



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!




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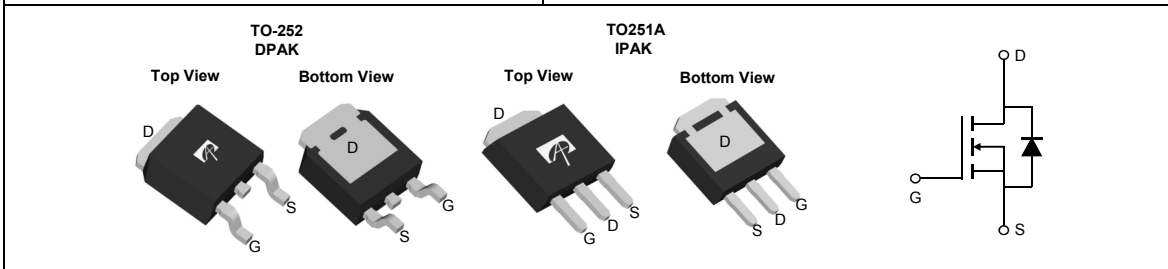
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<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>Trench Power MV MOSFET technology</li> <li>Low <math>R_{DS(ON)}</math></li> <li>Low Gate Charge</li> <li>Optimized for fast-switching applications</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>Synchronous Rectification in DC/DC and AC/DC Converters</li> <li>Industrial and Motor Drive applications</li> </ul>	<p><b>Product Summary</b></p> <table border="0"> <tr> <td><math>V_{DS}</math></td> <td>200V</td> </tr> <tr> <td><math>I_D</math> (at <math>V_{GS}=10V</math>)</td> <td>18A</td> </tr> <tr> <td><math>R_{DS(ON)}</math> (at <math>V_{GS}=10V</math>)</td> <td>&lt; 105m<math>\Omega</math></td> </tr> <tr> <td><math>R_{DS(ON)}</math> (at <math>V_{GS}=5V</math>)</td> <td>&lt; 120m<math>\Omega</math></td> </tr> </table> <p>100% UIS Tested 100% Rg Tested</p> 	$V_{DS}$	200V	$I_D$ (at $V_{GS}=10V$ )	18A	$R_{DS(ON)}$ (at $V_{GS}=10V$ )	< 105m $\Omega$	$R_{DS(ON)}$ (at $V_{GS}=5V$ )	< 120m $\Omega$
$V_{DS}$	200V								
$I_D$ (at $V_{GS}=10V$ )	18A								
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	< 105m $\Omega$								
$R_{DS(ON)}$ (at $V_{GS}=5V$ )	< 120m $\Omega$								



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOD2210	TO-252	Tape & Reel	2500
AOI2210	TO-251A	Tube	4000

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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	200	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	18
		$T_C=100^\circ\text{C}$	13
Pulsed Drain Current <sup>C</sup>	$I_{DM}$	45	A
Continuous Drain Current	$I_{DSM}$	$T_A=25^\circ\text{C}$	3.0
		$T_A=70^\circ\text{C}$	2.5
Avalanche Current <sup>C</sup>	$I_{AS}$	9	A
Avalanche energy $L=0.1\text{mH}$ <sup>C</sup>	$E_{AS}$	4	mJ
$V_{DS}$ Spike	$V_{SPIKE}$	240	V
Power Dissipation <sup>B</sup>	$P_D$	$T_C=25^\circ\text{C}$	100
		$T_C=100^\circ\text{C}$	50
Power Dissipation <sup>A</sup>	$P_{DSM}$	$T_A=25^\circ\text{C}$	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 <sup>A</sup> $t \leq 10\text{s}$	$R_{\theta JA}$	15	20	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A,D</sup> Steady-State		41	50	$^\circ\text{C/W}$
Maximum Junction-to-Case Steady-State	$R_{\theta JC}$	1	1.5	$^\circ\text{C/W}$

**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	200			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =200V, 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	2.0	2.5	V
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =18A T <sub>J</sub> =125°C		87	105	mΩ
		V <sub>GS</sub> =5V, I <sub>D</sub> =16A		93	120	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =18A		40		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.7	1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				18	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =100V, f=1MHz		2065		pF
C <sub>oss</sub>	Output Capacitance			74		pF
C <sub>riss</sub>	Reverse Transfer Capacitance			3.8		pF
R <sub>g</sub>	Gate resistance	f=1MHz	1.1	2.2	3.3	Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g(10V)</sub>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =100V, I <sub>D</sub> =18A		27	40	nC
Q <sub>g(4.5V)</sub>	Total Gate Charge			12	20	nC
Q <sub>gs</sub>	Gate Source Charge			7		nC
Q <sub>gd</sub>	Gate Drain Charge			3		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =100V, R <sub>L</sub> =5.5Ω, R <sub>GEN</sub> =3Ω		8		ns
t <sub>r</sub>	Turn-On Rise Time			10		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			30		ns
t <sub>f</sub>	Turn-Off Fall Time			4		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =18A, dI/dt=500A/μs		60		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =18A, dI/dt=500A/μs		800		nC

A. The value of R<sub>θJA</sub> is measured 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 Power dissipation P<sub>DSM</sub> is based on R<sub>θJA</sub> ≤ 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<sub>D</sub> is based on T<sub>J(MAX)</sub>=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<sub>J(MAX)</sub>=175° C.

D. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to case R<sub>θJC</sub> and case to ambient.

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

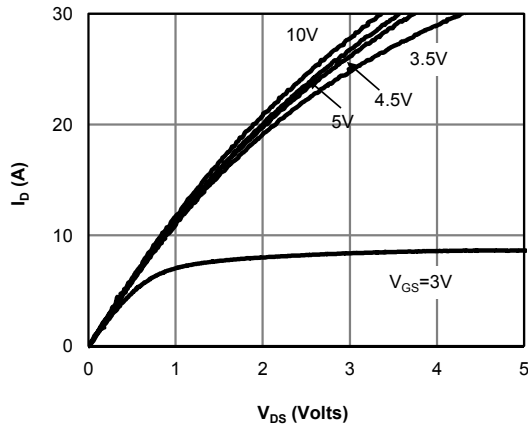
F. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of T<sub>J(MAX)</sub>=175° C. The SOA curve provides a single pulse rating.

G. The maximum current rating is package limited.

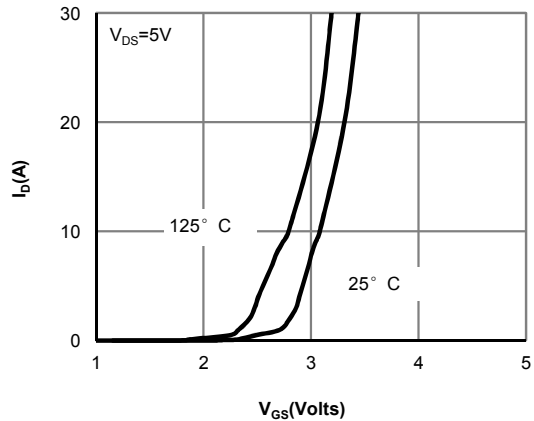
H. These tests are performed with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25° C.

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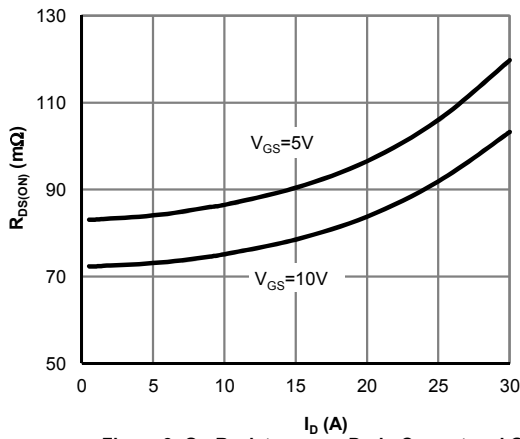
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



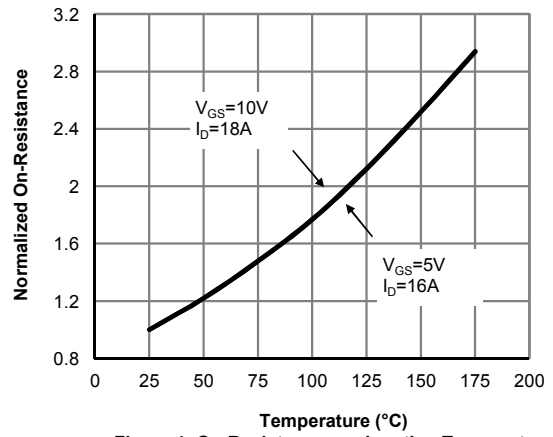
**Figure 1: On-Region Characteristics (Note E)**



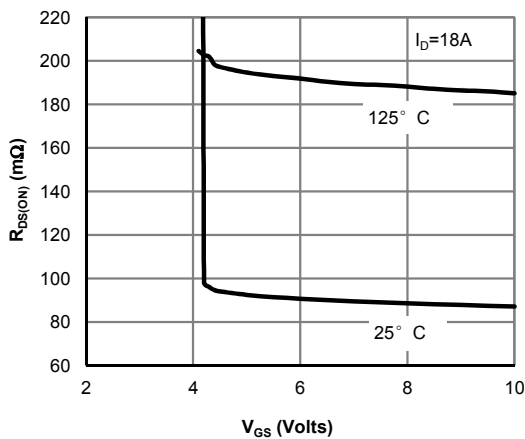
**Figure 2: Transfer Characteristics (Note E)**



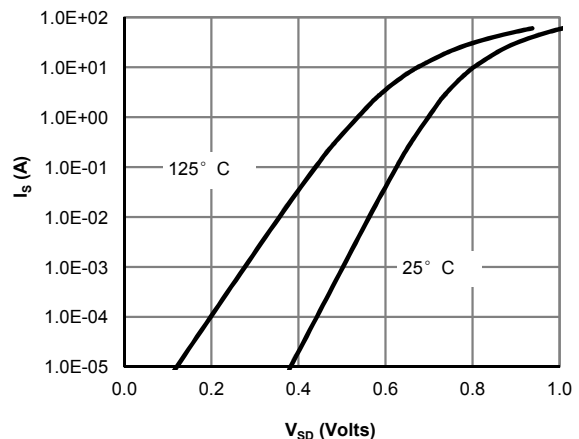
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)**



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

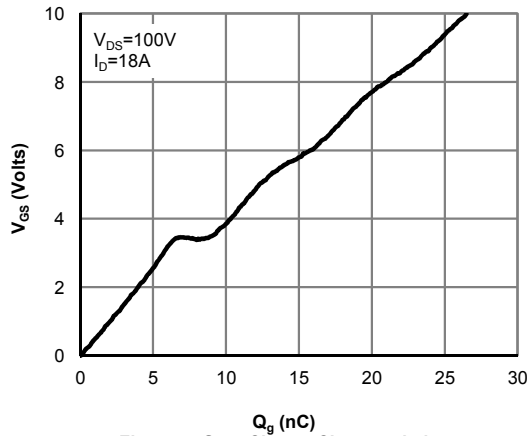


**Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)**

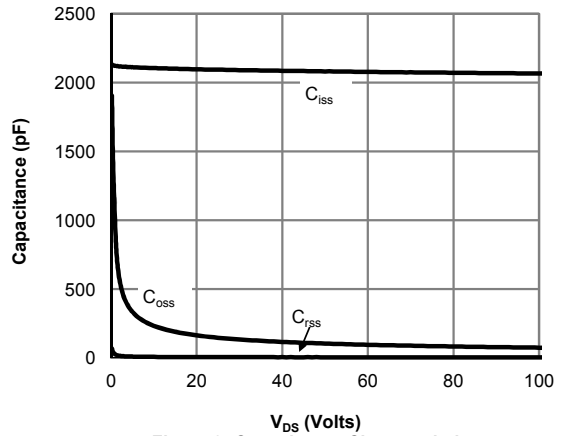


**Figure 6: Body-Diode Characteristics (Note E)**

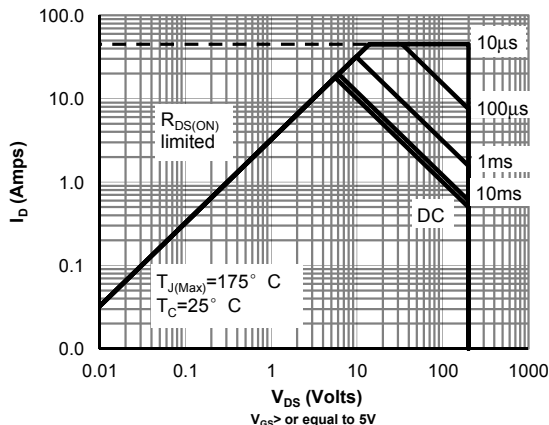
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



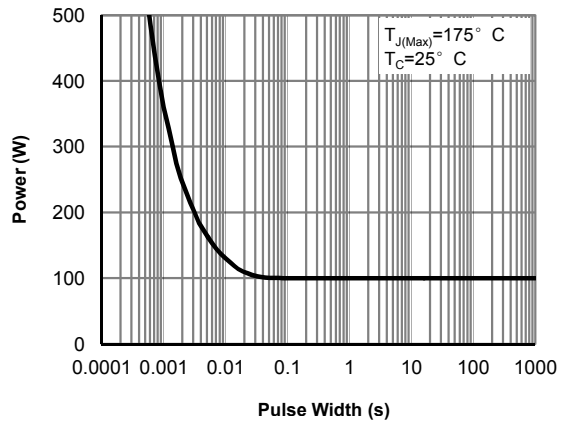
**Figure 7: Gate-Charge Characteristics**



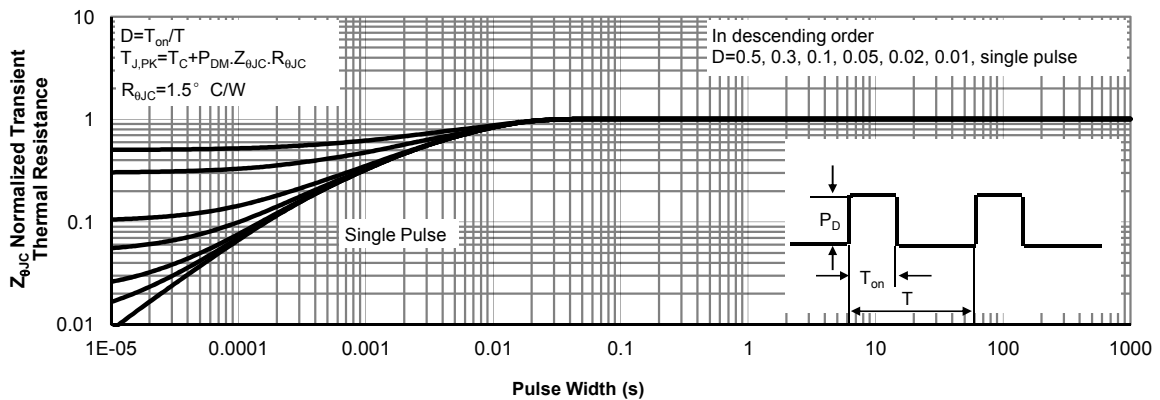
**Figure 8: Capacitance Characteristics**



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

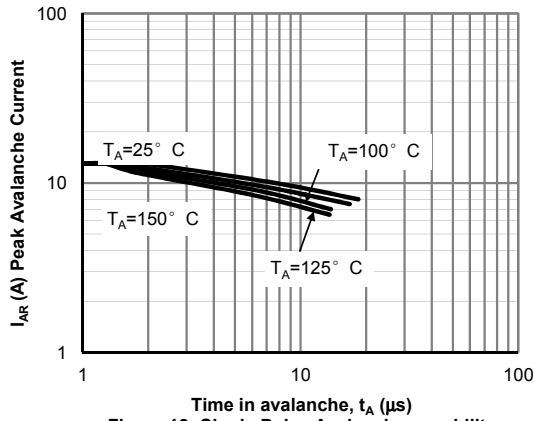


**Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)**

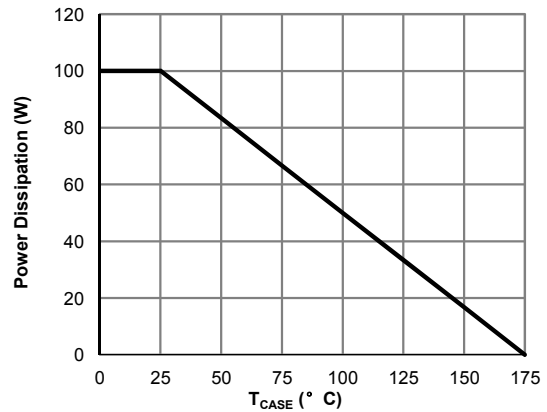


**Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)**

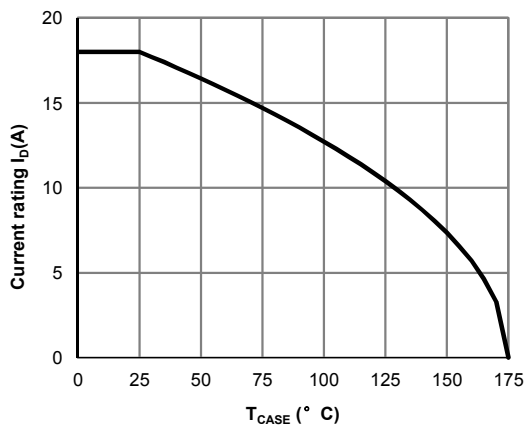
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



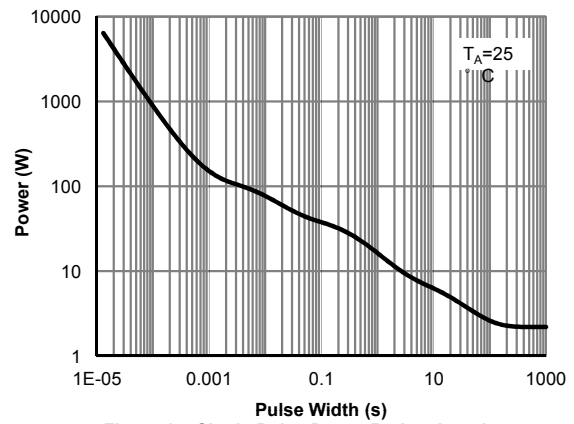
**Figure 12: Single Pulse Avalanche capability (Note C)**



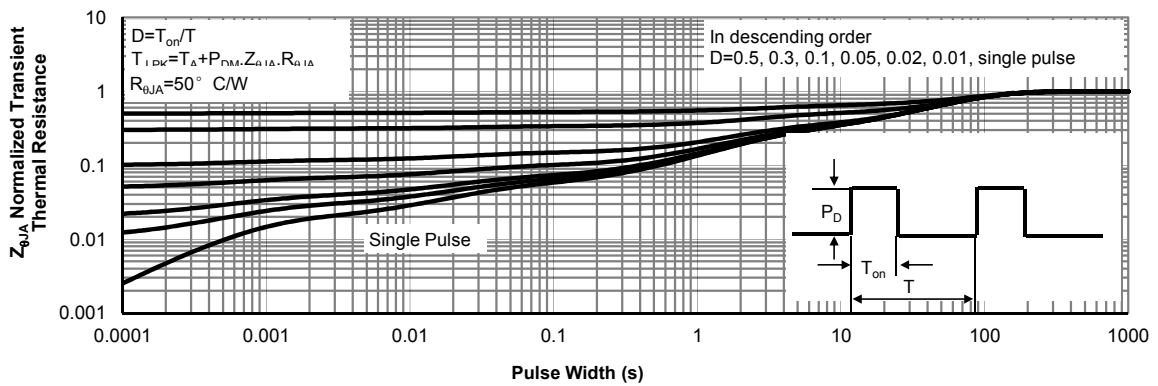
**Figure 13: Power De-rating (Note F)**



**Figure 14: Current De-rating (Note F)**

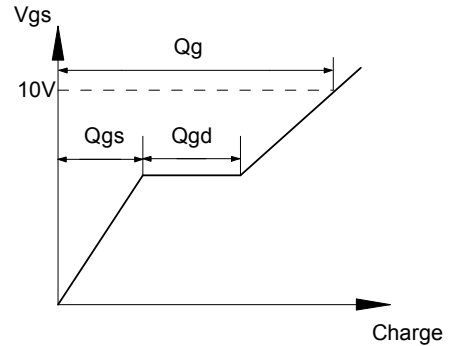
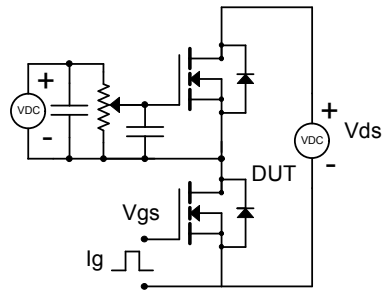


**Figure 15: Single Pulse Power Rating Junction-to-Ambient (Note H)**

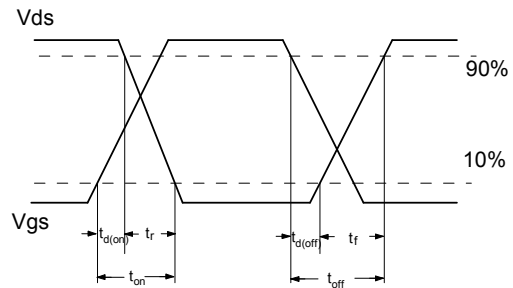
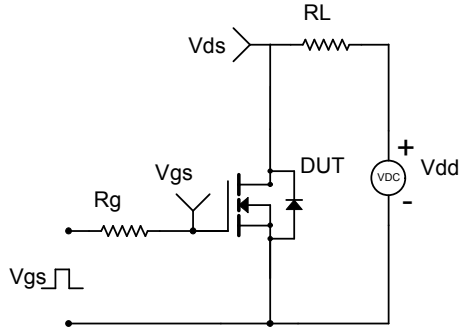


**Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)**

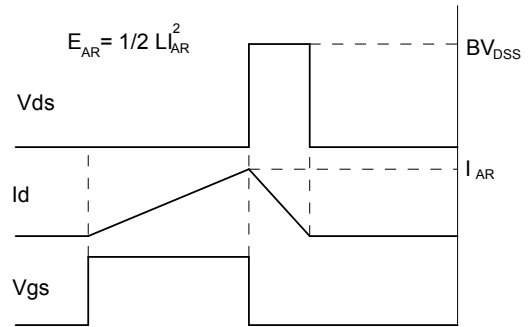
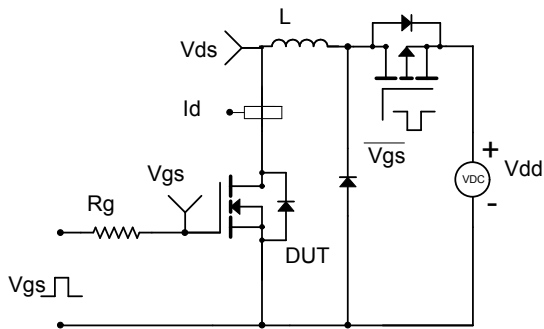
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

