

### General Description

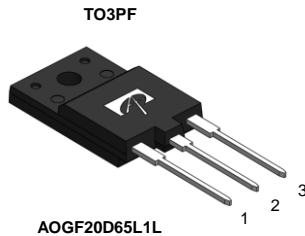
- 650V breakdown voltage
- Low forward voltage (VF)
- Very fast recovery
- Low reverse recovery charge
- Low reverse recovery current
- 175°C operating junction temperature

### Applications

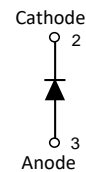
- AC/DC converters
- Boost diode in PFC stages
- Free wheeling diodes in inverters and motor drives
- General purpose inverters
- Switch mode power supplies

### 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 <sup>(1)</sup>
		$T_C=100^\circ\text{C}$	20 <sup>(1)</sup>
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<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
<b>STATIC PARAMETERS</b>							
V <sub>BR</sub>	Breakdown voltage	I <sub>R</sub> =1mA, T <sub>J</sub> =25°C	650	-	-	V	
V <sub>F</sub>	Diode Forward Voltage	I <sub>F</sub> =20A	T <sub>J</sub> =25°C	-	1.54	2	V
			T <sub>J</sub> =125°C	-	1.57	-	
			T <sub>J</sub> =175°C	-	1.51	-	
I <sub>R</sub>	Reverse Leakage Current	V <sub>BR</sub> =650V	T <sub>J</sub> =25°C	-	-	10	μA
			T <sub>J</sub> =125°C	-	-	500	
			T <sub>J</sub> =175°C	-	-	5000	
<b>SWITCHING PARAMETERS, (Load Inductive, T<sub>J</sub>=25°C)</b>							
t <sub>rr</sub>	Diode Reverse Recovery Time	T <sub>J</sub> =25°C	-	104	-	ns	
Q <sub>rr</sub>	Diode Reverse Recovery Charge	I <sub>F</sub> =20A, di/dt=200A/μs, V <sub>CC</sub> =400V	-	0.34	-	μC	
I <sub>rrm</sub>	Diode Peak Reverse Recovery Current	Include IGBT AOK40B65H2AL	-	5.6	-	A	
<b>SWITCHING PARAMETERS, (Load Inductive, T<sub>J</sub>=175°C)</b>							
t <sub>rr</sub>	Diode Reverse Recovery Time	T <sub>J</sub> =175°C	-	166	-	ns	
Q <sub>rr</sub>	Diode Reverse Recovery Charge	I <sub>F</sub> =20A, di/dt=200A/μs, V <sub>CC</sub> =400V	-	1.0	-	μC	
I <sub>rrm</sub>	Diode Peak Reverse Recovery Current	Include IGBT AOK40B65H2AL	-	8.9	-	A	

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**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**

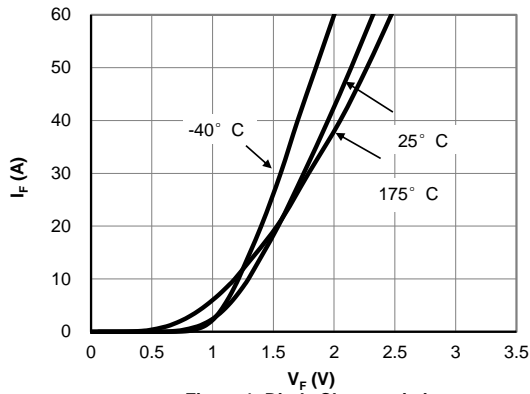


Figure 1: Diode Characteristic

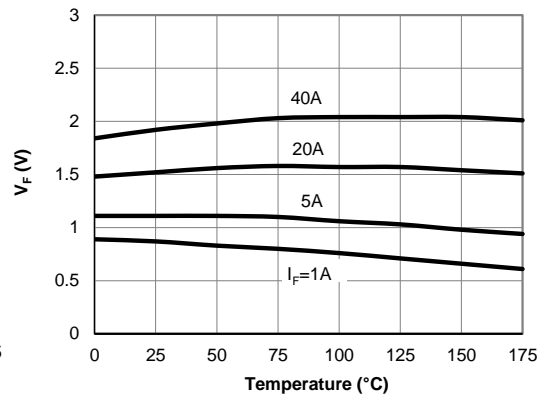


Figure 2: Diode Forward voltage vs. Junction Temperature

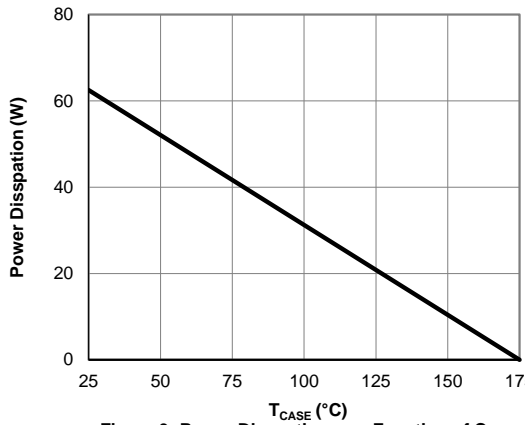


Figure 3: Power Dissipation as a Function of Case

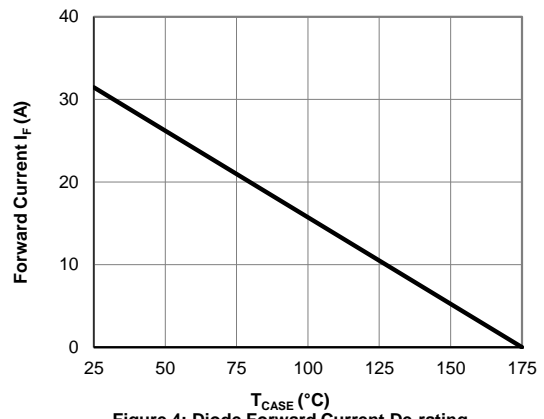
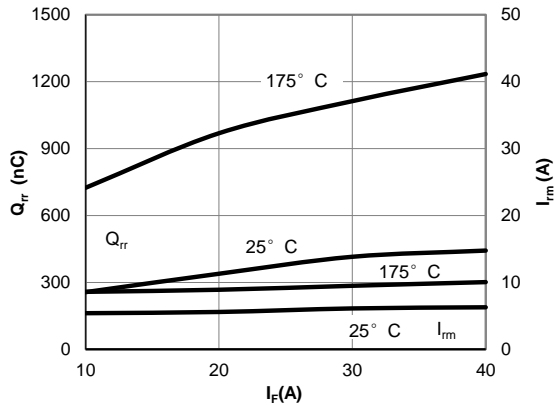
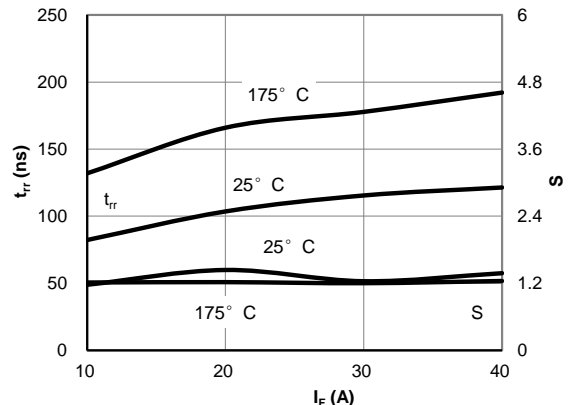


Figure 4: Diode Forward Current De-rating

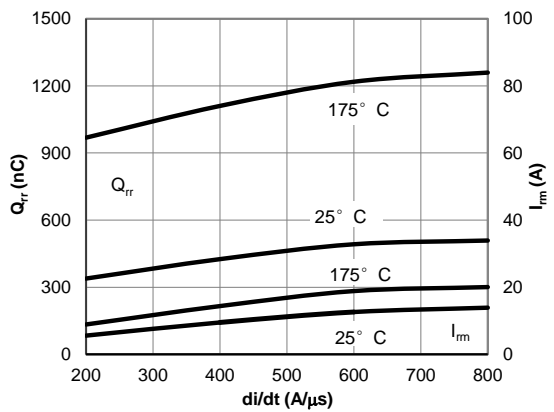
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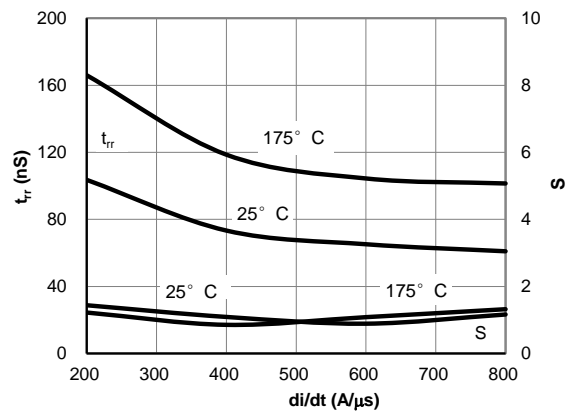
**Figure 5: Diode Reverse Recovery Charge and Peak Current vs. Conduction Current**  
( $V_{GE}=15V, V_{CE}=400V, di/dt=200A/\mu s$ )



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

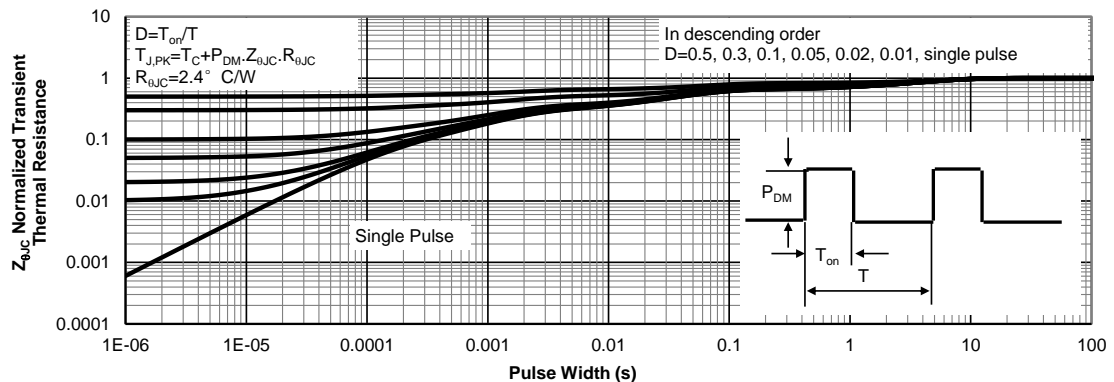


**Figure 7: Diode Reverse Recovery Charge and Peak Current vs. di/dt**  
( $V_{GE}=15V, V_{CE}=400V, I_F=20A$ )



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

**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



**Figure 9: Normalized Maximum Transient Thermal Impedance for Diode**

Diode Recovery Test Circuit & Waveforms

