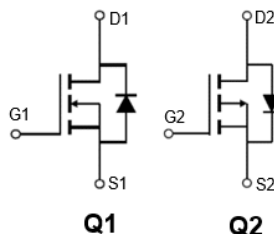
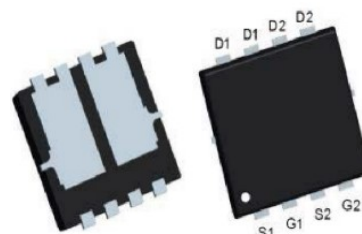


Features

- Q1: $V_{DS}=20V; I_D=15A$
- Q1: $R_{DS(ON)}=32m\Omega$ (TYP.) $V_{GS}=10V$
- Q2: $V_{DS}=-20V; I_D=-12A$
- Q2: $R_{DS(ON)}=65m\Omega$ (TYP.) $V_{GS}=-10V$
- Reliable and Rugged
- High Current Capability
- Low On-Resistance



PDFN3*3



Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

Ordering Information

Device	package	Device Marking	Package Qty.
AGM210MAP	PDFN3*3	*	5000/PCS

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

Parameter	Symbol	Value(Q1)	Value(Q2)	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	20	-20	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	± 12	± 12	V
Continuous Drain Current ($T_C=25^\circ C$)	I_D	15	-12	A
Continuous Drain Current ($T_C=100^\circ C$)		11	-9	A
Pulsed Drain Current	I_{DM}	60	-60	A
Single Pulsed Avalanche Energy	E_{AS}	-	-	mJ
Maximum Power Dissipation ($T_C=25^\circ C$)	P_D	18	18	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	-55~150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.8	-	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	65	-	$^\circ C/W$

Q1: Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	-	1.3	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	-	24	32	m Ω
		$V_{GS}=4.5V, I_D=1A$	-	33	38	
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-	-	-	V

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=20V$ $V_{GS}=0V$ $f=1MHz$	-	680	-	pF
Output capacitance	C_{oss}		-	102	-	
Reverse transfer capacitance	C_{rss}		-	77	-	
Gate Resistance	R_g	$f=1MHz$	-	3	-	Ω
Total Gate Charge	Q_g	$V_{DS}=20V$ $V_{GS}=10V$ $I_D=6A$	-	13.8	-	nC
Gate Source Charge	Q_{gs}		-	6.74	-	
Gate Drain Charge	Q_{gd}		-	1.82	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=20V$ $R_L=3.2\Omega$ $R_G=3\Omega$	-	4.6	-	ns
Rise time	t_r		-	4.1	-	
Turn-off delay Time	$t_{d(off)}$		-	20.6	-	
Fall time	t_f		-	5.2	-	
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=6A$ $dI/dt=500A/\mu s$	-	-	-	ns
Reverse Recovery Charge	Q_{rr}		-	-	-	nC

Q1:Electrical Characteristics Diagrames

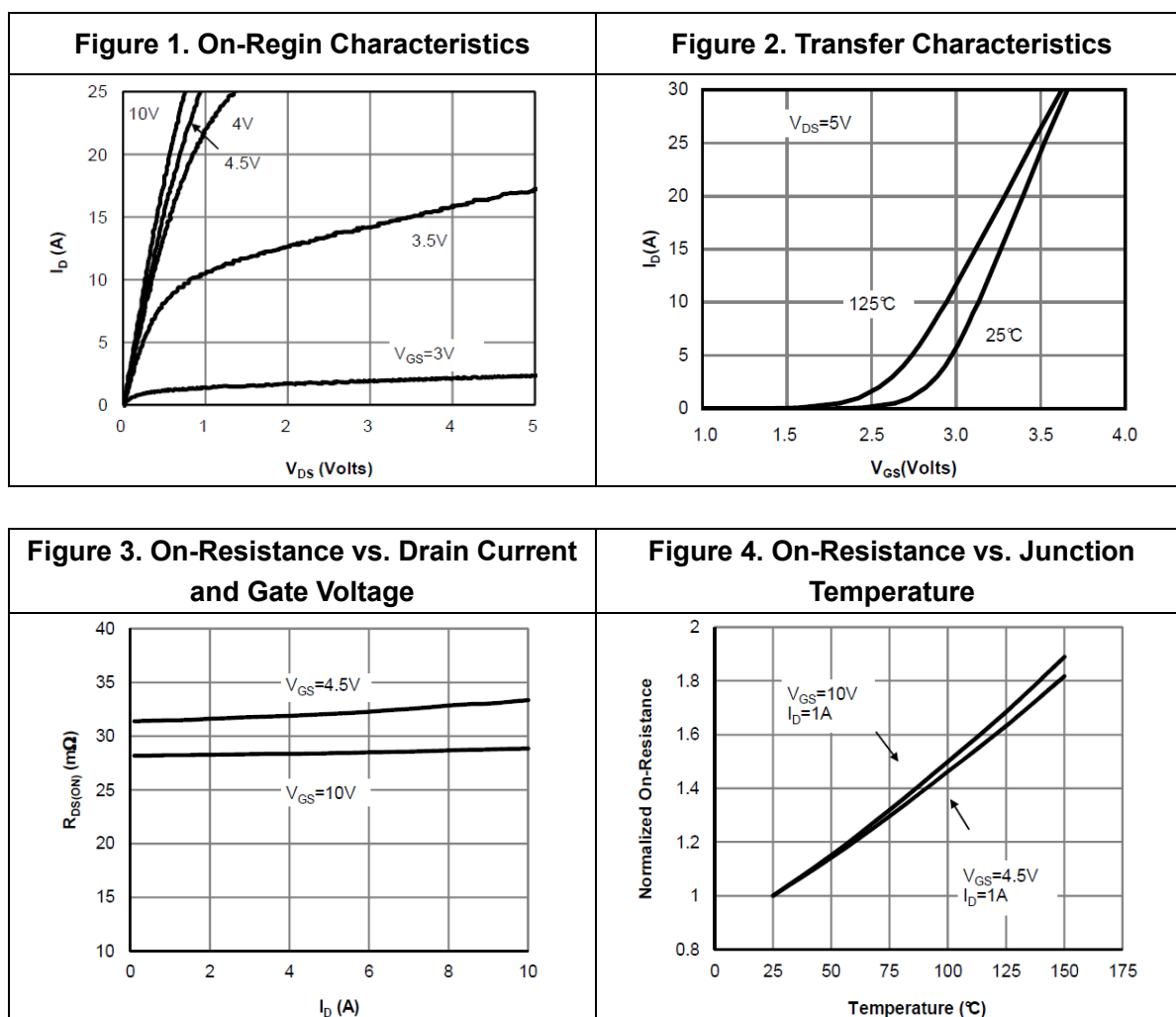


Figure 5. On-Resistance vs. Gate-Source Voltage

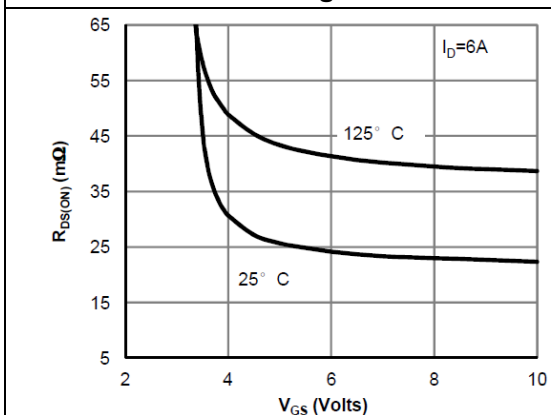


Figure 6. Body-Diode Characteristics

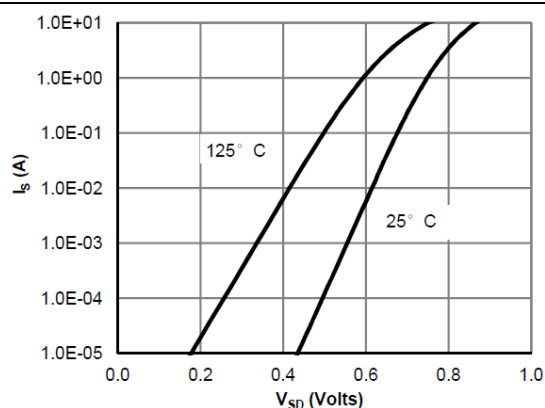


Figure 7. Gate-Charge Characteristics

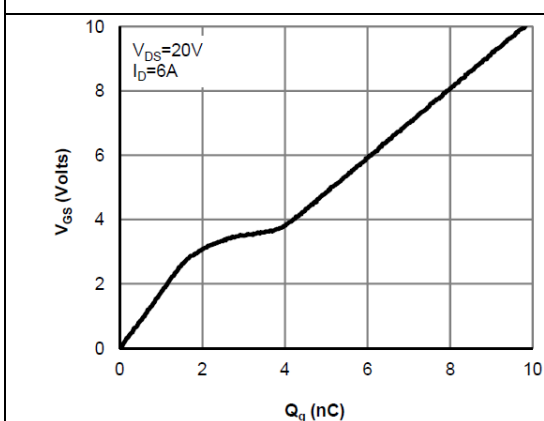


Figure 8. Capacitance Characteristics

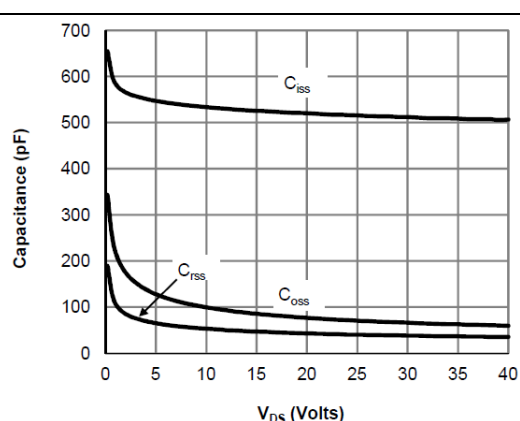


Figure 9. Maximum Forward Biased Safe Operating Area

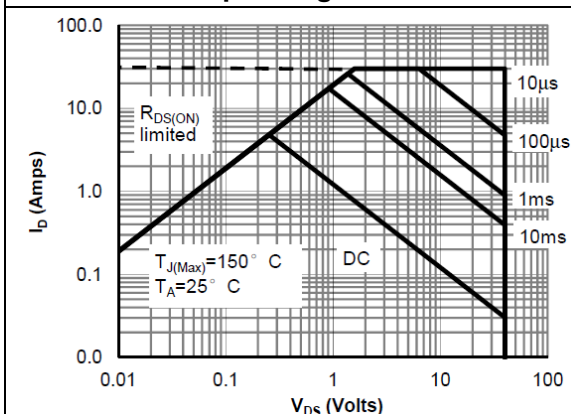
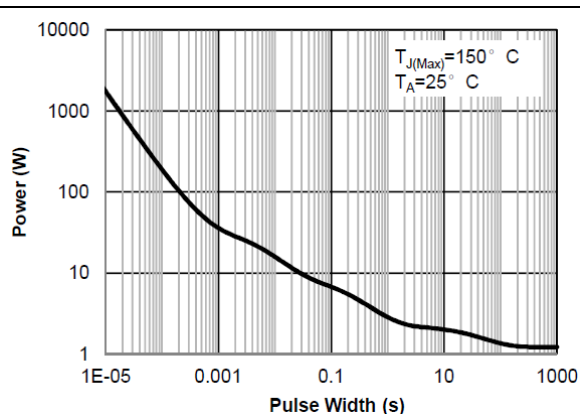
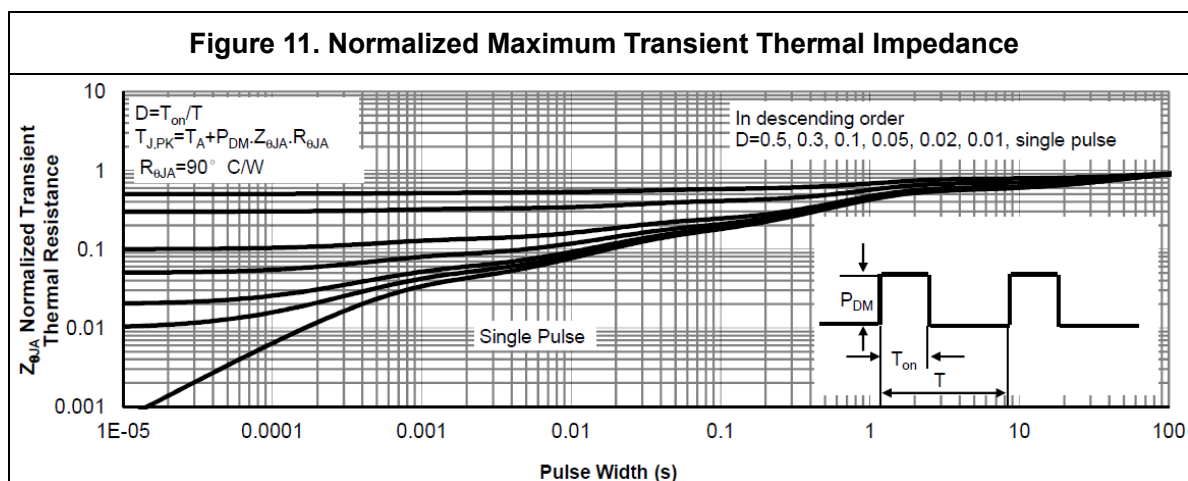


Figure 10. Single Pulse Power Rating Junction-to-Case





Q2:Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	--	-	-1.3	V
Drain-Source On-stage Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1A$	-	52	65	m Ω
		$V_{GS}=-4.5V, I_D=-1A$	-	59	75	
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=-1A$	-	-	-	V

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=-20V$	-	920	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	190	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	122	-	
Gate Resistance	R_g	$f=1MHz$	-	8.9	-	Ω
Total Gate Charge	Q_g	$V_{DS}=-20V$	-	9.6	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=-10V$	-	2.7	-	
Gate Drain Charge	Q_{gd}	$I_D=-5A$	-	4.5	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=-10V$	-	7.7	-	ns
Rise time	t_r	$V_{DS}=-20V$	-	5.7	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=4\Omega$	-	20.2	-	
Fall time	t_f	$R_G=3\Omega$	-	9.5	-	
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=-5A$	-	8.8	-	ns
Reverse Recovery Charge	Q_{rr}	$d_i/d_t=500A/\mu s$	-	20	-	nC

Q2:Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

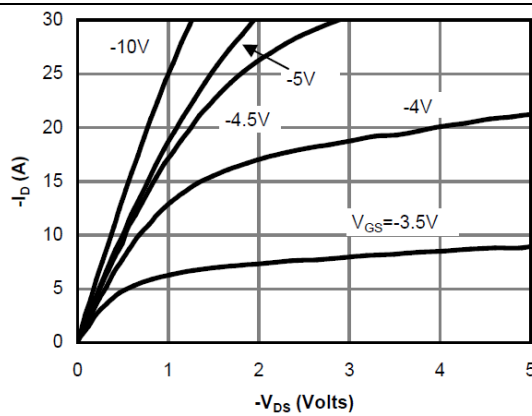


Figure 2. Transfer Characteristics

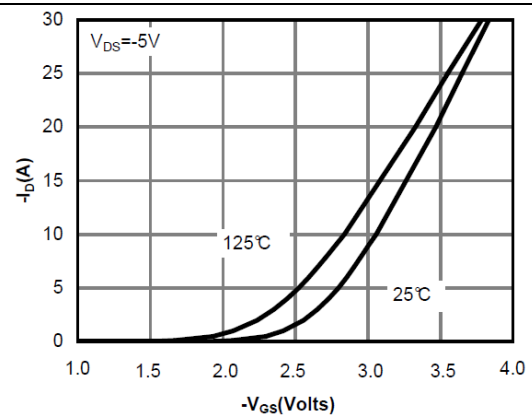


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

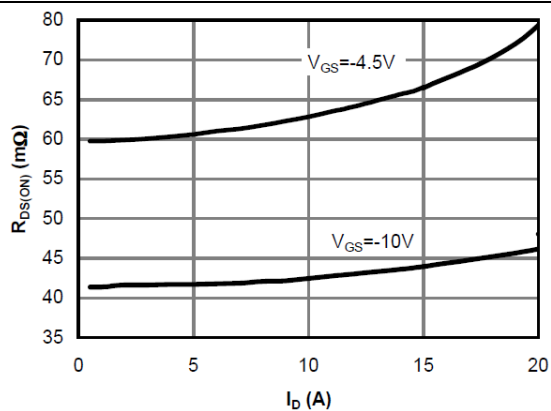


Figure 4. On-Resistance vs. Junction Temperature

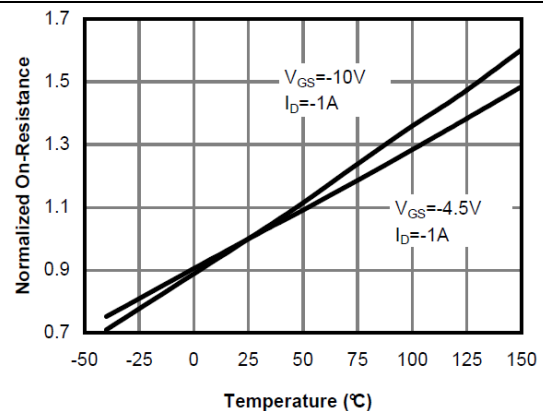


Figure 5. On-Resistance vs. Gate-Source Voltage

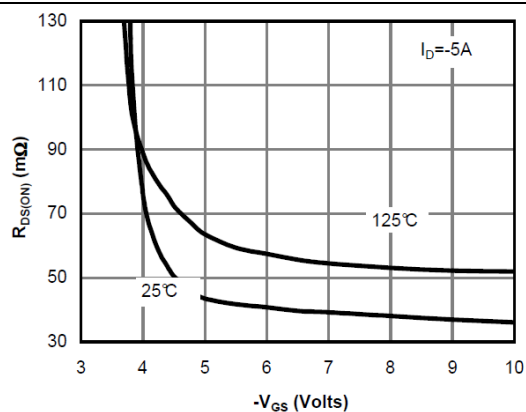


Figure 6. Body-Diode Characteristics

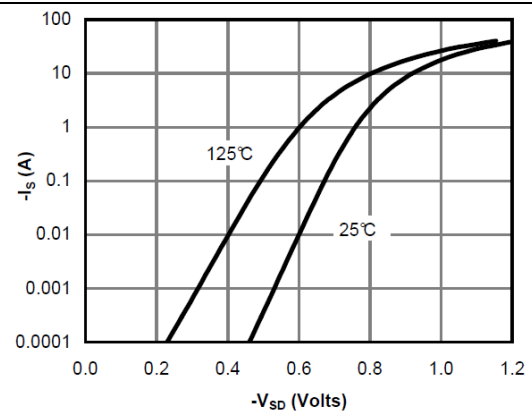


Figure 7. Gate-Charge Characteristics

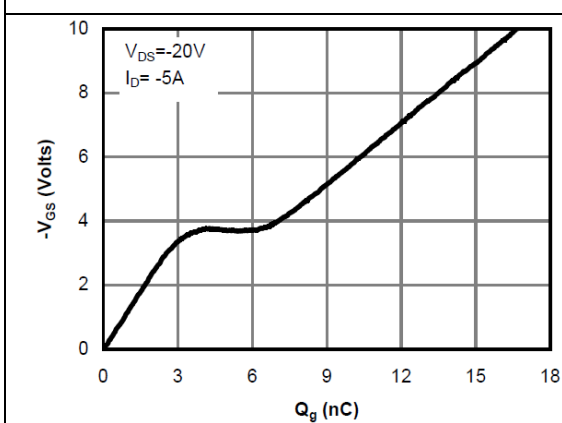


Figure 8. Capacitance Characteristics

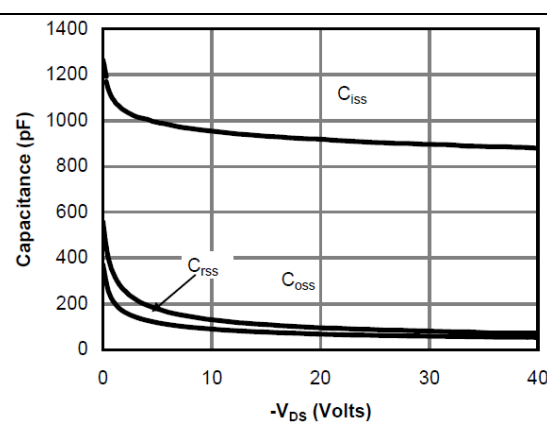


Figure 9. Maximum Forward Biased Safe Operating Area

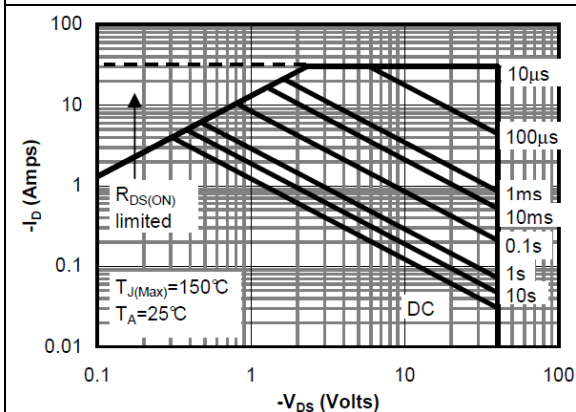


Figure 10. Single Pulse Power Rating Junction-to-Case

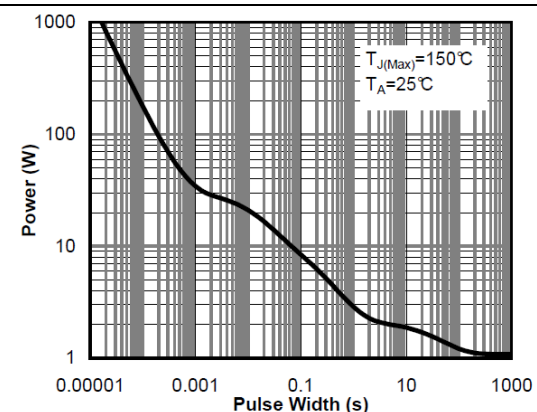
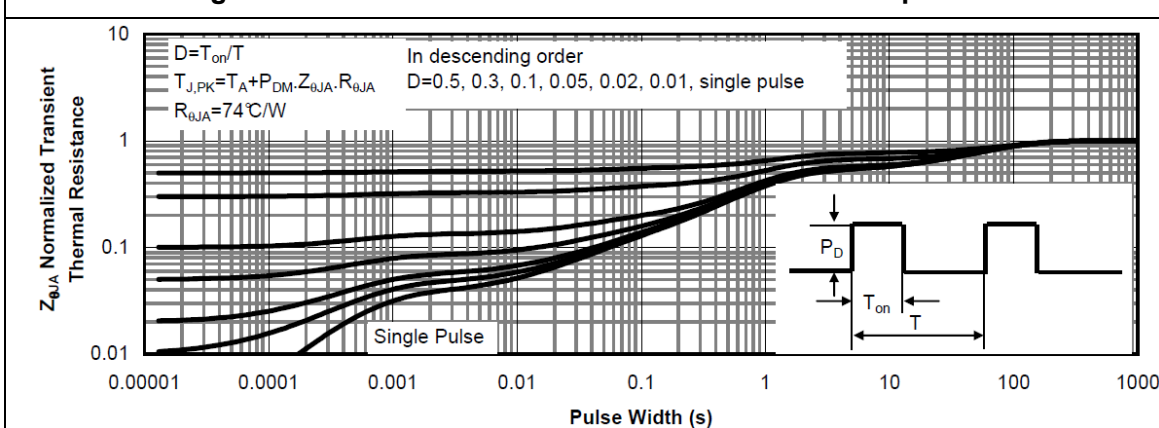


Figure 11. Normalized Maximum Transient Thermal Impedance



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