

Electrical Characteristics (T_j=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0V	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V T _j =55°C			1 5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±10V			±10	μA
BV _{GSO}	Gate-Source Breakdown Voltage	V _{DS} =0V, I _G =±250μA	±12			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.6	1.1	1.5	V
I _{D(ON)}	On state drain current	V _{GS} =4.5V, V _{DS} =5V	55			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =4.5V, I _D =7A T _j =125°C	12 19	15.5 23.5	19 29	mΩ
		V _{GS} =4.0V, I _D =5A	13	16	20	mΩ
		V _{GS} =3.1V, I _D =5A	14	18	23	mΩ
		V _{GS} =2.5V, I _D =4A	17	23	30	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =7A		32		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =0V		0.71	0.9	V
I _S	Maximum Body-Diode Continuous Current				2.5	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		920	1150	pF
C _{oss}	Output Capacitance			105		pF
C _{rss}	Reverse Transfer Capacitance			52		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.7	2.5	KΩ
SWITCHING PARAMETERS						
Q _{g(10V)}	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =7A		17.5	24	nC
Q _{g(4.5V)}	Total Gate Charge			7.5	10	nC
Q _{gs}	Gate Source Charge			2.9		nC
Q _{gd}	Gate Drain Charge			2.5		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =15V, R _L =2.1Ω, R _{GEN} =3Ω		0.32	0.42	μs
t _r	Turn-On Rise Time			0.55		μs
t _{D(off)}	Turn-Off DelayTime			4.35		μs
t _f	Turn-Off Fall Time			2.4		μs
t _{rr}	Body Diode Reverse Recovery Time	I _F =7A, dI/dt=100A/μs		21.6	26	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =7A, dI/dt=100A/μs		10		nC

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The value in any given application depends on the user's specific board design. The current rating is based on the steady state thermal resistance rating.

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

C: The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} 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 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The SOA curve provides a single pulse rating.

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.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

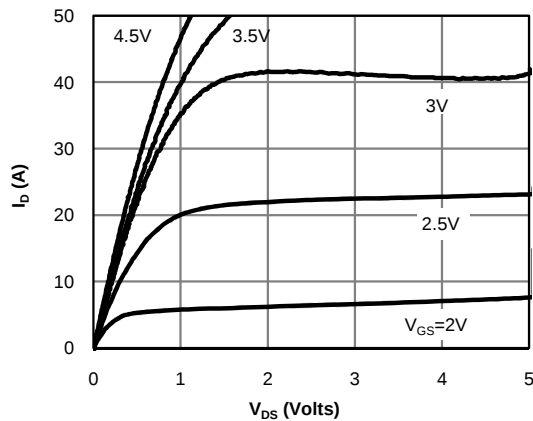


Fig 1: On-Region Characteristics (Note D)

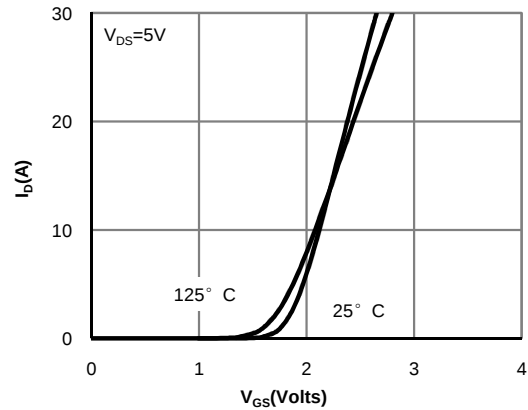


Figure 2: Transfer Characteristics (Note D)

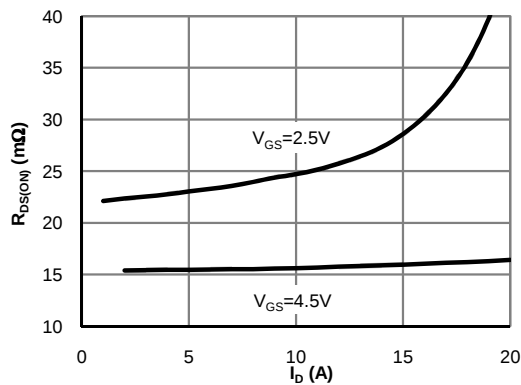


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note D)

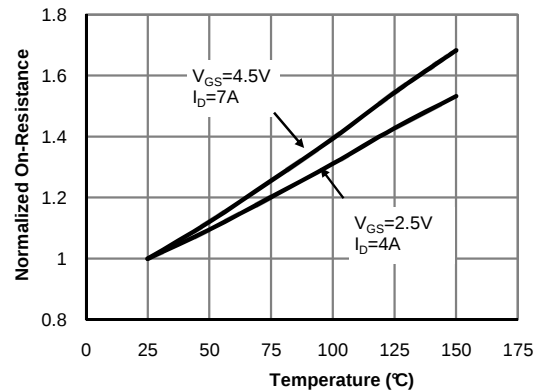


Figure 4: On-Resistance vs. Junction Temperature (Note D)

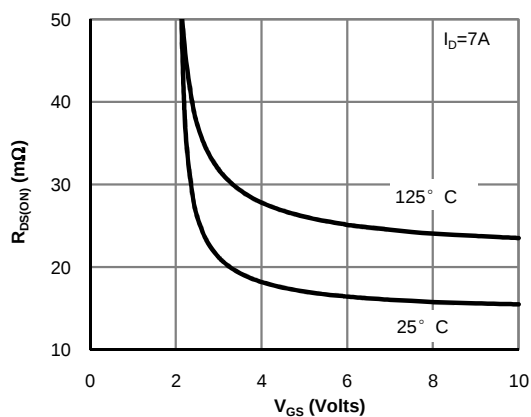


Figure 5: On-Resistance vs. Gate-Source Voltage (Note D)

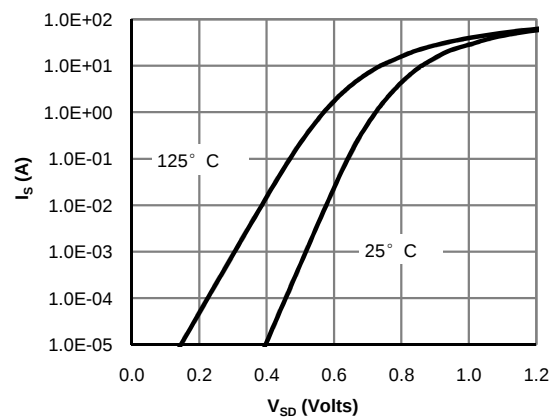


Figure 6: Body-Diode Characteristics (Note D)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

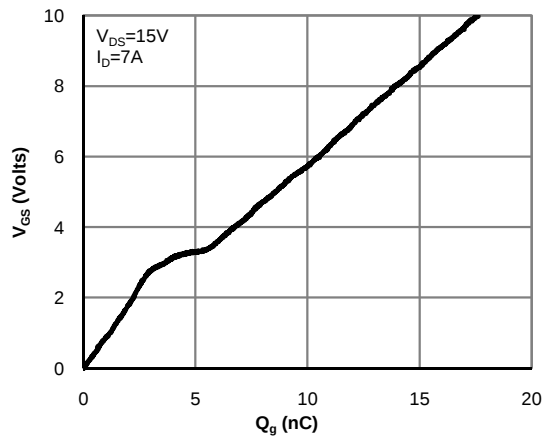


Figure 7: Gate-Charge Characteristics

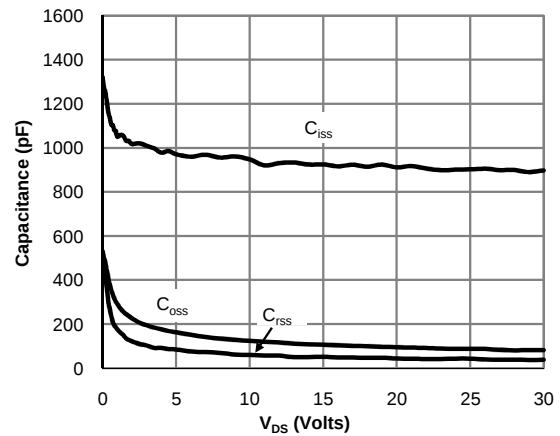


Figure 8: Capacitance Characteristics

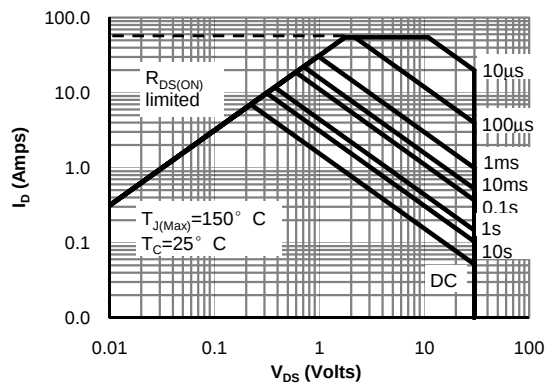


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

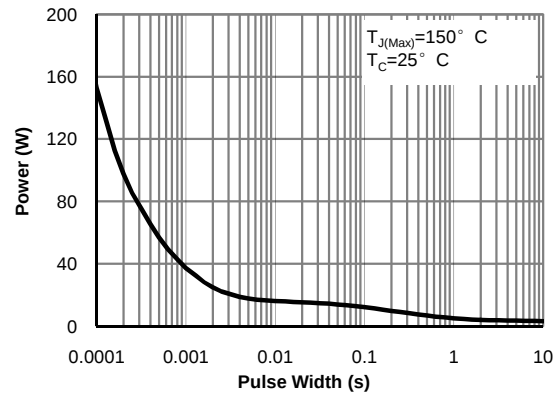


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

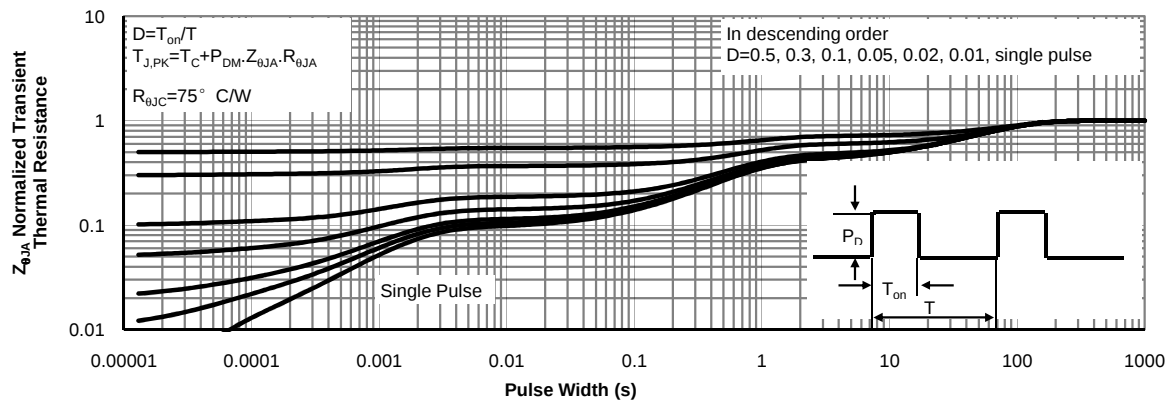
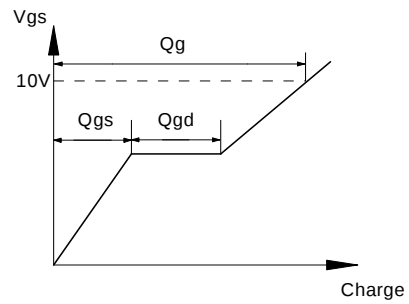
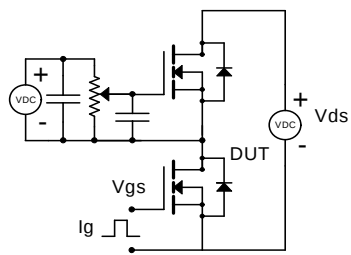
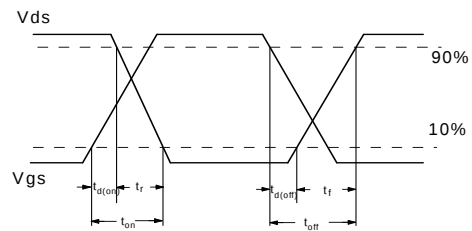
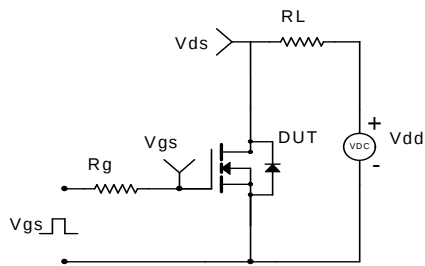


Figure 11: Normalized Maximum Transient Thermal Impedance (Note E)

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

