


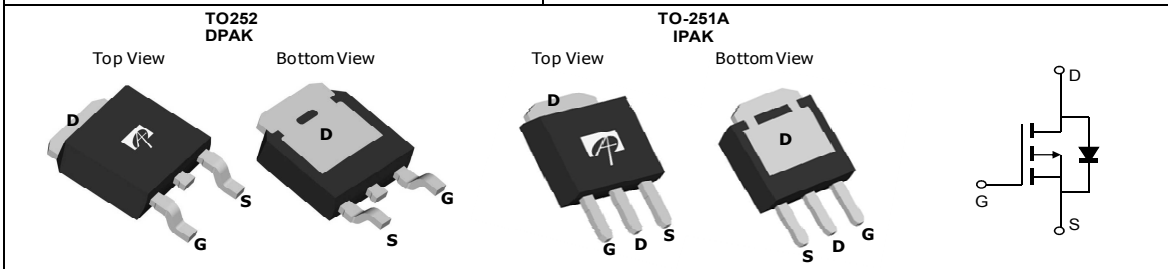
阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

<p>General Description</p> <ul style="list-style-type: none"> Trench Power MV MOSFET technology Low $R_{DS(ON)}$ Low Gate Charge Optimized for fast-switching applications <p>Applications</p> <ul style="list-style-type: none"> Synchronous Rectification in DC/DC and AC/DC Converters Industrial and Motor Drive applications 	<p>Product Summary</p> <table border="0"> <tr> <td>V_{DS}</td> <td>-60V</td> </tr> <tr> <td>I_D (at $V_{GS}=-10V$)</td> <td>-26A</td> </tr> <tr> <td>$R_{DS(ON)}$ (at $V_{GS}=-10V$)</td> <td>< 40mΩ</td> </tr> <tr> <td>$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)</td> <td>< 55mΩ</td> </tr> </table> <p>100% UIS Tested 100% Rg Tested</p> 	V_{DS}	-60V	I_D (at $V_{GS}=-10V$)	-26A	$R_{DS(ON)}$ (at $V_{GS}=-10V$)	< 40m Ω	$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	< 55m Ω
V_{DS}	-60V								
I_D (at $V_{GS}=-10V$)	-26A								
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	< 40m Ω								
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	< 55m Ω								



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOD409	TO-252	Tape & Reel	2500
AOI409	TO-251A	Tube	4000

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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	-26
		$T_C=100^\circ\text{C}$	-18
Pulsed Drain Current ^C	I_{DM}	-80	A
Avalanche Current ^C	I_{AS}	-26	A
Avalanche energy L=0.1mH ^C	E_{AS}	34	mJ
Power Dissipation ^B	P_D	$T_C=25^\circ\text{C}$	60
		$T_C=100^\circ\text{C}$	30
Power Dissipation ^A	P_{DSM}	$T_A=25^\circ\text{C}$	2.5
		$T_A=70^\circ\text{C}$	1.6
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	16.7	25	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^{A D}				
Maximum Junction-to-Case	$R_{\theta JC}$	1.9	2.5	$^\circ\text{C/W}$

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	-60			V	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V T _J =55°C			-1 -5	μA	
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±20V			±100	nA	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.2	-1.9	-2.4	V	
I _{D(ON)}	On state drain current	V _{GS} =-10V, V _{DS} =-5V	-80			A	
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-20A T _J =125°C		32	40	mΩ	
		V _{GS} =-4.5V, I _D =-20A		53			
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-20A		32		S	
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.73	-1	V	
I _S	Maximum Body-Diode Continuous Current				-30	A	
DYNAMIC PARAMETERS							
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, f=1MHz		2977	3600	pF	
C _{oss}	Output Capacitance				241		pF
C _{riss}	Reverse Transfer Capacitance				153		pF
R _g	Gate resistance	f=1MHz		2	2.4	Ω	
SWITCHING PARAMETERS							
Q _{g(10V)}	Total Gate Charge	V _{GS} =-10V, V _{DS} =-30V, I _D =-20A		44	54	nC	
Q _{g(4.5V)}	Total Gate Charge			22.2	28		
Q _{gs}	Gate Source Charge			9			
Q _{gd}	Gate Drain Charge			10			
t _{D(on)}	Turn-On DelayTime	V _{GS} =-10V, V _{DS} =-30V, R _L =1.5Ω, R _{GEN} =3Ω		12		ns	
t _r	Turn-On Rise Time			14.5			
t _{D(off)}	Turn-Off DelayTime			38			
t _f	Turn-Off Fall Time			15			
t _{rr}	Body Diode Reverse Recovery Time	I _F =-20A, dI/dt=100A/μs		40	50	ns	
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-20A, dI/dt=100A/μs		59		nC	

A. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The Power dissipation P_{DSM} is based on R_{θJA} ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design, and the maximum temperature of 175° C may be used if the PCB allows it.

B. The power dissipation P_D is based on T_{J(MAX)}=175° C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. Single pulse width limited by junction temperature T_{J(MAX)}=175° C.

D. The R_{θJA} is the sum of the thermal impedance from junction to case R_{θJC} and case to ambient.

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

F. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of T_{J(MAX)}=175° C. The SOA curve provides a single pulse rating.

G. The maximum current rating is package limited.

H. 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.

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

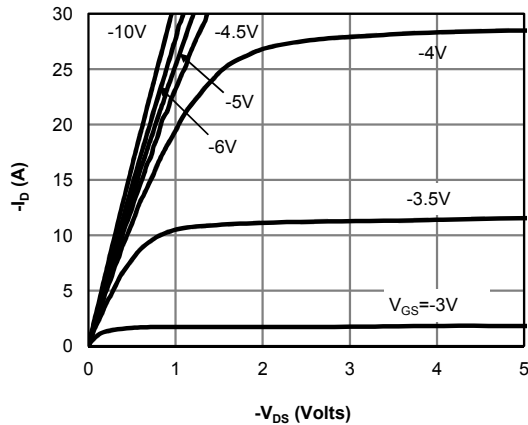


Figure 1: On-Region Characteristics (Note E)

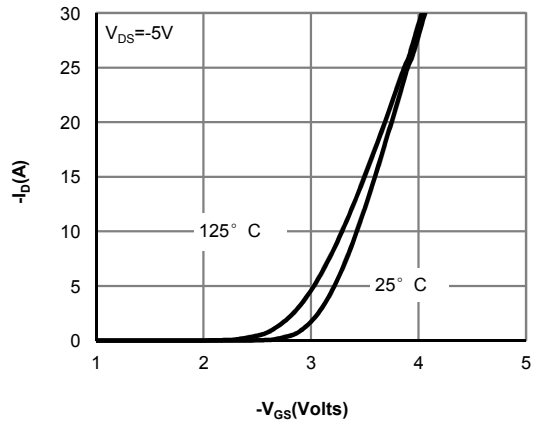


Figure 2: Transfer Characteristics (Note E)

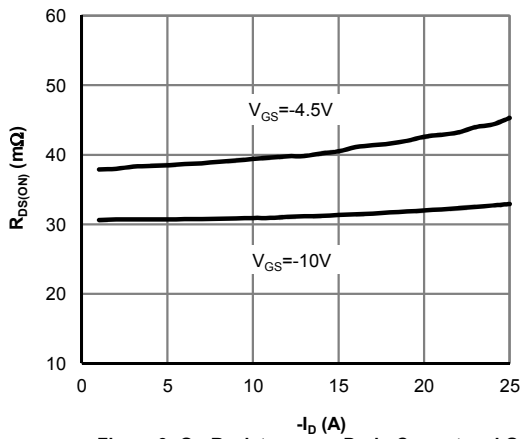


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

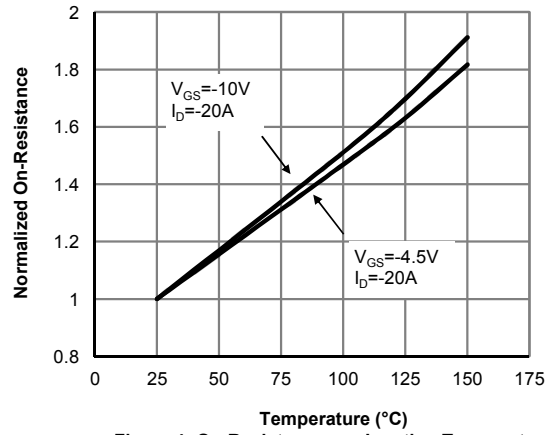


Figure 4: On-Resistance vs. Junction Temperature (Note E)

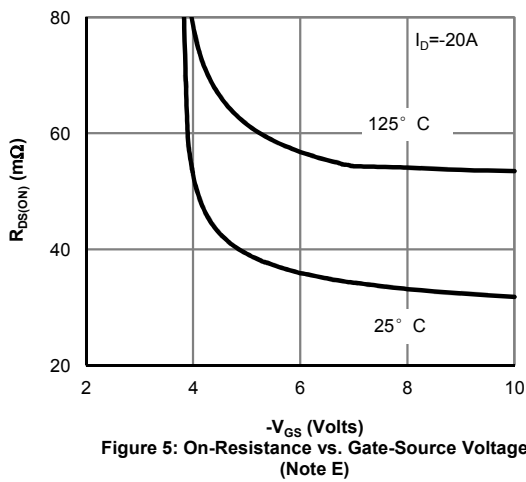


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

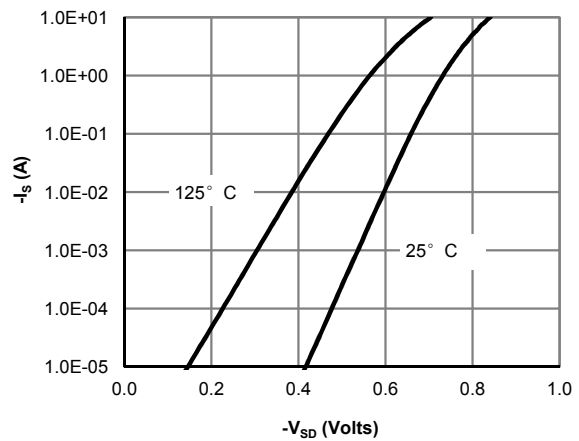


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

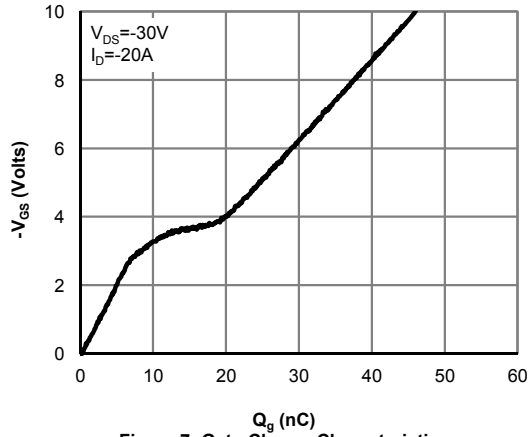


Figure 7: Gate-Charge Characteristics

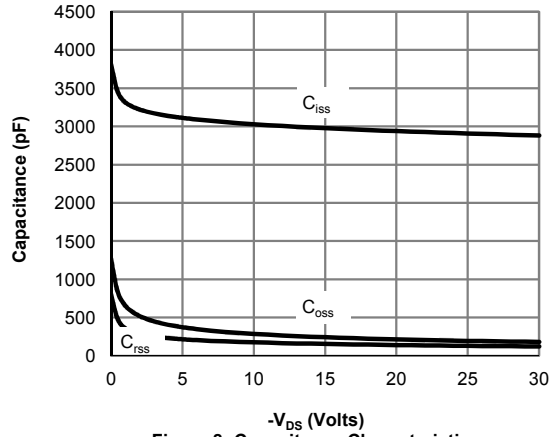


Figure 8: Capacitance Characteristics

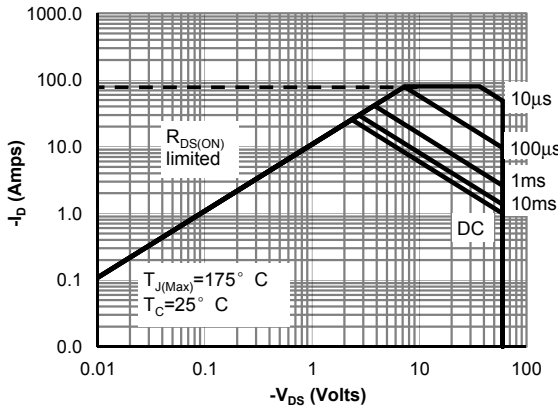


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

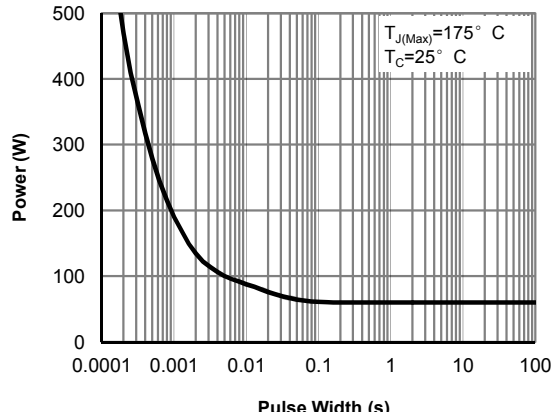


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

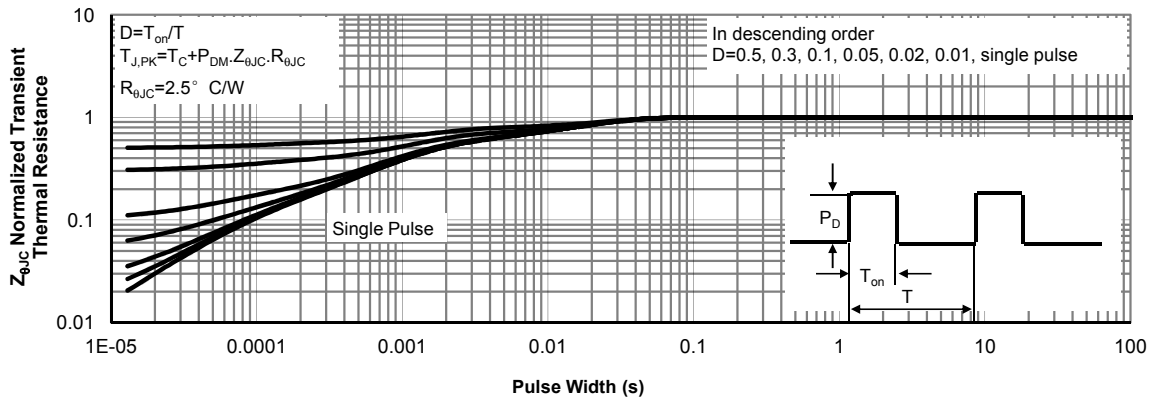
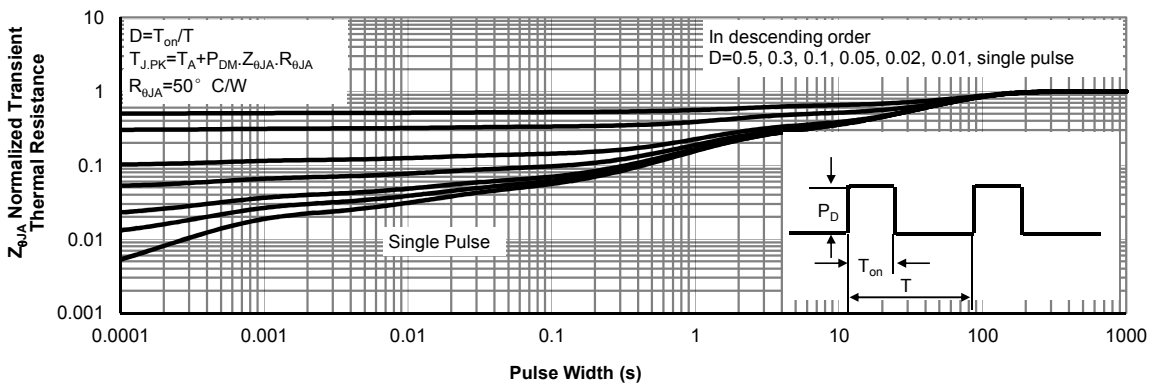
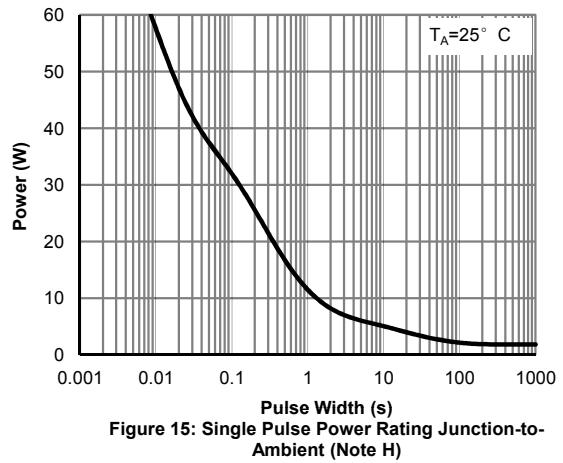
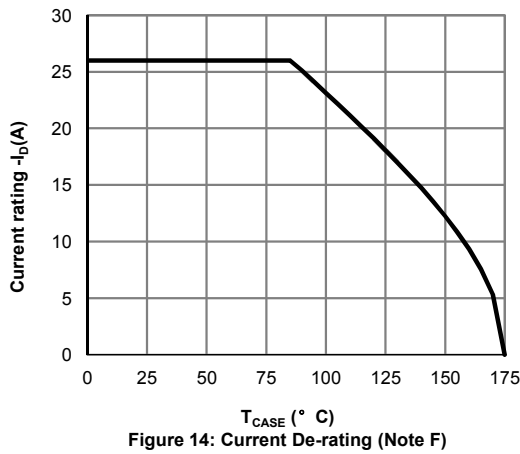
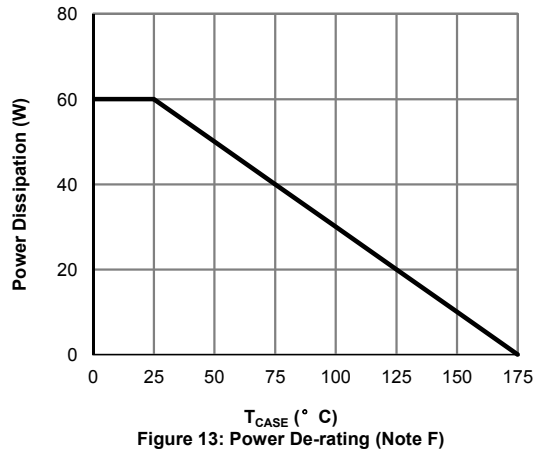
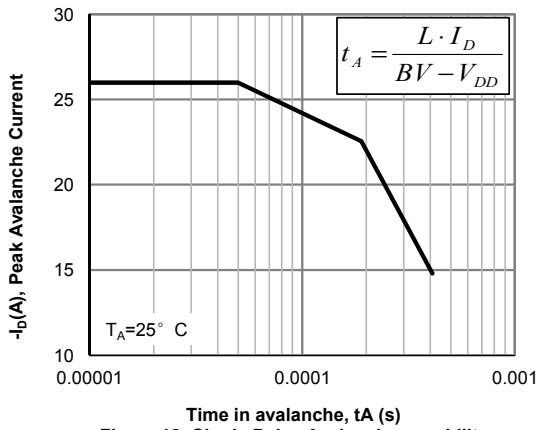
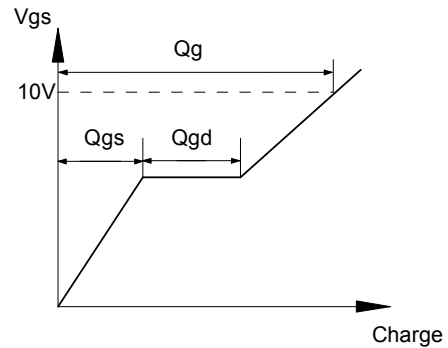
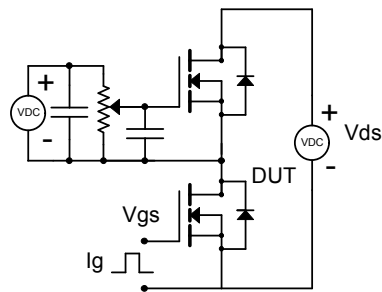


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

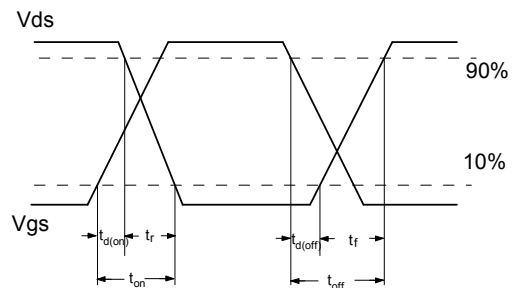
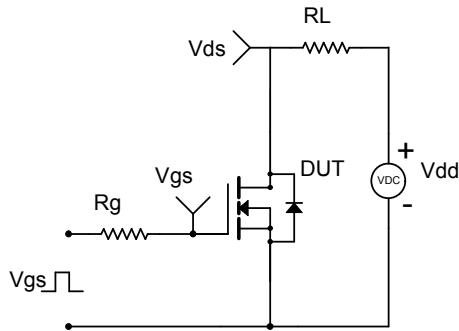
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



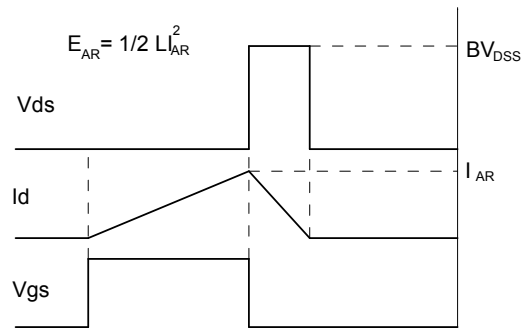
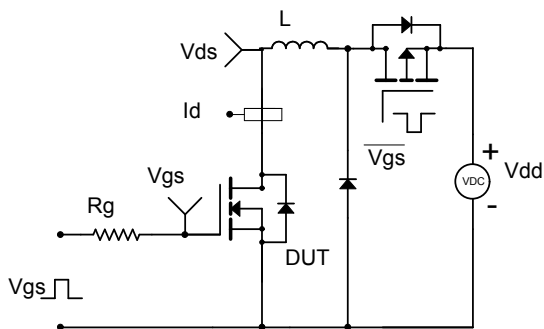
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

