DS2002SF

RECTIFIER DIODE

APPLICATIONS

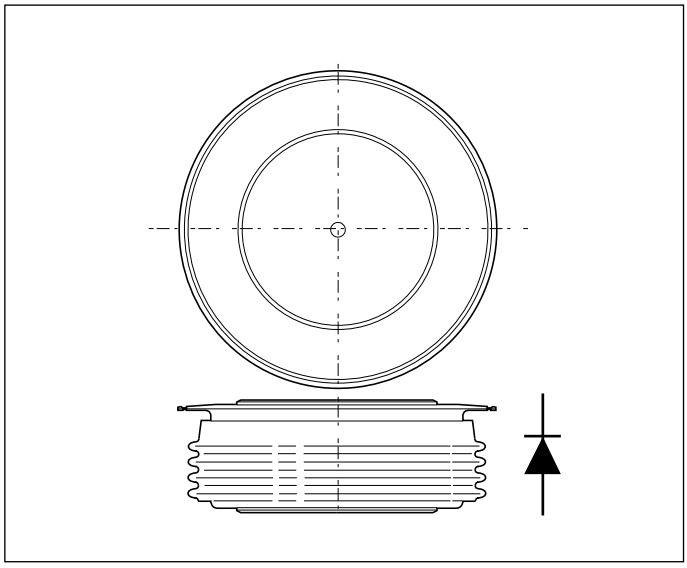
- Rectification.
- Freewheel Diode.
- DC Motor Control.
- Power Supplies.
- Welding.
- Battery Chargers.

KEY PARAMETERS

V_{RRM}	1800V
$I_{F(AV)}$	2320A
I_{FSM}	41250A

FEATURES

- Double Side Cooling.
- High Surge Capability.



Outline type code: F. Turn to page 7 for further information.

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DS2002SF18	1800	$V_{RSM} = V_{RRM} + 100V$
DS2002SF17	1700	
DS2002SF16	1600	
DS2002SF15	1500	
DS2002SF14	1400	
DS2002SF13	1300	

Lower voltage grades available.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 100°C	2320	A
$I_{F(RMS)}$	RMS value	T_{case} = 100°C	3644	A
I_F	Continuous (direct) forward current	T_{case} = 100°C	3300	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 100°C	1345	A
$I_{F(RMS)}$	RMS value	T_{case} = 100°C	2110	A
I_F	Continuous (direct) forward current	T_{case} = 100°C	1630	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 175°C	33.0	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - 1/4 sine	5.44 x 10^6	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; T_{case} = 175°C	41.25	kA
I^2t	I^2t for fusing	V_R = 0	8.5 x 10^6	A^2s

THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.022	°C/W
		Single side cooled	Anode dc	-	0.038	°C/W
			Cathode dc	-	0.052	°C/W
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004	°C/W
			Single side	-	0.008	°C/W
T_{vj}	Virtual junction temperature	Forward (conducting)		-	185	°C
		Reverse (blocking)		-	175	°C
T_{stg}	Storage temperature range			-55	200	°C
-	Clamping force			18.0	22.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{FM}	Forward voltage	At 3400A peak, T_{case} = 25°C	-	1.18	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 175°C	-	50	mA
Q_S	Total stored charge	I_F = 2000A, dI_{RR}/dt = 3A/µs	-	1500	µC
I_{RR}	Peak recovery current	T_{case} = 175°C, V_R = 100V	-	90	A
V_{TO}	Threshold voltage	At T_{vj} = 175°C	-	0.74	V
r_T	Slope resistance	At T_{vj} = 175°C	-	0.088	mΩ

CURVES

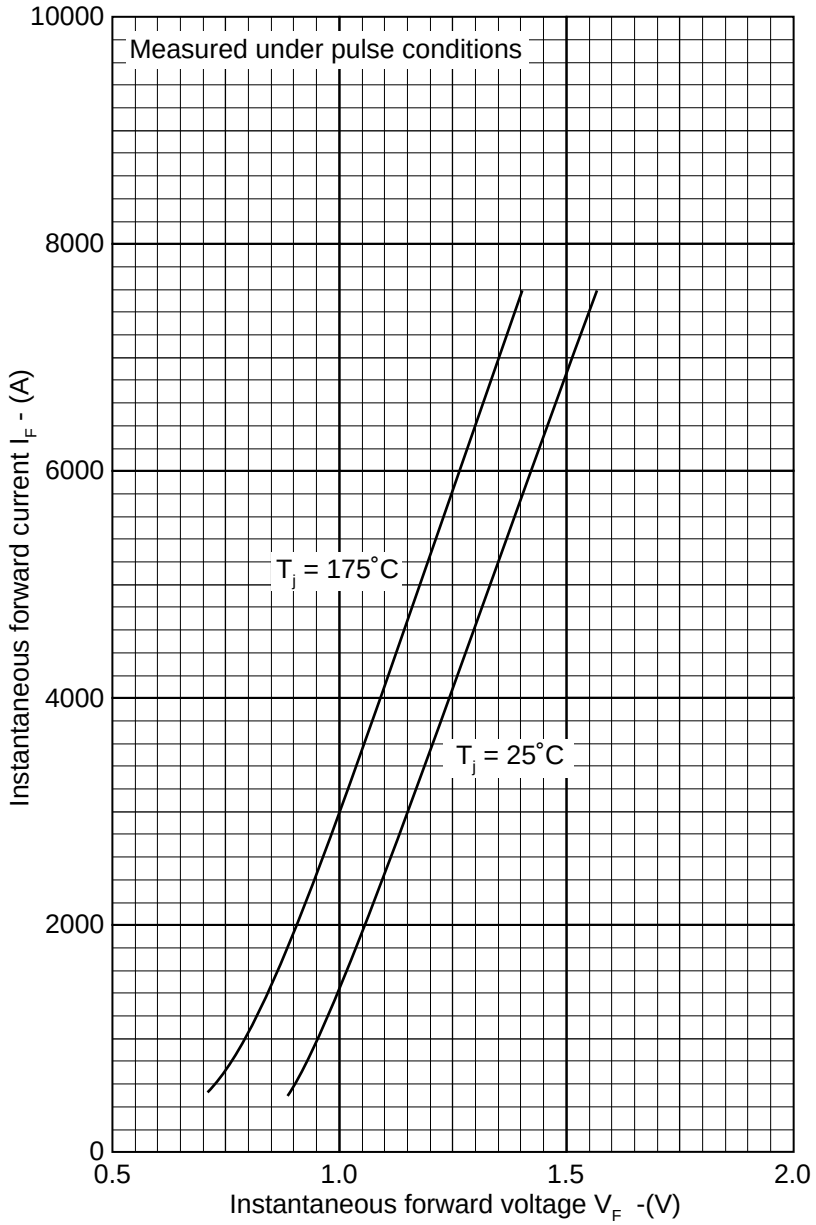


FIG. MAXIMUM (LIMIT) FORWARD CHARACTERISTICS

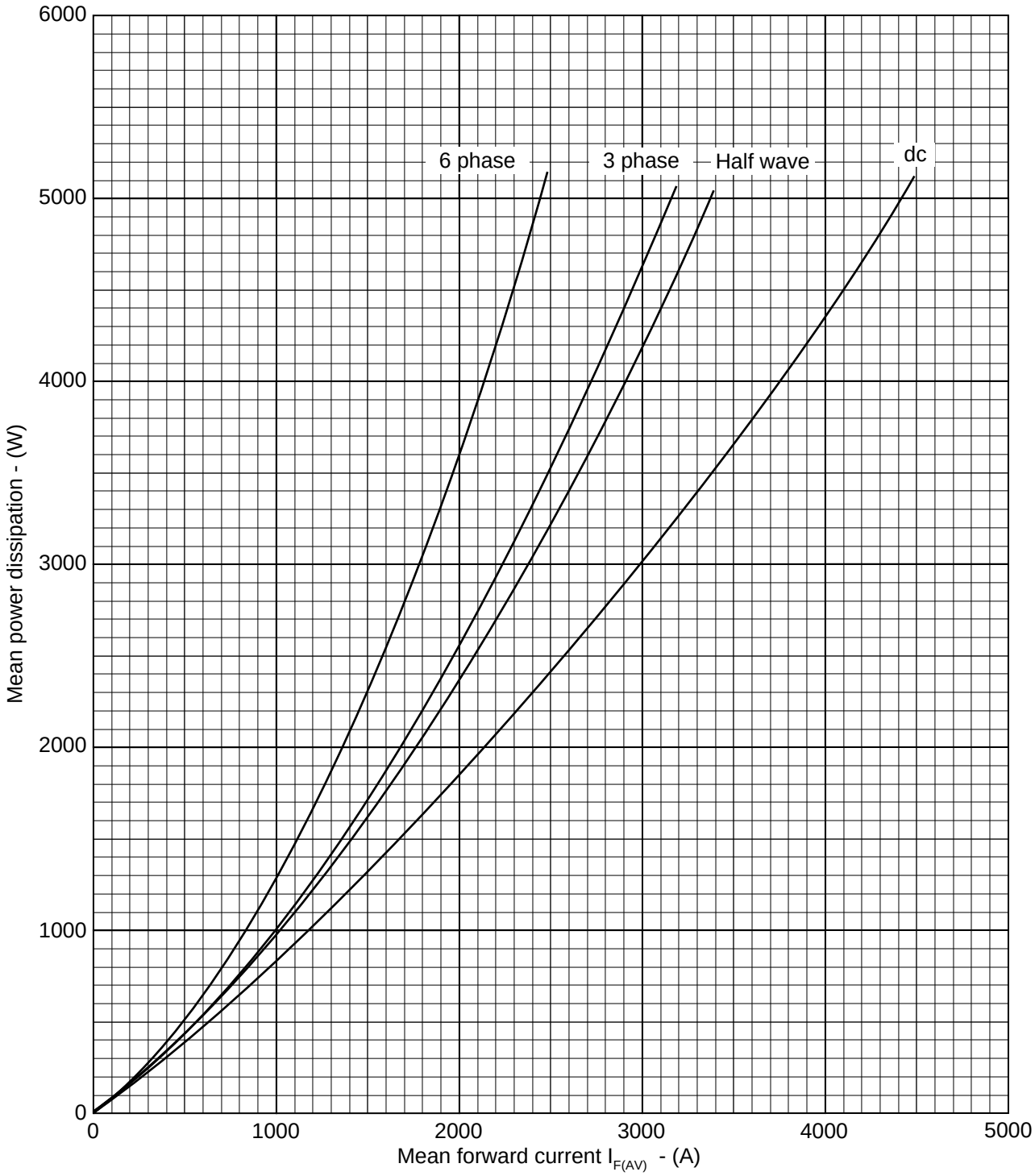


FIG. 2 DISSIPATION CURVES

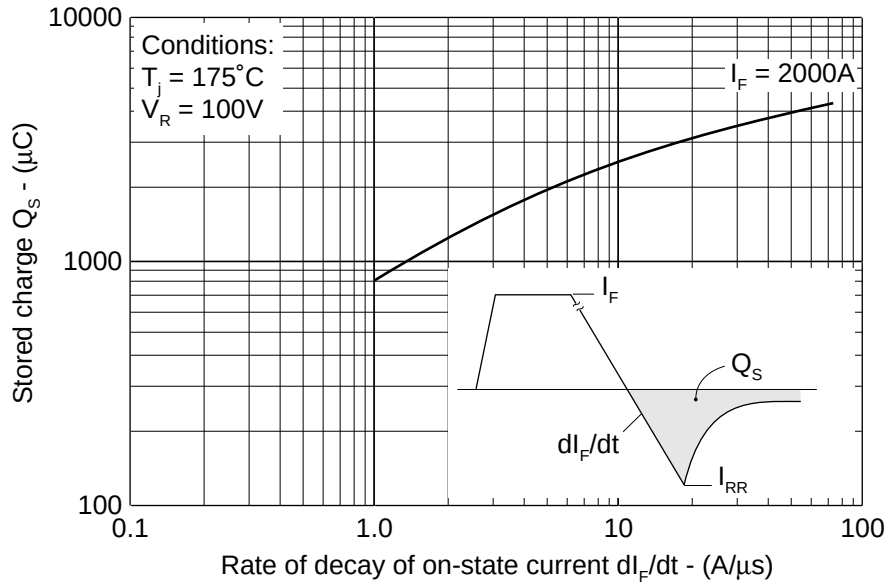


FIG. 3 MAXIMUM TOTAL STORED CHARGE

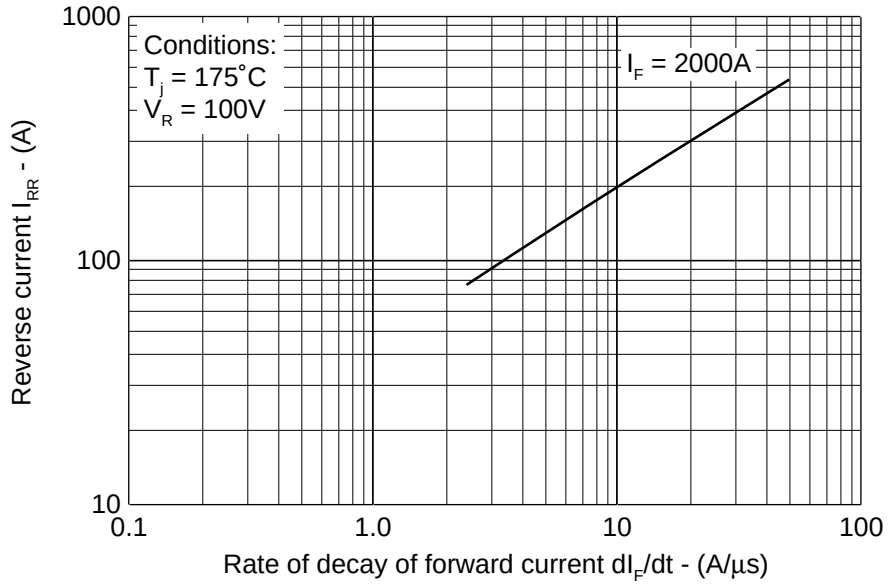


FIG. 4 MAXIMUM REVERSE RECOVERY CURRENT

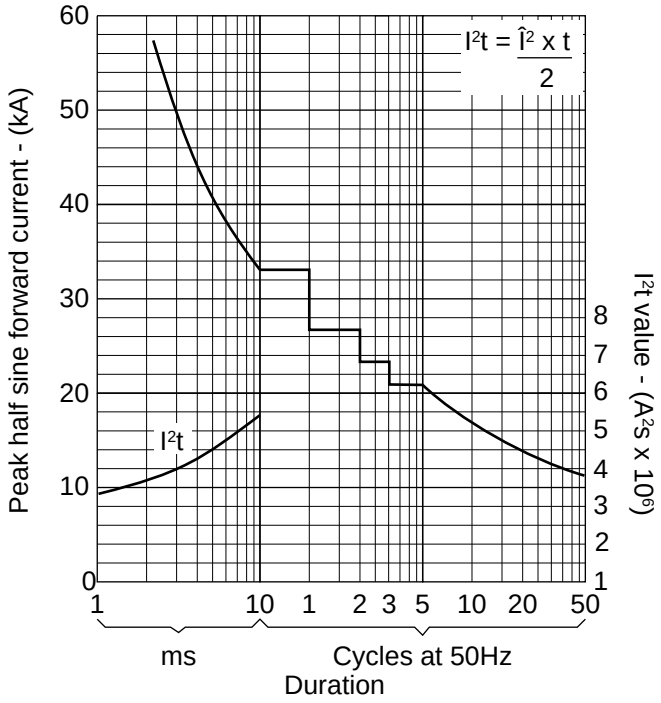
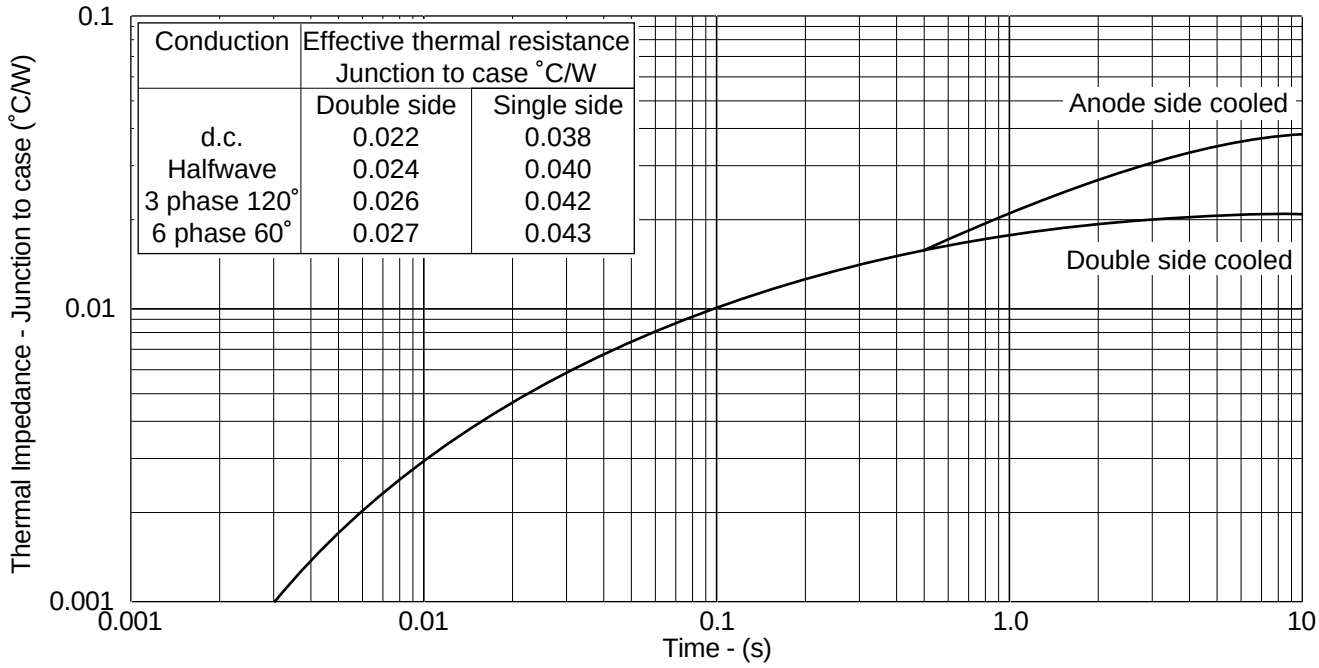


FIG. 5 SURGE (NON-REPETITIVE) FORWARD CURRENT vs TIME (WITH 50% V_{RRM} T_{case} = 175˚C)

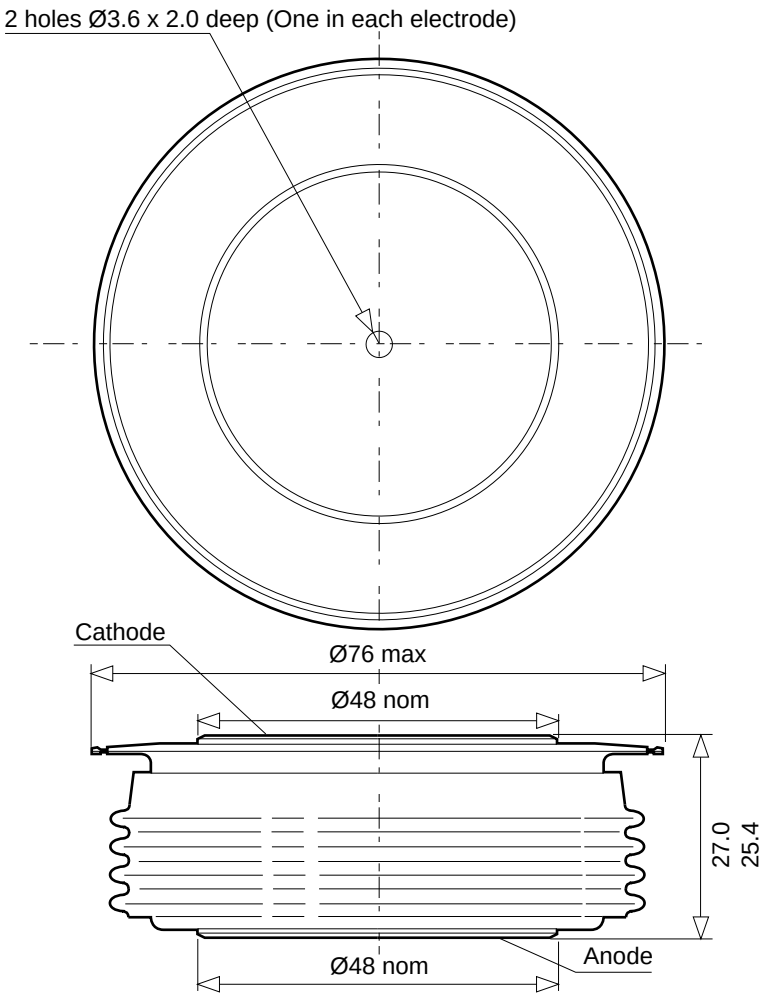


Conduction	Effective thermal resistance Junction to case ˚C/W	
	Double side	Single side
d.c.	0.022	0.038
Halfwave	0.024	0.040
3 phase 120˚	0.026	0.042
6 phase 60˚	0.027	0.043

FIG. 6 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE - (˚C/W)

PACKAGE DETAILS - F

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Weight: 500g

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