

General Description

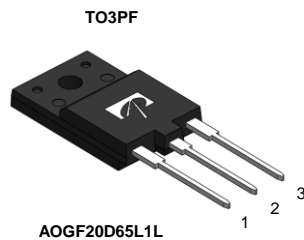
- 650V breakdown voltage
- Low forward voltage (VF)
- Very fast recovery
- Low reverse recovery charge
- Low reverse recovery current
- 175°C operating junction temperature

Applications

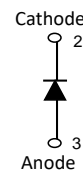
- AC/DC converters
- Boost diode in PFC stages
- Free wheeling diodes in inverters and motor drives
- General purpose inverters
- Switch mode power supplies

Product Summary

V_{BR}	650V
I_F ($T_C=100^\circ\text{C}$)	20A
V_F ($T_J=25^\circ\text{C}$)	1.54V



- Pin1-not connected
- Pin2-cathode
- Pin3-anode



Orderable Part Number	Package Type	Form	Minimum Order Quantity
AOGF20D65L1L	TO3PF	Tube	480

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

Parameter	Symbol	AOGF20D65L1L	Units
Repetitive peak reverse voltage	V_{RRM}	650	V
Continuous Diode Forward Current	I_F	$T_C=25^\circ\text{C}$	40 ⁽¹⁾
		$T_C=100^\circ\text{C}$	20 ⁽¹⁾
Diode Pulsed Current, Limited by T_{Jmax}	I_{FM}	60	A
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	63
		$T_C=100^\circ\text{C}$	31
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^\circ\text{C}$
Maximum Lead Temperature for Soldering Purpose, 1/8" from case for 5 seconds	T_L	300	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	AOGF20D65L1L	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	30	$^\circ\text{C/W}$
Maximum Diode Junction-to-Case	$R_{\theta JC}$	2.4	$^\circ\text{C/W}$

(1) TO3PF I_F follows TO247.

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
STATIC PARAMETERS							
V_{BR}	Breakdown voltage	$I_R=1\text{mA}$, $T_J=25^{\circ}\text{C}$	650	-	-	V	
V_F	Diode Forward Voltage	$I_F=20\text{A}$	$T_J=25^{\circ}\text{C}$	-	1.54	2	V
			$T_J=125^{\circ}\text{C}$	-	1.57	-	
			$T_J=175^{\circ}\text{C}$	-	1.51	-	
I_R	Reverse Leakage Current	$V_{BR}=650\text{V}$	$T_J=25^{\circ}\text{C}$	-	-	10	μA
			$T_J=125^{\circ}\text{C}$	-	-	500	
			$T_J=175^{\circ}\text{C}$	-	-	5000	
SWITCHING PARAMETERS, (Load Inductive, $T_J=25^{\circ}\text{C}$)							
t_{rr}	Diode Reverse Recovery Time	$T_J=25^{\circ}\text{C}$	-	104	-	ns	
Q_{rr}	Diode Reverse Recovery Charge	$I_F=20\text{A}$, $di/dt=200\text{A}/\mu\text{s}$, $V_{CC}=400\text{V}$	-	0.34	-	μC	
I_{rm}	Diode Peak Reverse Recovery Current	Include IGBT AOK40B65H2AL	-	5.6	-	A	
SWITCHING PARAMETERS, (Load Inductive, $T_J=175^{\circ}\text{C}$)							
t_{rr}	Diode Reverse Recovery Time	$T_J=175^{\circ}\text{C}$	-	166	-	ns	
Q_{rr}	Diode Reverse Recovery Charge	$I_F=20\text{A}$, $di/dt=200\text{A}/\mu\text{s}$, $V_{CC}=400\text{V}$	-	1.0	-	μC	
I_{rm}	Diode Peak Reverse Recovery Current	Include IGBT AOK40B65H2AL	-	8.9	-	A	

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

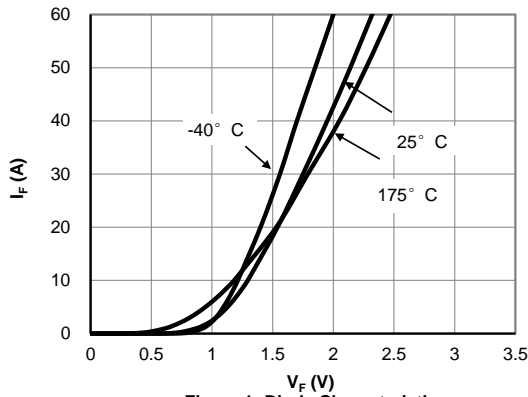


Figure 1: Diode Characteristic

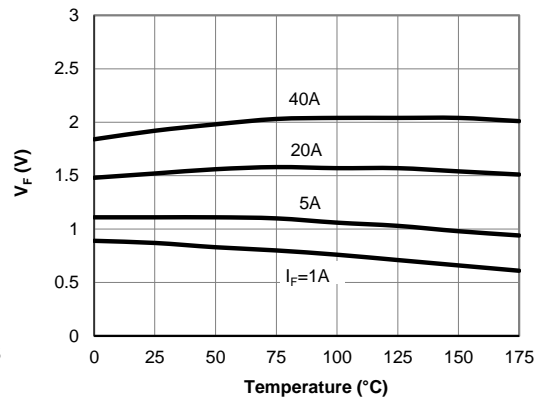


Figure 2: Diode Forward voltage vs. Junction Temperature

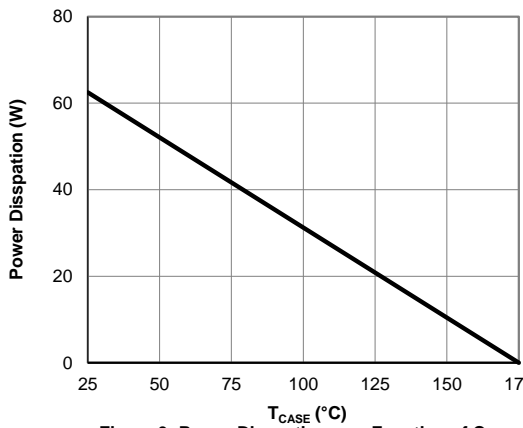


Figure 3: Power Dissipation as a Function of Case

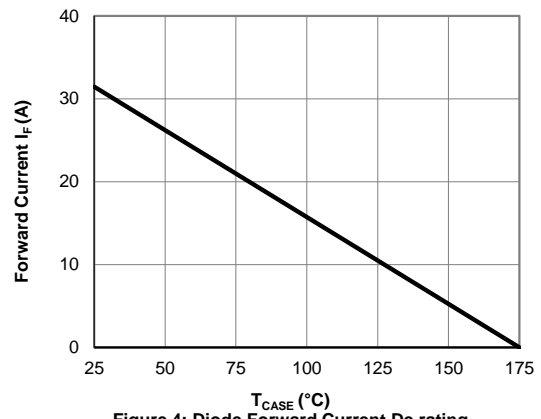


Figure 4: Diode Forward Current De-rating

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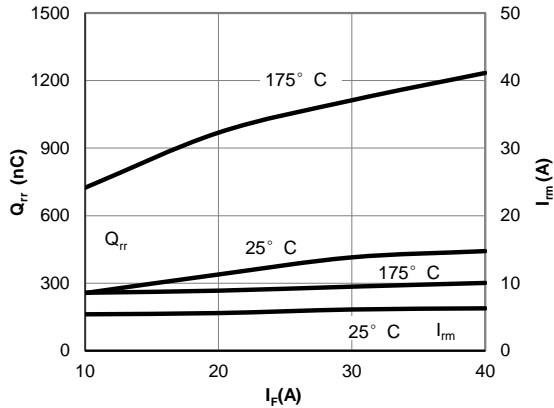


Figure 5: Diode Reverse Recovery Charge and Peak Current vs. Conduction Current
($V_{GE}=15V$, $V_{CE}=400V$, $di/dt=200A/\mu s$)

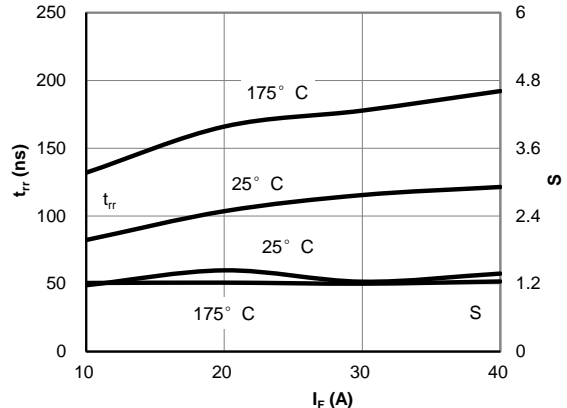


Figure 6: Diode Reverse Recovery Time and Softness Factor vs. Conduction Current
($V_{GE}=15V$, $V_{CE}=400V$, $di/dt=200A/\mu s$)

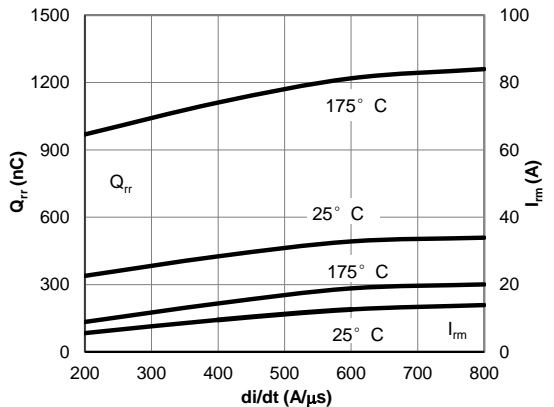


Figure 7: Diode Reverse Recovery Charge and Peak Current vs. di/dt
($V_{GE}=15V$, $V_{CE}=400V$, $I_F=20A$)

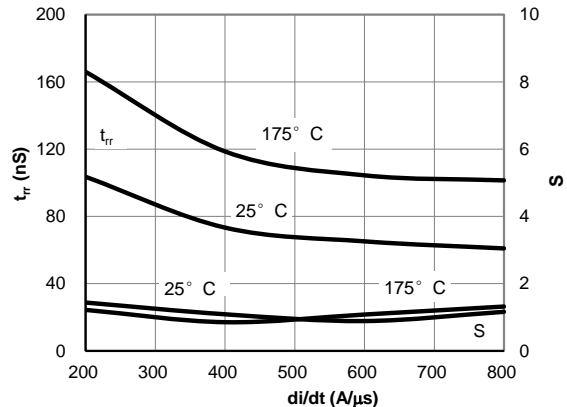


Figure 8: Diode Reverse Recovery Time and Softness Factor vs. di/dt
($V_{GE}=15V$, $V_{CE}=400V$, $I_F=20A$)

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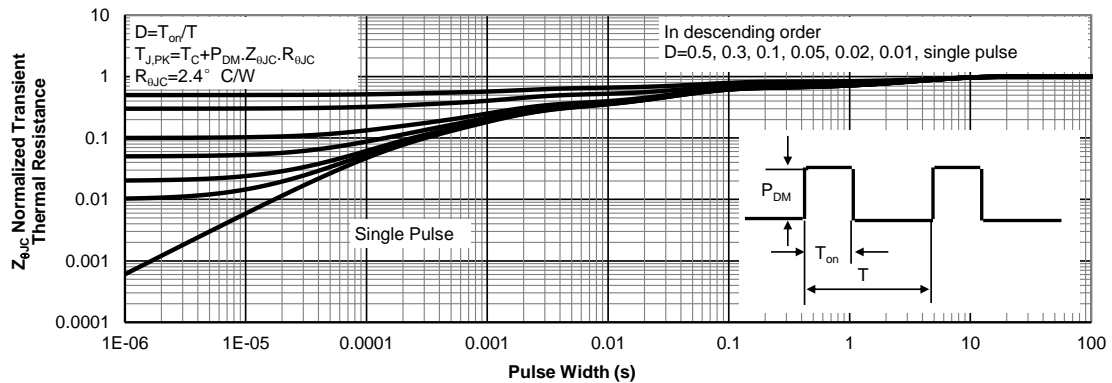


Figure 9: Normalized Maximum Transient Thermal Impedance for Diode

Diode Recovery Test Circuit & Waveforms

