Ultrafast Recovery Power Rectifier

General Description

The SFN10A600 is ideally as boost diode in discontinuous or critical mode power factor corrections. The planar structure and the platinum doper life time control guarantee the best overall performance, ruggedness reliability characteristics. The device is also intended for use as a freewheeling diode in power supplies and other power switching applications.

TO-220F-2L

Features and Benefits

- Low forward drop voltage
- Ultrafast recovery time and high speed switching
- Full lead (Pb)-free device and RoHS compliant device

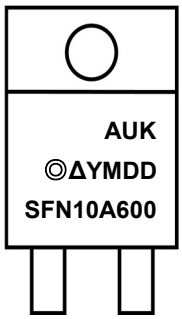
Applications

- Switching power supply
- Power inverters
- Power conversion system

Ordering Information

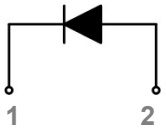
Part Number	Marking Code	Package	Packaging
SFN10A600	SFN10A600	TO-220F-2L	Tube

Marking Information



AUK = Manufacture Logo
◎ = Management Code
Δ = Control Code of Manufacture
YMDD = Date Code Marking
-. Y = Year Code
-. M = Monthly Code
-. DD = Daily Code
SFN10A600 = Specific Device Code

Pinning Information

Pin	Description	Simplified Outline	Graphic Symbol
1	Cathode		
2	Anode		

Absolute Maximum Ratings (Limiting values at 25°C, unless otherwise specified)

Characteristic	Symbol	Ratings	Unit
Maximum repetitive reverse voltage Maximum working peak reverse voltage Maximum DC blocking voltage	V_{RRM} V_{RWM} V_R	600	V
Maximum average forward rectified current	$I_{F(AV)}$	10	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	100	A
Storage temperature range	T_{stg}	-45 to +150	℃
Maximum operating junction temperature	T_J	150	

Thermal Characteristics

Characteristic	Symbol	Ratings	Unit
Maximum thermal resistance	$R_{th(j-c)}$	4.0	°C/W
	$R_{th(j-a)}$	62.5	

Electrical Characteristics

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Peak forward voltage drop	V_{FM} [1)]	I_{FM} = 10A	T_j=25℃	-	1.58	2.1	V
Reverse leakage current	I_{RM} [2)]	$V_R = V_{RRM}$	T_j=25℃	-	-	5	uA
			T_j=125℃	-	-	200	
Junction capacitance	C_j	V_R = 10V_{DC}, f=1MHz		-	38	-	pF

[1)] Pulse test: $t_p \leq 380us$, Duty cycle≤2%

[2)] Pulse test: $t_p \leq 20ms$, Duty cycle≤2%

Dynamic Recovery Characteristics

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
Reverse recovery time	t_{rr}	I_F = 1A, dI/dt = -100A/us	T_J=25℃	-	22	27	ns
			T_J=125℃	-	49	-	
		I_F = 10A, dI/dt = -100A/us	T_J=25℃	-	33	-	
			T_J=125℃	-	78	-	
Reverse recovery current	I_{rr}	I_F = 1A, dI/dt = -100A/us	T_J=25℃	-	1.4	-	A
			T_J=125℃	-	2.8	-	
		I_F = 10A, dI/dt = -100A/us	T_J=25℃	-	1.9	-	
			T_J=125℃	-	3.5	-	
Reverse recovery charge	Q_{rr}	I_F = 1A, dI/dt = -100A/us	T_J=25℃	-	17	-	nC
			T_J=125℃	-	76	-	
		I_F = 10A, dI/dt = -100A/us	T_J=25℃	-	35	-	
			T_J=125℃	-	150	-	

Fig. 1 Reverse Recovery Time Test Circuit

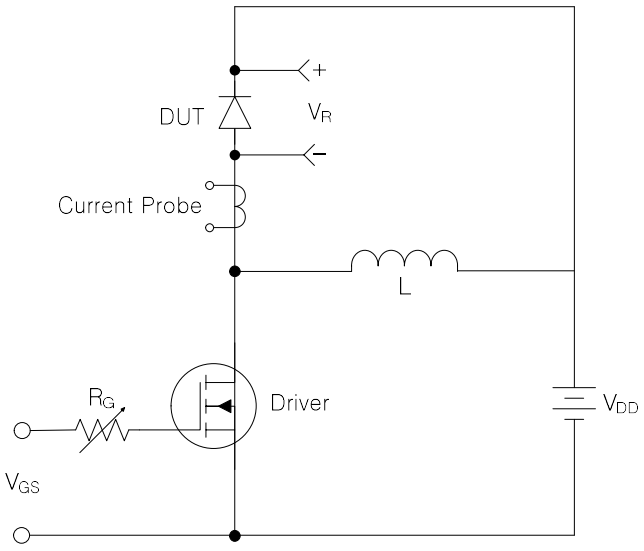
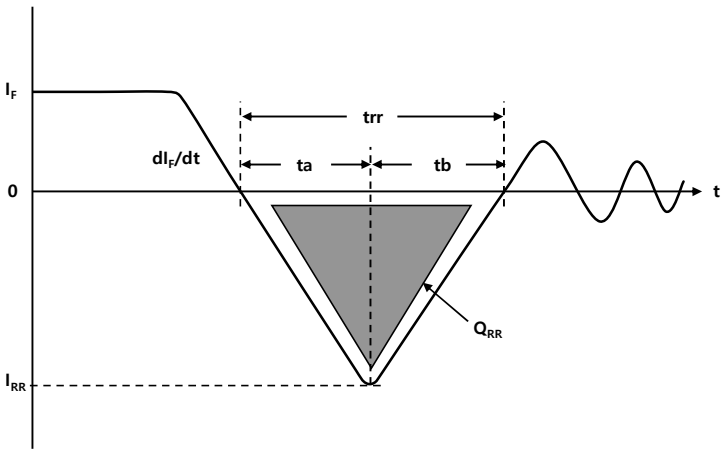


Fig. 2 Reverse Recovery Definitions



Typical Electrical Characteristic Curves

Fig. 1) Typical Forward Characteristics

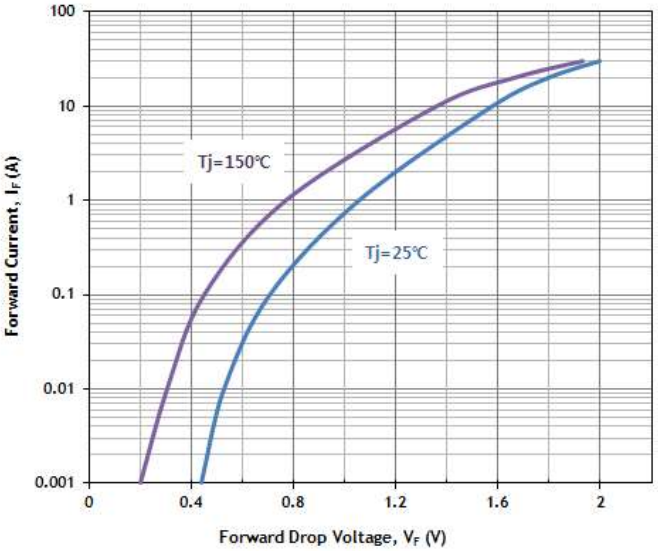


Fig. 2) Typical Reverse Characteristics

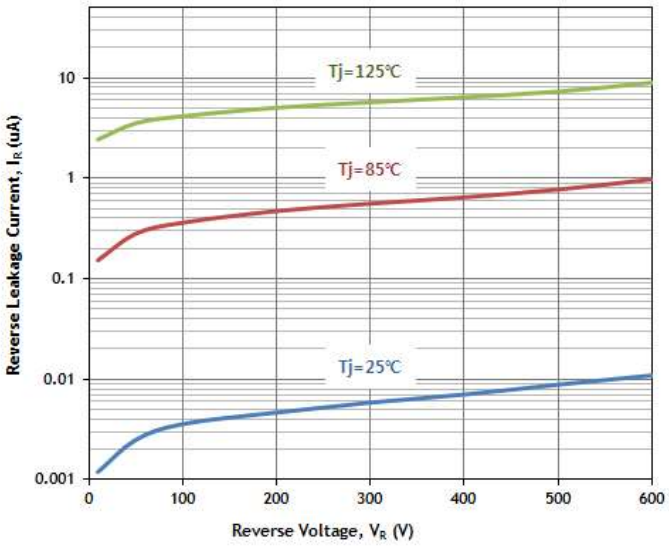


Fig. 3) Typical Reverse recovery time

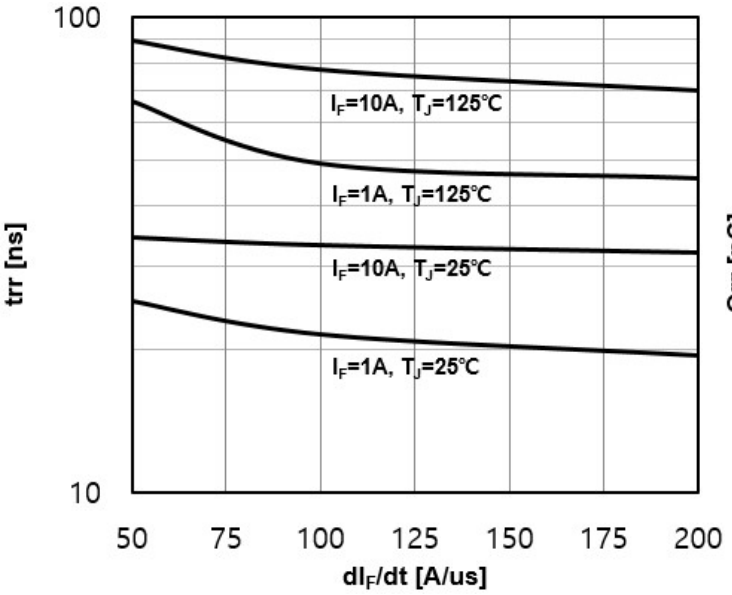
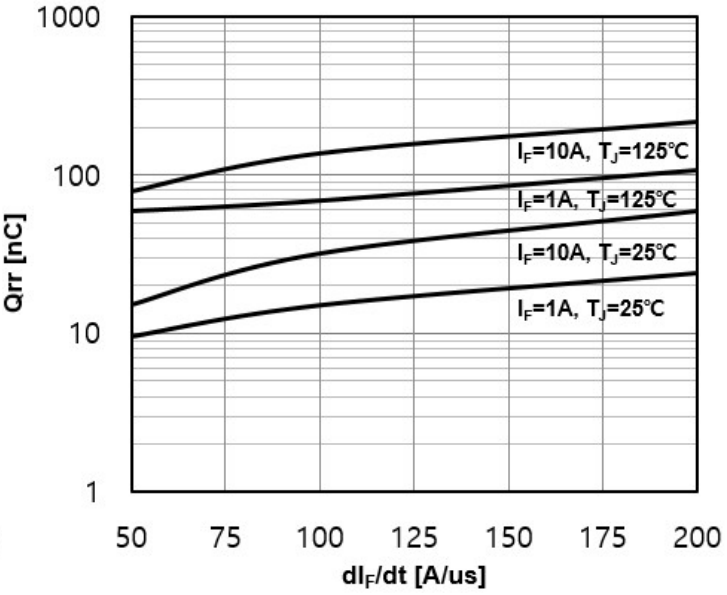


Fig. 4) Typical Reverse recovery charge



Typical Electrical Characteristic Curves

Fig. 3) Typical Junction Capacitance Characteristics

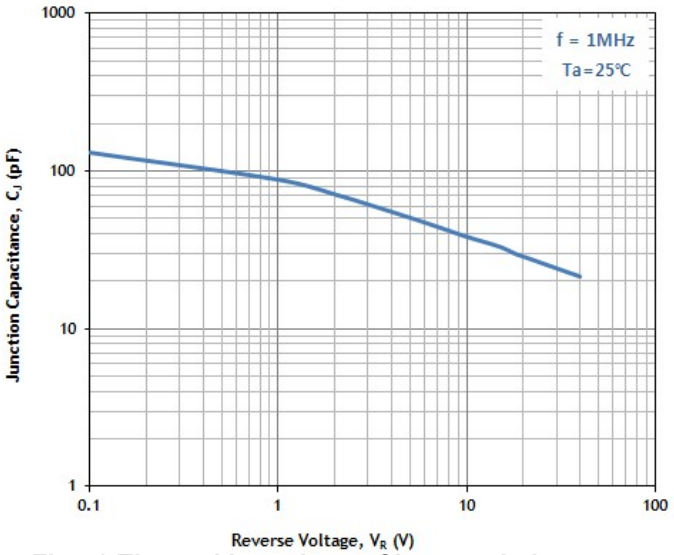


Fig. 4) Peak Forward Surge Current Characteristics

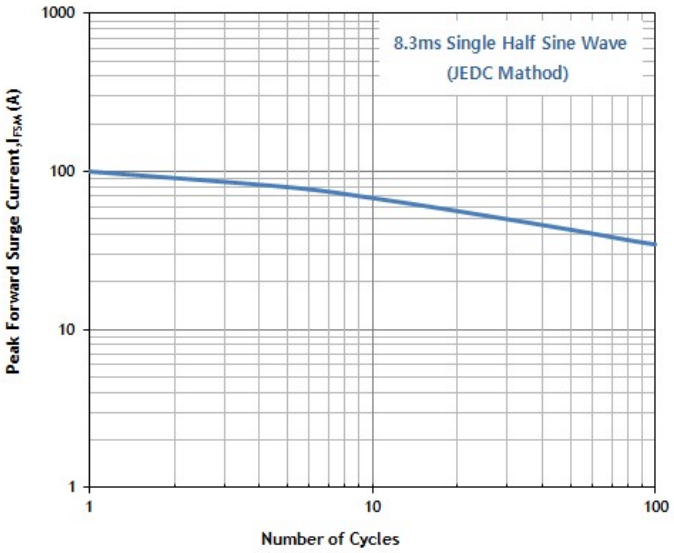


Fig. 5) Thermal Impedance Characteristics

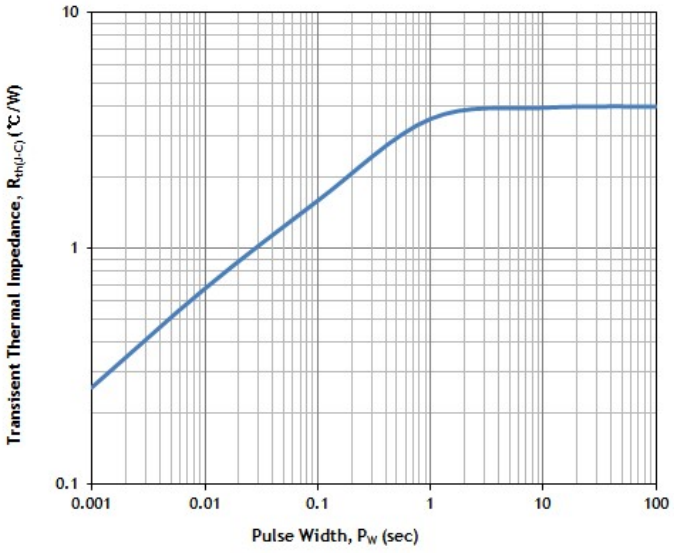
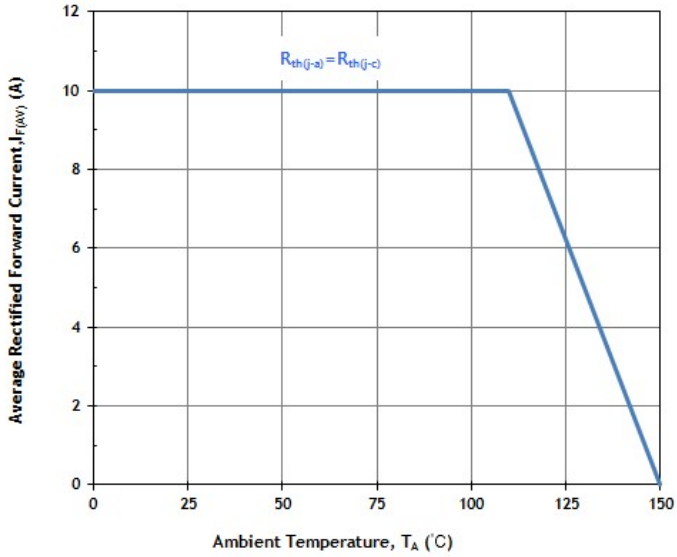
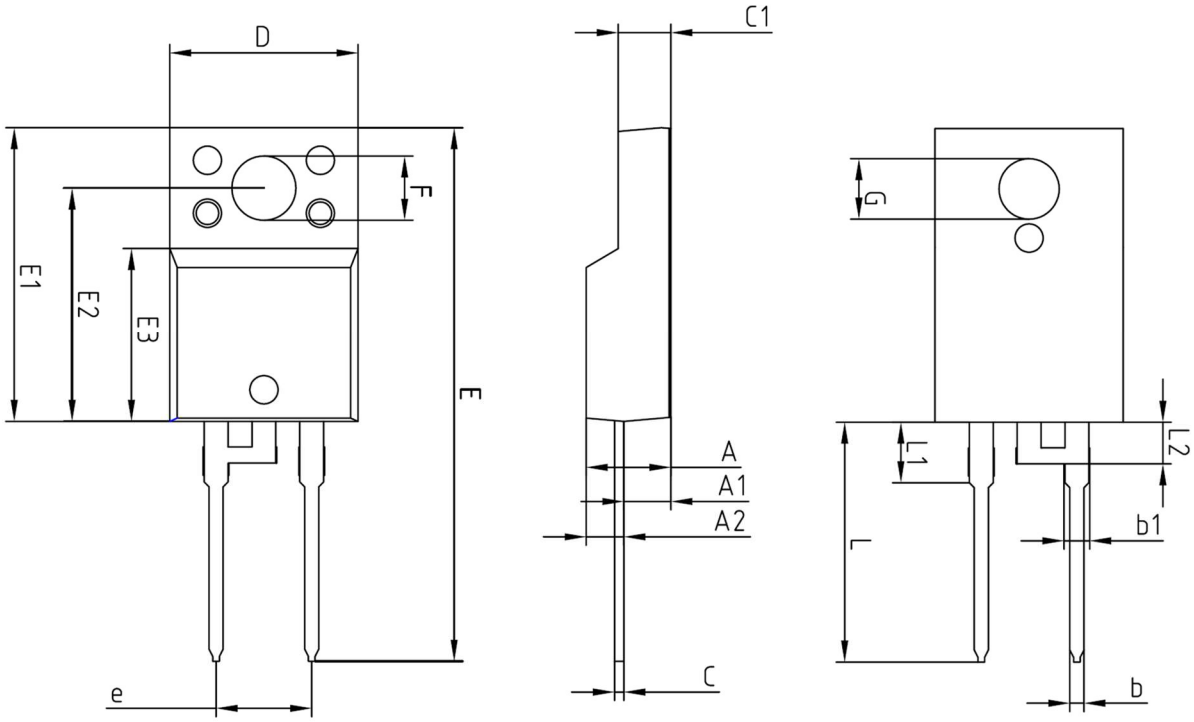


Fig. 6) Average Forward Current Characteristics



Package Outline Dimensions (Unit: mm)



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	–	–	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.65	0.75	0.85	
b1	1.07	1.27	1.47	
C	0.40	0.50	0.60	
C1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	28.00	–	28.60	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.30	3.40	3.50	
G	3.10	3.20	3.30	
e	5.08 BSC			
L	12.40	–	13.00	
L1	3.46 BSC			
L2	2.21 BSC			

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