

MITSUBISHI SOFT RECOVERY DIODES

FD500JV-90DA

HIGH POWER, HIGH FREQUENCY,
PRESS PACK TYPE

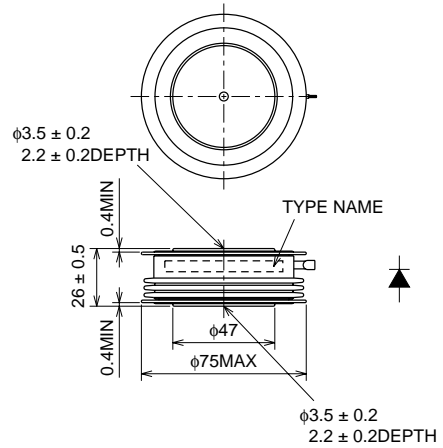
FD500JV-90DA



- $I_F(AV)$ Average forward current 500A
- V_{RRM} Repetitive peak reverse voltage 4500V
- Q_{RR} Reverse recovery charge 1500 μ C
- Press pack type

OUTLINE DRAWING

Dimensions in mm



APPLICATION

Clamp diode for GCT Thyristor

High-power inverters

Power supplies as high frequency rectifiers

MAXIMUM RATINGS

Symbol	Parameter	Voltage class	Unit
V_{RRM}	Repetitive peak reverse voltage	4500	V
V_{RSM}	Non-repetitive peak reverse voltage	4500	V
$V_R(DC)$	DC reverse voltage	3600	V

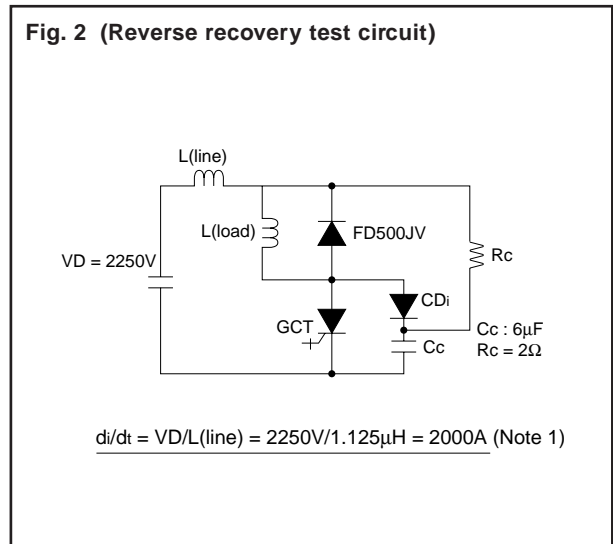
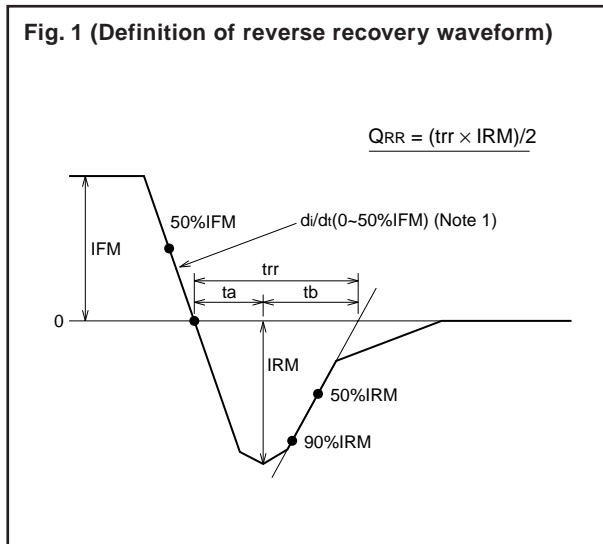
Symbol	Parameter	Conditions	Ratings	Unit
$I_F(RMS)$	RMS forward current	Applied for all conduction angles $f = 60\text{Hz}$, sine wave $\theta = 180^\circ$, $T_f = 76^\circ\text{C}$	785	A
$I_F(AV)$	Average forward current		500	A
I_{FSM}	Surge forward current	One half cycle at 60Hz, $T_j = 125^\circ\text{C}$	10	kA
I^2t	Current-squared, time integration		4.2×10^5	A^2s
di/dt	Critical rate of rise of reverse recovery current	$I_{FM} = 500\text{A}$, $V_R \leq 2250\text{V}$, $T_j = 125^\circ\text{C}$ (Fig. 1 and Fig. 2)	2000	$\text{A}/\mu\text{s}$
T_j	Junction temperature		-20 ~ 125	$^\circ\text{C}$
T_{stg}	Storage temperature		-40 ~ 150	$^\circ\text{C}$
—	Mounting force required	(Recommended value 23.5kN)	22 ~ 28	kN
—	Weight	Typical 530g	—	g

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ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IRRM	Repetitive peak reverse current	$V_{RM} = 4500V, T_j = 125^\circ C$	—	—	80	mA
V _{FM}	Forward voltage	$I_{FM} = 1570A, T_j = 125^\circ C$	—	—	3.5	V
QRR	Reverse recovery charge	$I_{FM} = 500A, di/dt = 1000A/\mu s, V_R = 2250V, T_j = 125^\circ C$	—	—	1500	μC
E _{rec}	Reverse recovery loss	(Refer to Fig. 1 and Fig. 2)	—	4.0	—	J/P
t _b /t _a	Soft recovery rate		—	2	—	—
V _{FP}	Forward recovery voltage	$di/dt = 1000A/\mu s, T_j = 25^\circ C$	—	100	—	V
R _{th(j-f)}	Thermal resistance	Junction to fin	—	—	.027	$^\circ C/W$



Note 1

In case of 2000A/ μs , definition of di/dt is by VD and inductance value of L (line) as follows.

$$di/dt = VD/L(\text{line}) = 2250V/1.125\mu H = 2000A/\mu s$$

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PERFORMANCE CURVES

