_D=-1\text{A}$		195	265	$\text{m}\Omega$
g_{FS}	Forward Transconductance	$V_{DS}=-5\text{V}$, $I_D=-2.3\text{A}$		8		S
V_{SD}	Diode Forward Voltage	$I_S=-1\text{A}$, $V_{GS}=0\text{V}$		-0.85	-1	V
I_S	Maximum Body-Diode Continuous Current				-1.35	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{GS}=0\text{V}$, $V_{DS}=-15\text{V}$, $f=1\text{MHz}$		409		pF
C_{oss}	Output Capacitance			55		pF
C_{rss}	Reverse Transfer Capacitance			42		pF
R_g	Gate resistance	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		12		Ω
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	$V_{GS}=-4.5\text{V}$, $V_{DS}=-15\text{V}$, $I_D=-2.0\text{A}$		4.9		nC
Q_{gs}	Gate Source Charge			0.6		nC
Q_{gd}	Gate Drain Charge			1.6		nC
$t_{D(on)}$	Turn-On Delay Time	$V_{GS}=-10\text{V}$, $V_{DS}=-15\text{V}$, $R_L=7.5\Omega$, $R_{GEN}=3\Omega$		6.9		ns
t_r	Turn-On Rise Time			3.3		ns
$t_{D(off)}$	Turn-Off Delay Time			38.5		ns
t_f	Turn-Off Fall Time			13.2		ns
t_{rr}	Body Diode Reverse Recovery Time	$I_F=-2.0\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		15		ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F=-2.0\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		8		nC
SCHOTTKY PARAMETERS						
V_F	Forward Voltage Drop	$I_F=0.5\text{A}$		0.39	0.5	V
I_{rm}	Maximum reverse leakage current	$V_R=16\text{V}$			0.1	mA
		$V_R=16\text{V}$, $T_J=125^\circ\text{C}$			20	
C_T	Junction Capacitance	$V_R=10\text{V}$		34		pF
t_{rr}	Schottky Reverse Recovery Time	$I_F=1\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		5.2	10	ns
Q_{rr}	Schottky Reverse Recovery Charge	$I_F=1\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		0.8		nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any a 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 6,12,14 are obtained using $80\mu\text{s}$ pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1in^2 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. Rev3: Nov. 2010

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

MOSFET TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

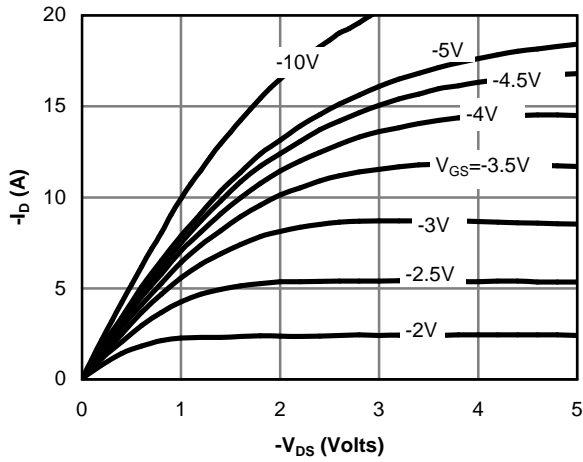


Fig 1: On-Region Characteristics

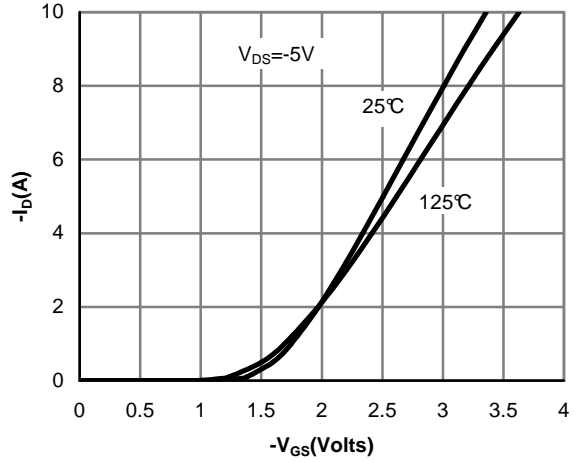


Figure 2: Transfer Characteristics

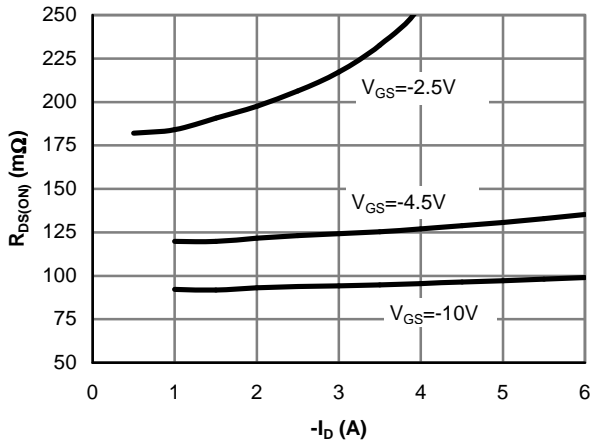


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

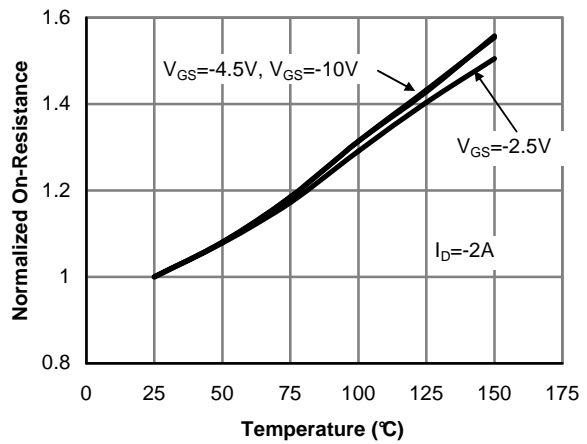


Figure 4: On-Resistance vs. Junction Temperature

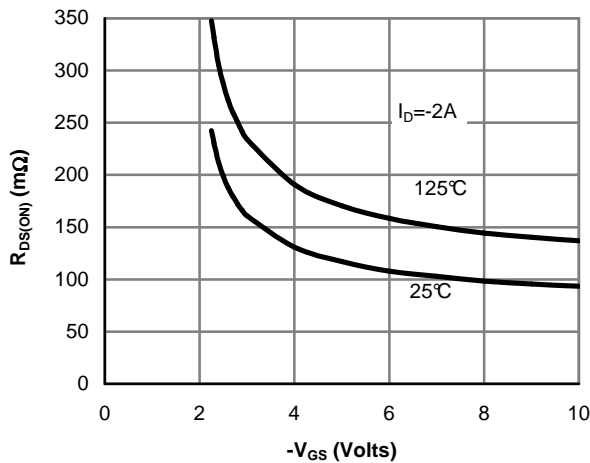


Figure 5: On-Resistance vs. Gate-Source Voltage

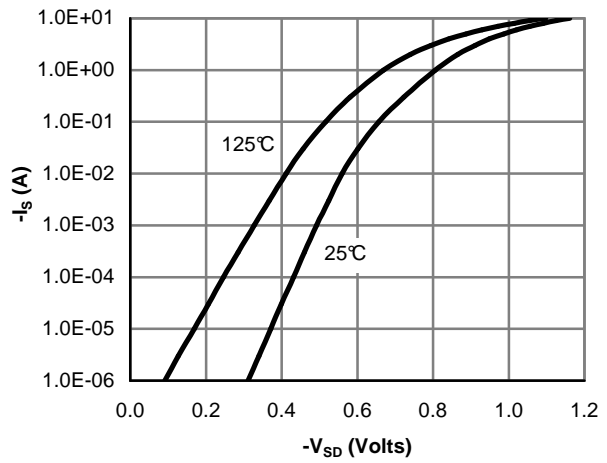


Figure 6: Body-Diode Characteristics

MOSFET TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

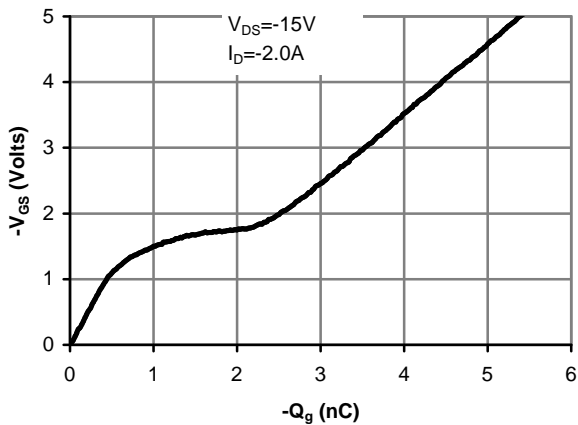


Figure 7: Gate-Charge Characteristics

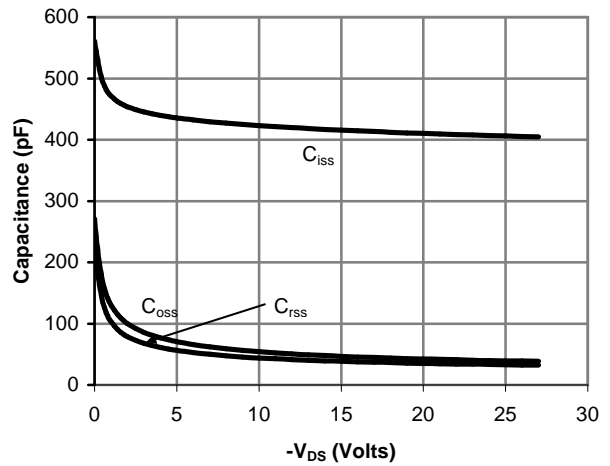


Figure 8: Capacitance Characteristics

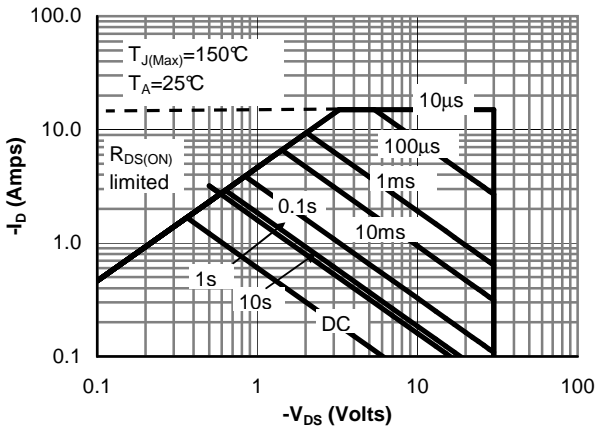


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

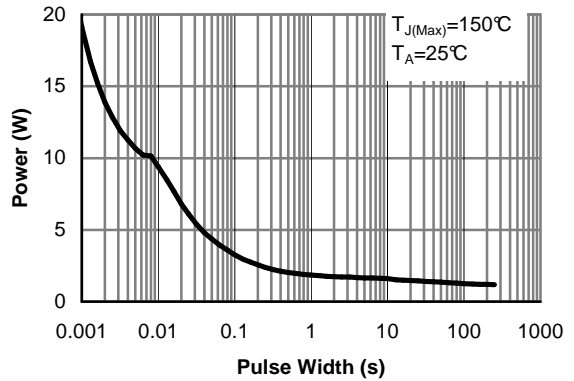


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

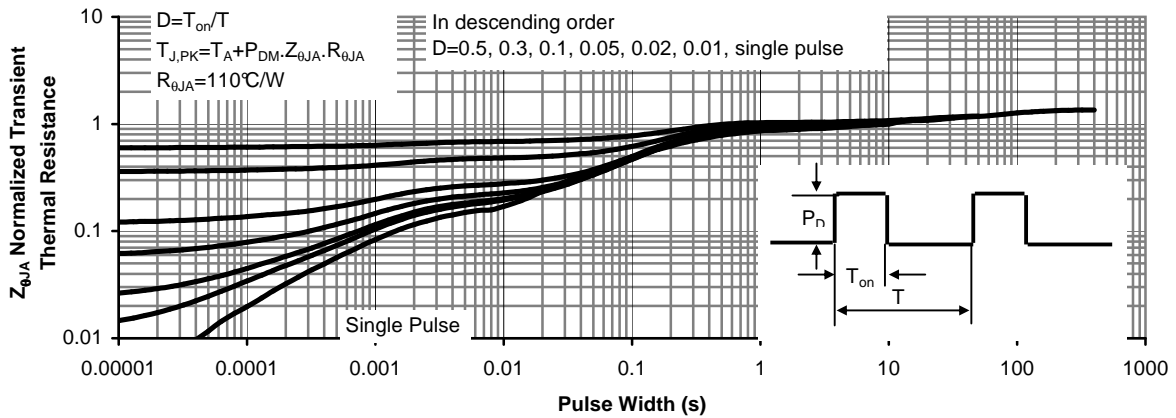


Figure 11: Normalized Maximum Transient Thermal Impedance

单击下面可查看定价，库存，交付和生命周期等信息

[>>AOS\(万代\)](#)