

# FD500JV-90DA

HIGH POWER, HIGH FREQUENCY,  
PRESS PACK TYPE

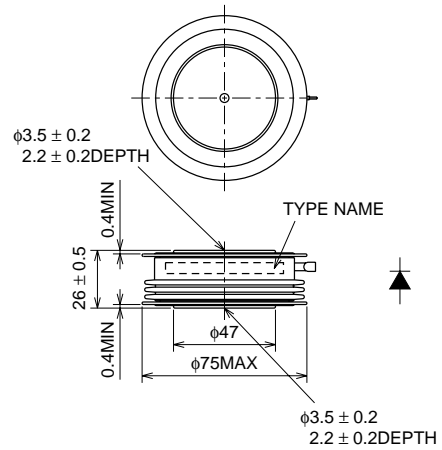
**FD500JV-90DA**



- $I_F(AV)$  Average forward current ..... 500A
- $V_{RRM}$  Repetitive peak reverse voltage ..... 4500V
- $Q_{RR}$  Reverse recovery charge ..... 1500 $\mu$ 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

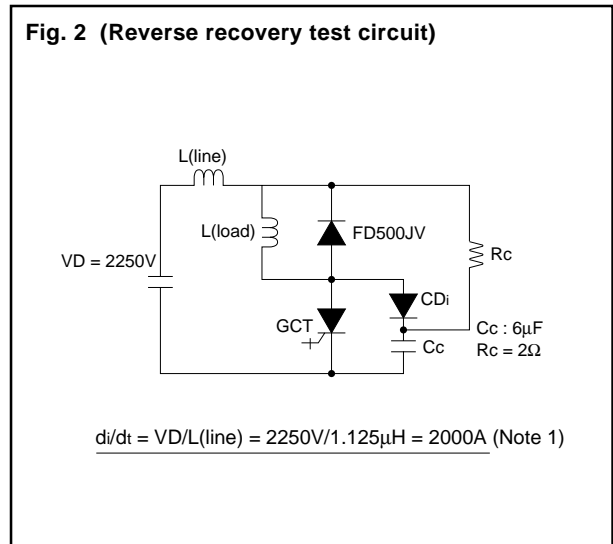
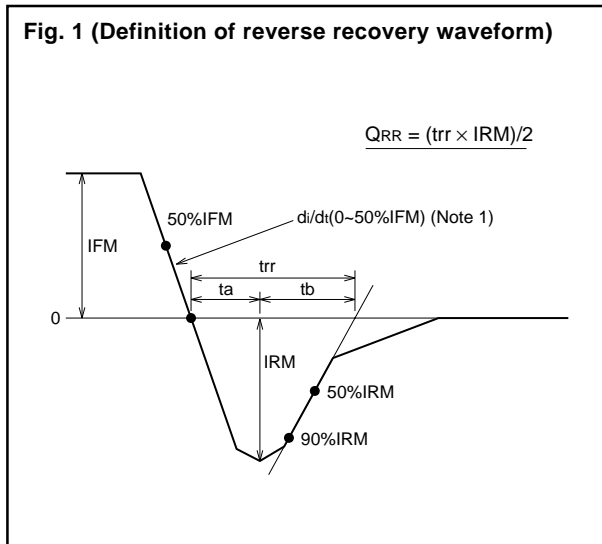
Symbol	Parameter	Conditions	Ratings	Unit
$I_F(RMS)$	RMS forward current	Applied for all conduction angles	785	A
$I_F(AV)$	Average forward current	$f = 60\text{Hz}$ , sine wave $\theta = 180^\circ$ , $T_f = 76^\circ\text{C}$	500	A
$I_{FSM}$	Surge forward current	One half cycle at 60Hz, $T_j = 125^\circ\text{C}$	10	kA
$I^2t$	Current-squared, time integration		$4.2 \times 10^5$	$\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of reverse recovery current	$I_{FM} = 500\text{A}$ , $V_R \leq 2250\text{V}$ , $T_j = 125^\circ\text{C}$ (see Fig. 1, 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 <sub>FM</sub>	Forward voltage	$I_{FM} = 1570A, T_j = 125^\circ C$	—	—	3.5	V
QRR	Reverse recovery charge	$I_{FM} = 500A, di/dt = 1000A/\mu s, V_R = 2250V, T_j = 125^\circ C$ (see Fig. 1, 2)	—	—	1500	$\mu C$
E <sub>rec</sub>	Reverse recovery loss		—	4.0	—	J/P
tb/ta	Soft recovery rate		—	2	—	—
V <sub>FP</sub>	Forward recovery voltage	$di/dt = 1000A/\mu s, T_j = 25^\circ C$	—	100	—	V
R <sub>th(j-f)</sub>	Thermal resistance	Junction to fin	—	—	0.027	$^\circ C/W$



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

