

Ultrafast Dual Common-Cathode Rectifier

General Description

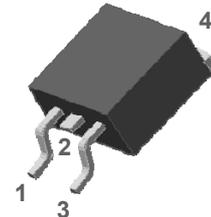
The SF20D400SD2 is an ultrafast rectifier. It has a low forward voltage drop and reverse recovery time ($t_{rr} < 30\text{ns}$). The device is intended for use as a free-wheeling, clamping rectifier in a variety of switching power supplies and other power switching applications.

Features and Benefits

- Low forward drop voltage and low leakage current
- Ultrafast reverse recovery time ($t_{rr} < 30\text{ns}$)
- Dual common-cathode rectifier construction
- Full lead (Pb)-free device and RoHS compliant device

Applications

- Switching power supply
- Power inverters
- Power conversion system
- DC/DC Converter system



D2-PAK

Product Characteristics	
$I_{F(AV)}$	2 x 10A
V_{RRM}	400V
V_{FM} at 125°C	1.25V
t_{rr}	30ns

Ordering Information

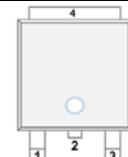
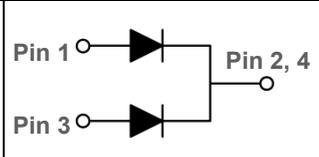
Part Number	Marking Code	Package	Packaging
SF20D400SD2	SF20D400SD2	D2-PAK	Tape & Reel

Marking Information



AUK = Manufacture Logo
Δ = Control Code of Manufacture
YMDD = Date Code Marking
 -. **Y** = Year Code
 -. **M** = Monthly Code
 -. **DD** = Daily Code
SF20D400SD2 = Specific Device Code

Pinning Information

Pin	Description	Simplified Outline	Graphic Symbol
1	Anode		
2, 4	Common-Cathode		
3	Anode		

SF20D400SD2

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	400	V
Maximum average forward rectified current	per diode	$I_{F(AV)}$	10	A
	total device		20	
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load per 1 chip		I_{FSM}	100	A
Storage temperature range		T_{stg}	-45 to +150	°C
Maximum operating junction temperature		T_J	150	

Thermal Characteristics

Characteristic	Symbol	Ratings	Unit
Maximum thermal resistance	$R_{th(j-c)}$	3.0	°C/W
	$R_{th(j-a)}$	62.5	

Electrical Characteristics

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Peak forward voltage drop	$V_{FM}^{(1)}$	$I_{FM} = 10A$	$T_A=25^\circ C$	0.80	1.12	1.40	V
			$T_A=125^\circ C$	-	-	1.25	
Reverse leakage current	I_{RM}	$V_R = V_{RRM}$	$T_A=25^\circ C$	-	-	20	uA
			$T_A=125^\circ C$	-	-	200	
Reverse recovery time	t_{rr}	$I_F = 1A, di/dt = -100 A/us$	15	22	30	ns	

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

Rating & Electrical Characteristic Curves

Fig. 1) Typical Forward Characteristics

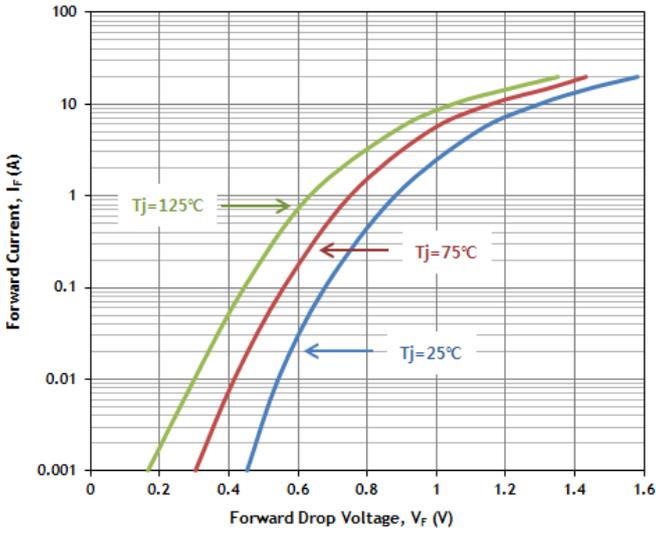


Fig. 2) Typical Reverse Characteristics

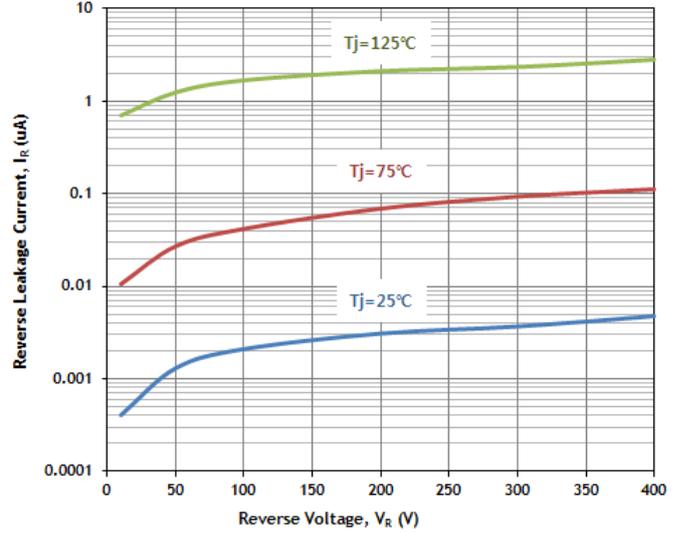


Fig. 3) Maximum Forward Derivative Curve

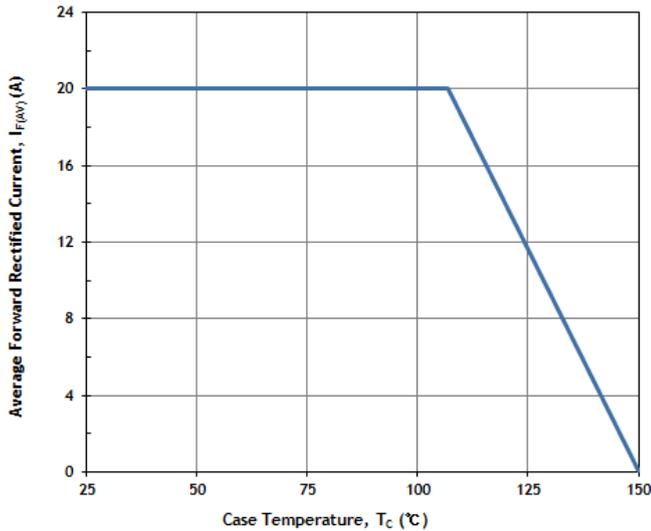


Fig. 4) Average Power Dissipation

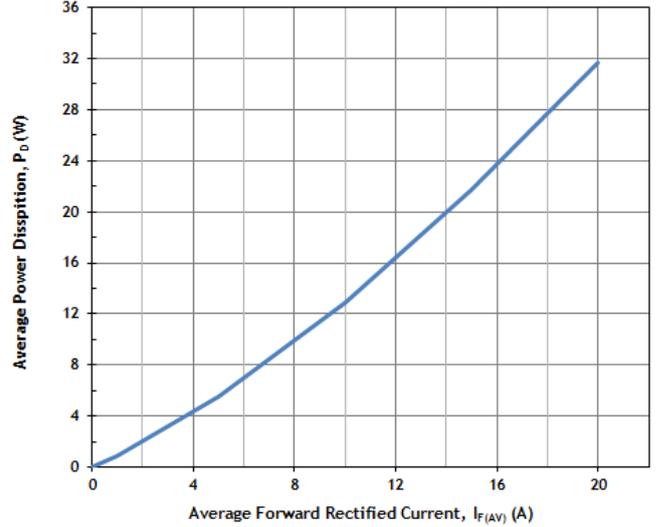


Fig. 5) Maximum Non-Repetitive Peak Forward Surge Current

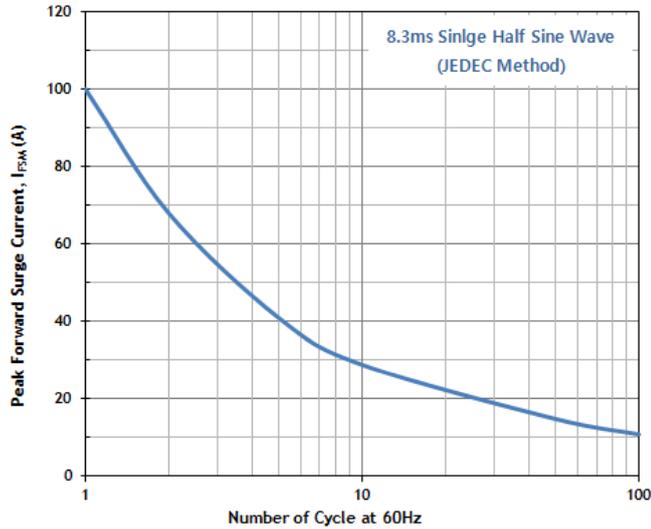
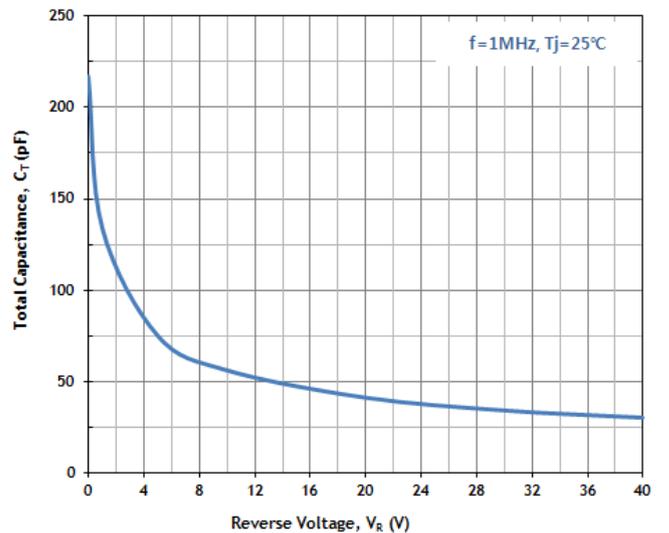
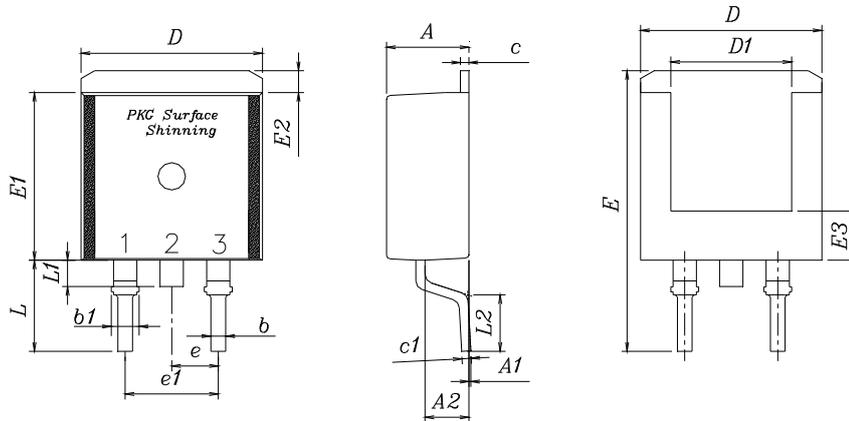


Fig. 6) Typical Junction Capacitance



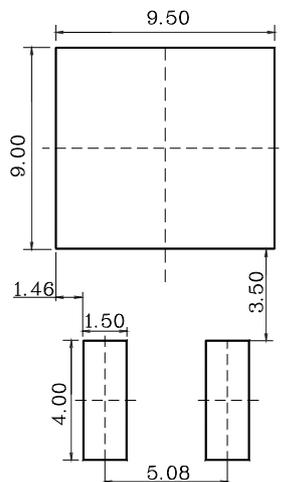
Package Outline Dimensions

Unit: mm



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	4.35	4.50	4.65	
A1	—	—	0.15	
A2	2.20	2.40	2.60	
b	0.70	0.80	0.90	
b1	1.17	1.27	1.37	
c	0.40	0.50	0.60	
c1	0.40	0.50	0.60	
D	9.80	10.00	10.20	
D1	6.40	6.60	6.80	
E	15.00	15.40	15.80	
E1	9.05	9.20	9.35	
E2	1.00	1.20	1.40	
E3	2.50	2.70	2.90	
e	2.34	2.54	2.74	
e1	4.88	5.08	5.28	
L	4.60	5.00	5.40	
L1	1.40	1.45	1.50	
L2	2.50	—	—	

※ Recommend PCB solder land (Unit : mm)



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