

MITSUBISHI SOFT RECOVERY DIODE

FD500JV-90DA

HIGH POWER, HIGH FREQUENCY
PRESS PACK TYPE

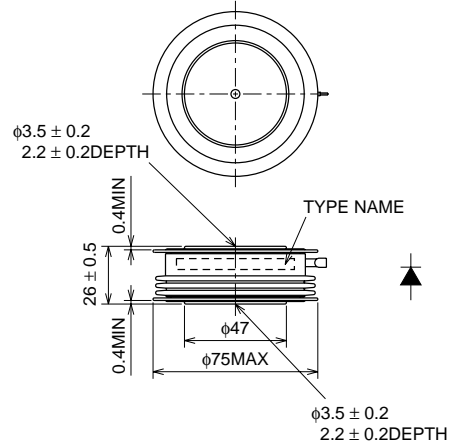
FD500JV-90DA



- VRRM Repetitive peak reverse voltage 4500V
- IT(AV) Average on-state current 500A

OUTLINE DRAWING

Dimensions in mm



APPLICATION

High-power inverters

Clamp diode for GTO Thyristor

Power supplies as high frequency rectifiers

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MAXIMUM RATINGS

Symbol	Parameter	Conditions	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 condition angles	785	A
IF(AV)	Average forward current	f = 60Hz, sinewave $\theta = 180^\circ$, $T_f = 76^\circ\text{C}$	500	A
IFSM	Surge forward current	One half cycle at 60Hz, $T_j = 125^\circ\text{C}$ start	10	kA
I^2t	Current-squared, time integration	One half cycle at 60Hz, $T_j = 125^\circ\text{C}$ start	4.2×10^5	A^2s
di/dt	Critical rate of rise of reverse recovery current	$I_{FM} = 500\text{A}$, $V_R = 2250\text{V}$, $T_j = 25/125^\circ\text{C}$ (See Fig. 1, 2)	2000	$\text{A}/\mu\text{s}$
T_j	Operation 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 value 530g	—	g

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{FM}	Forward voltage	$I_{FM} = 1570\text{A}$, $T_j = 125^\circ\text{C}$	—	—	3.5	V
I _{RRM}	Repetitive peak reverse current	$V_{RM} = 4500\text{V}$, $T_j = 125^\circ\text{C}$	—	—	80	mA
Q _{RR}	Reverse recovery charge	$I_{FM} = 500\text{A}$, di/dt = 1000A/ μs , $V_R = 2250\text{V}$, $T_j = 125^\circ\text{C}$	—	—	1500	μC
E _{rec}	Reverse recovery energy	(See Fig. 1, 2)	—	4	—	J/P
R _{th(j-f)}	Thermal resistance	Junction to Fin	—	—	0.027	K/W

Jul. 2002

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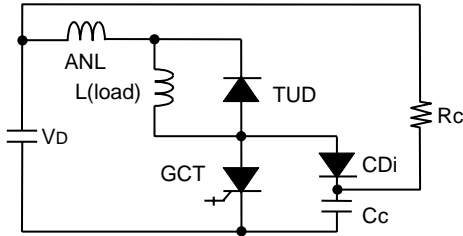


Fig. 1 Reverse recovery test circuit

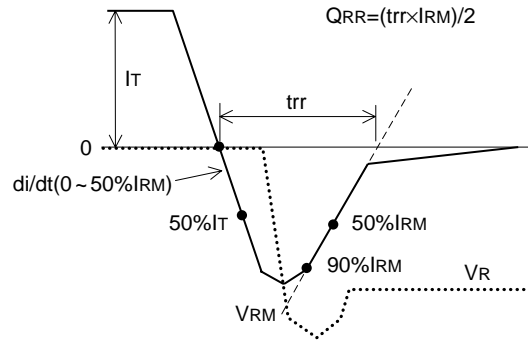
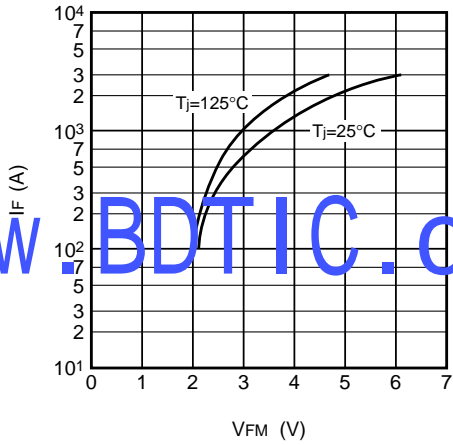


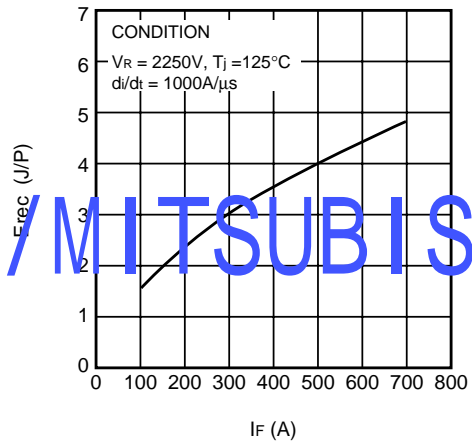
Fig. 2 Reverse recovery waveform

PERFORMANCE CURVES

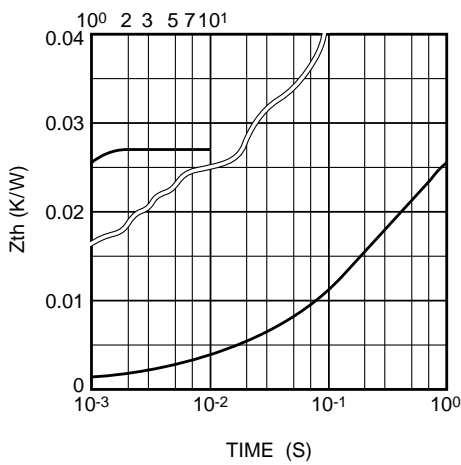
MAXIMUM ON STATE CHARACTERISTIC



Erec VS If (TYPICAL)



MAXIMUM THERMAL IMPEDANCE CHARACTERISTIC (JUNCTION TO FIN)



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