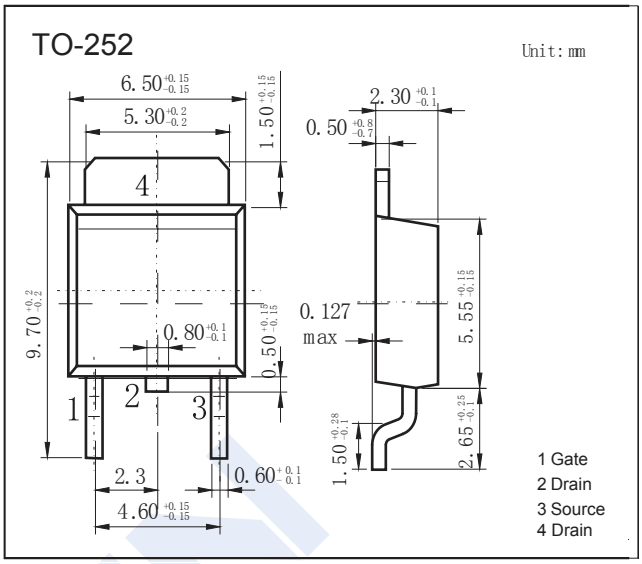
N-Channel Enhancement MOSFET

AOD464 (KOD464)



■ Features

- $V_{DS\ (V)}$ =105V
- I_D = 40A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 28mΩ (V_{GS} = 10V) @20A
- $R_{DS(ON)}$ < 31mΩ (V_{GS} = 6V)

■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	105	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current	TC=25℃	I_D	40	A
	TC=100℃		28	
Pulsed Drain Current		I_{DM}	80	
Avalanche Current		I_{AR}	20	
Repetitive avalanche energy L=0.1mH		E_{AR}	20	mJ
Power Dissipation	TC=25℃	P_D	100	W
	TC=100℃		50	
Power Dissipation	TA=25℃	P_{DSM}	2.3	
	TA=70℃		1.5	
Thermal Resistance.Junction- to-Ambient	t ≤ 10s	$R_{\theta JA}$	18	℃/W
Thermal Resistance.Junction- to-Ambient			55	
Thermal Resistance.Junction- to-Case		$R_{\theta JC}$	1.5	
Junction Temperature		T_J	175	℃
Storage Temperature Range		T_{stg}	-55 to 175	

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=10mA, V_{GS}=0V	105			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=84V, V_{GS}=0V			1	μA
		V_{DS}=84V, V_{GS}=0V, T_J=55℃			5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±25V			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	2.5		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A			28	mΩ
		V_{GS}=10V, I_D=20A T_J=125℃			40	
		V_{GS}=6V, I_D=20A			31	
On State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	80			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=20A		50		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		2038	2445	pF
Output Capacitance	C_{oss}			204		
Reverse Transfer Capacitance	C_{rss}			85		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz			1.56	Ω
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V, V_{DS}=50V, I_D=20A		38.5	46	nC
Gate Source Charge	Q_{gs}			8		
Gate Drain Charge	Q_{gd}			10		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=50V, R_L=2.7Ω ,R_{GEN}=3Ω		12.7		ns
Turn-On Rise Time	t_r			8.2		
Turn-Off DelayTime	$t_{d(off)}$			31.5		
Turn-Off Fall Time	t_f			11.2		
Body Diode Reverse Recovery Time	t_{rr}	I_F= 20A, dI/dt= 100A/μs		59.6	74	
Body Diode Reverse Recovery Charge	Q_{rr}	I_F= 20A, dI/dt= 100A/μs		161		nC
Maximum Body-Diode Continuous Current	I_S				55	A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V			1	V

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■ Typical Characterisitics

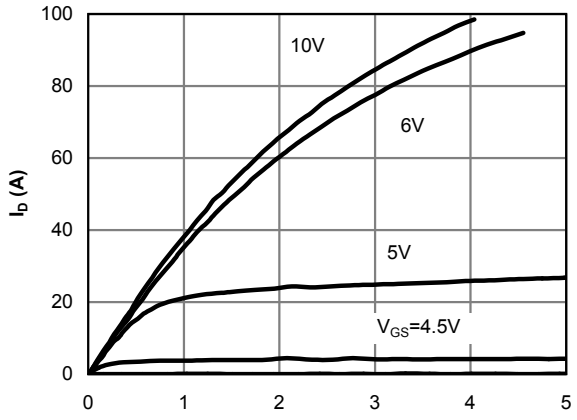

Fig 1: On-Region Characteristics

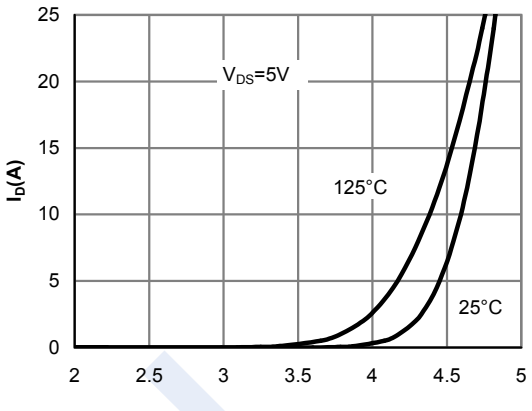

Figure 2: Transfer Characteristics

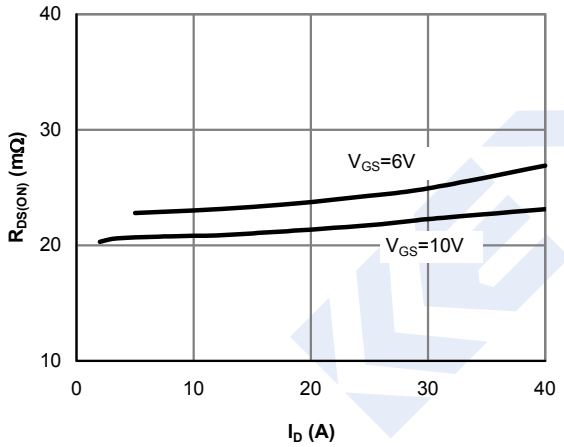

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

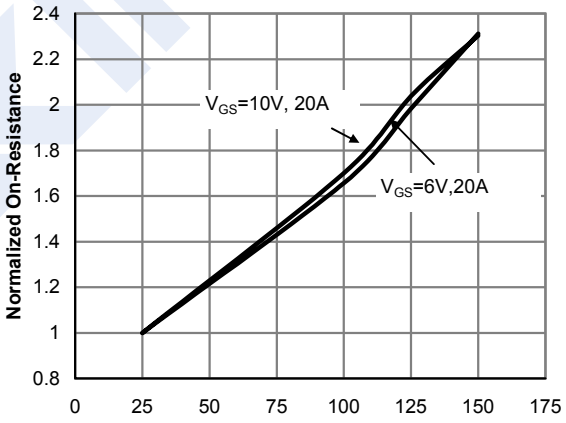

Figure 4: On-Resistance vs. Junction Temperature

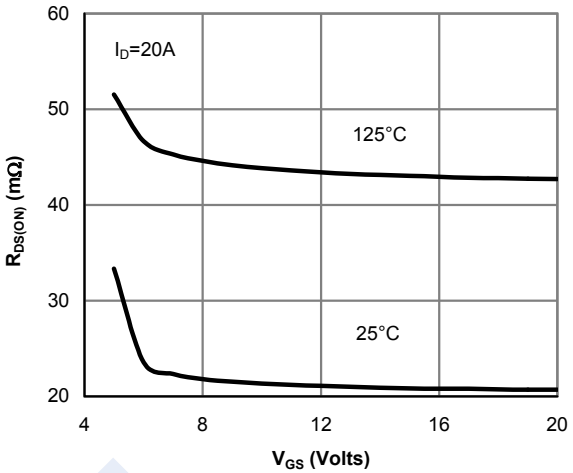

Figure 5: On-Resistance vs. Gate-Source Voltage

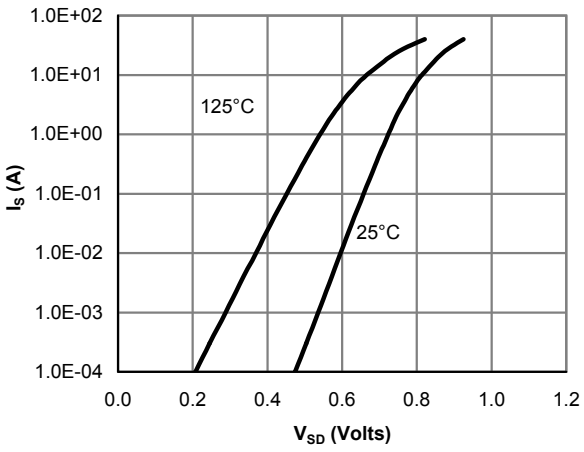

Figure 6: Body-Diode Characteristics

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■ Typical Characterisitics

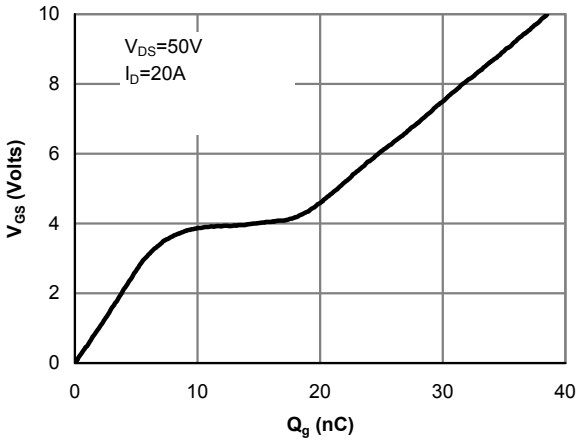

Figure 7: Gate-Charge Characteristics

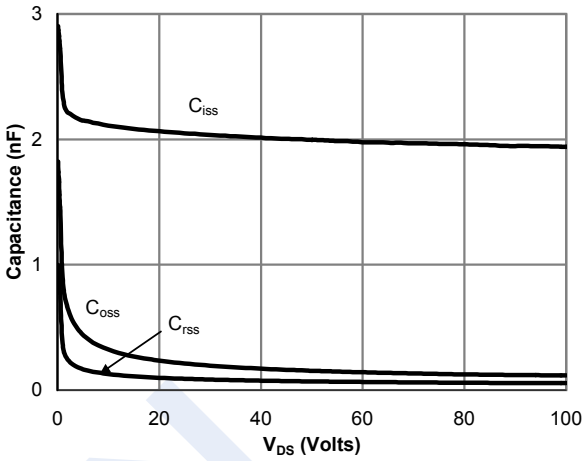

Figure 8: Capacitance Characteristics

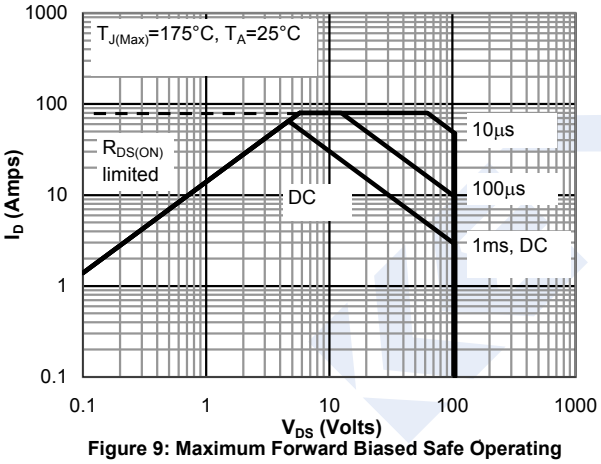

Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

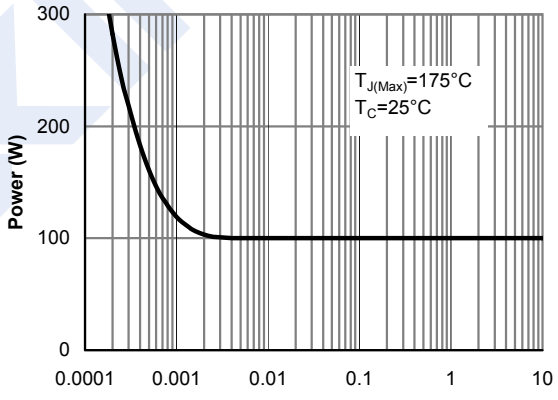

Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

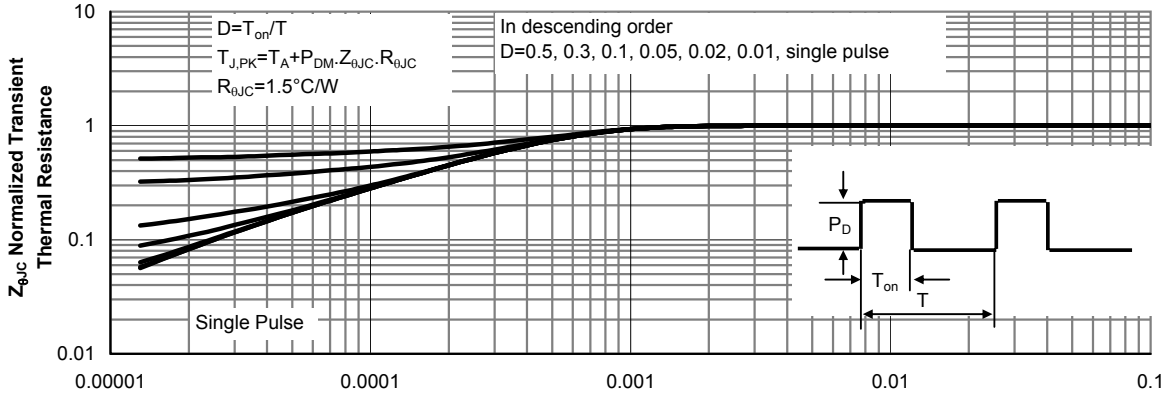

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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■ Typical Characterisitics

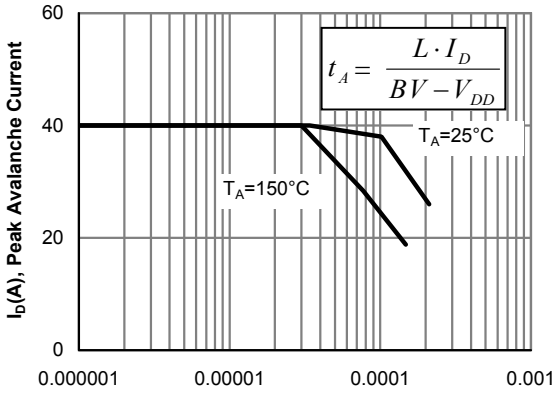

Figure 12: Single Pulse Avalanche capability

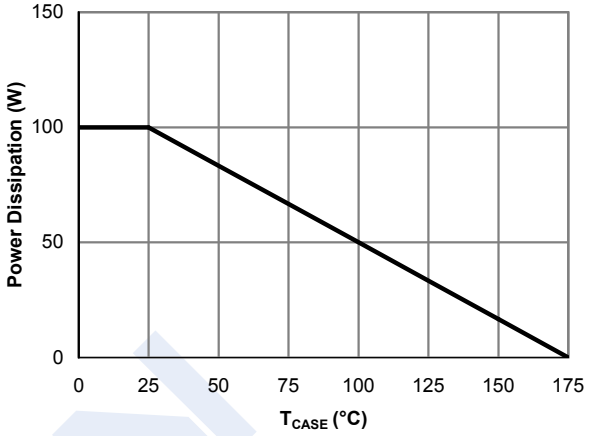

Figure 13: Power De-rating (Note B)

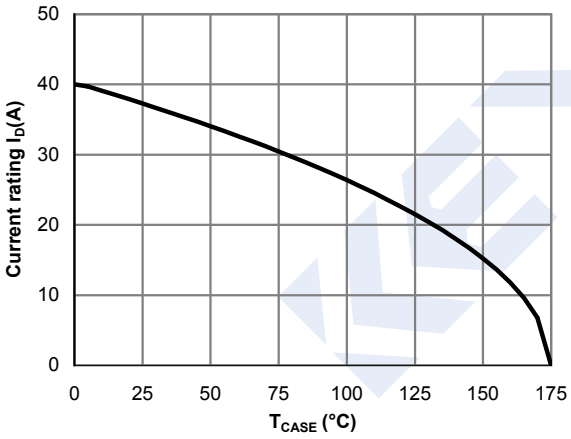

Figure 14: Current De-rating (Note B)

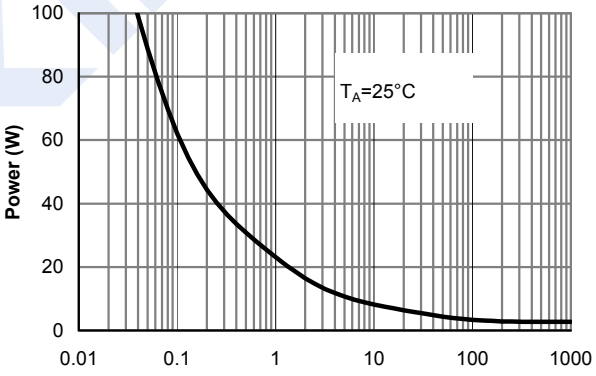

Figure 15: Single Pulse Power Rating Junction-to-Ambient (Note H)

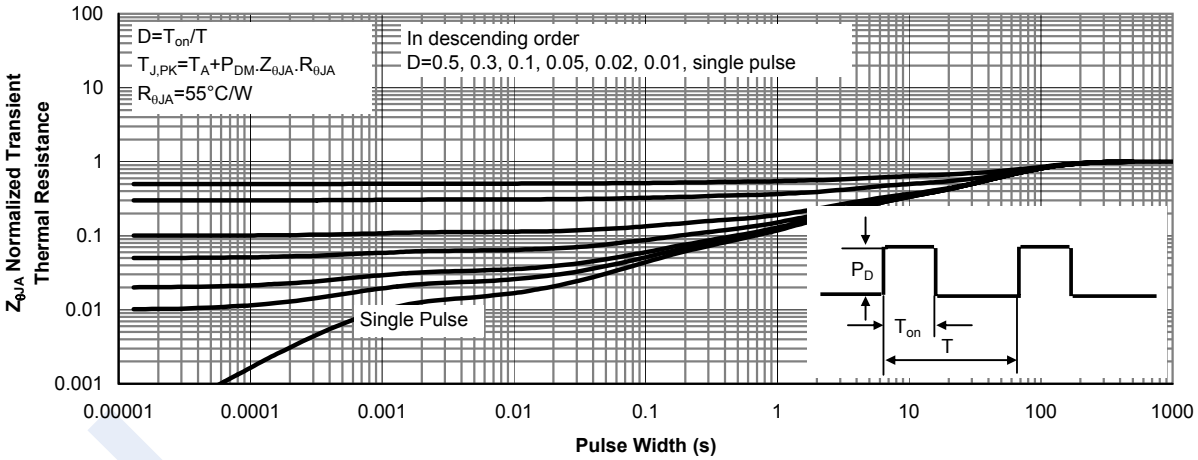

Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)