

MITSUBISHI SOFT RECOVERY DIODES

# FD500JV-90DA

HIGH POWER, HIGH FREQUENCY,  
PRESS PACK TYPE

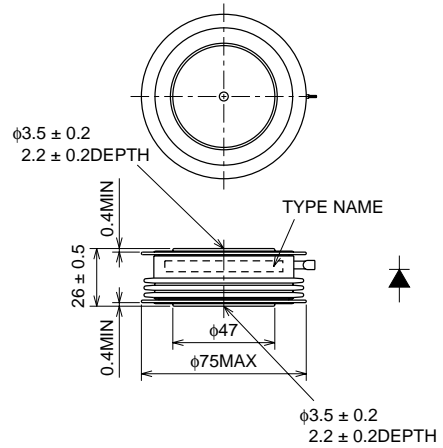
FD500JV-90DA



- IF(AV) Average forward current ..... 500A
- VRRM Repetitive peak reverse voltage ..... 4500V
- QRR Reverse recovery charge ..... 1500μC
- 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
VRRM	Repetitive peak reverse voltage	4500	V
VRSM	Non-repetitive peak reverse voltage	4500	V
VR(DC)	DC reverse voltage	3600	V

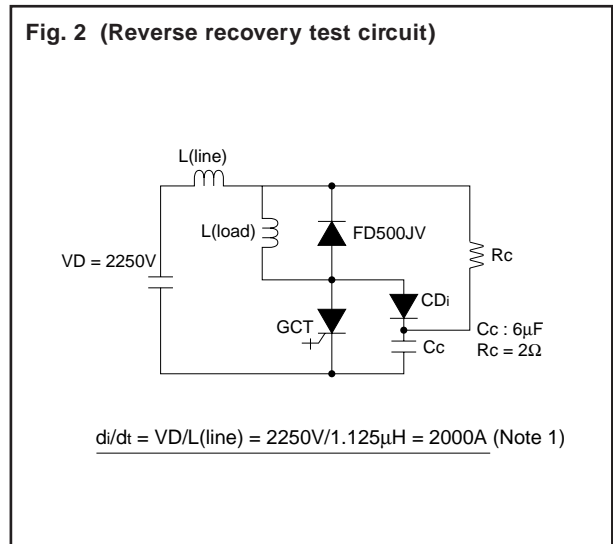
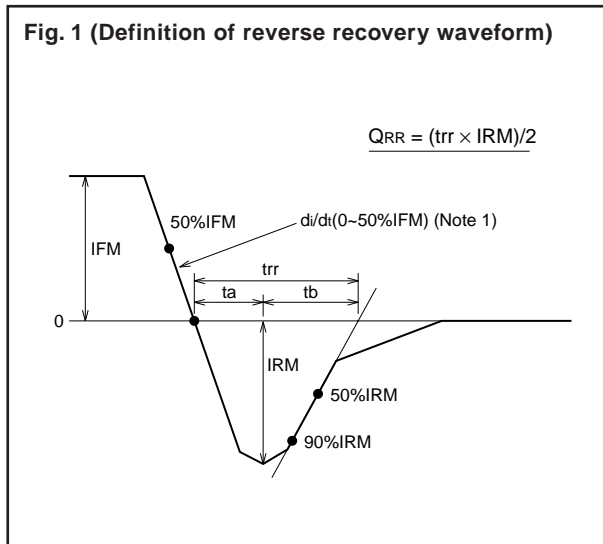
Symbol	Parameter	Conditions	Ratings	Unit
IF(RMS)	RMS forward current	Applied for all conduction angles	785	A
IF(AV)	Average forward current	f = 60Hz, sine wave $\theta = 180^\circ$ , $T_f = 76^\circ\text{C}$	500	A
IFSM	Surge forward current	One half cycle at 60Hz, $T_j = 125^\circ\text{C}$	10	kA
I <sup>2</sup> t	Current-squared, time integration		$4.2 \times 10^5$	A <sup>2</sup> s
di/dt	Critical rate of rise of reverse recovery current	IFM = 500A, VR ≤ 2250V, Tj = 125°C (Fig. 1 and Fig. 2)	2000	A/μs
Tj	Junction temperature		-20 ~ 125	°C
Tstg	Storage temperature		-40 ~ 150	°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
Q <sub>RR</sub>	Reverse recovery charge	$I_{FM} = 500A, di/dt = 1000A/\mu s, V_R = 2250V, T_j = 125^\circ C$ (Refer to Fig. 1 and Fig. 2)	—	—	1500	$\mu C$
E <sub>rec</sub>	Reverse recovery loss		—	4.0	—	J/P
t <sub>b</sub> /t <sub>a</sub>	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	—	—	.027	$^\circ C/W$



Note 1

In case of 2000A/ $\mu s$ , 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

