PRELIMINARY
Notice: This is not a final specification.
Some parametric limits are subject to change.

MITSUBISHI SOFT RECOVERY DIODE

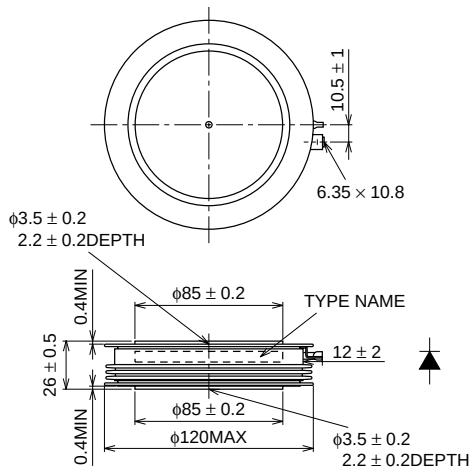
FD1500CV-90DA

HIGH POWER, HIGH FREQUENCY
PRESS PACK TYPE

FD1500CV-90DA

- V_{RRM} Repetitive peak reverse voltage 4500V
- $I_{T(AV)}$ Average on-state current 1200A

OUTLINE DRAWING **Dimensions in mm**



APPLICATION

High-power inverters

Fly-hweel diode for GCT Thyristor

Power supplies as high frequency rectifiers

MAXIMUM RATINGS

Symbol	Parameter	Conditions	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
$V_{(LTDS)}$	Long term DC stability voltage	—	3000	V

Symbol	Parameter	Conditions	Ratings	Unit
$I_{F(RMS)}$	RMS forward current	Applied for all condition angles	1900	A
$I_{F(AV)}$	Average forward current	f = 60Hz, sinewave θ = 180°, T_f =74°C	1200	A
I_{FSM}	Surge forward current	One half cycle at 60Hz, T_j =125°C start	26	kA
I^2t	Current-squared, time integration		2.8×10^6	A^2s
di/dt	Critical rate of rise of reverse recovery current	I_{FM} =1500A, V_R = 2250V, T_j = 25/125°C C_C =6μF, L_C = 0.3μH (See Fig. 1, 2)	1000	A/μs
T_j	Operation junction temperature		–40 ~ 125	°C
T_{stg}	Storage temperature		–40 ~ 150	°C
—	Mounting force required	(Recommended value 47kN)	39 ~ 55	kN
—	Weight	Typical value 1450g	—	g

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V_{FM}	Forward voltage	I_{FM} = 3400A, T_j = 125°C	—	—	5	V
I_{RRM}	Repetitive peak reverse current	V_{RM} = 4500V, T_j = 125°C	—	—	150	mA
Q_{RR}	Reverse recovery charge	I_{FM} = 1500A, di/dt = 1000A/μs, V_R = 2250V, T_j = 125°C	—	—	4000	μC
Erec	Reverse recovery energy	C_C = 6μF, L_C = 0.3μH (See Fig. 1, 2)	—	—	7	J/P
$R_{th(j-f)}$	Thermal resistance	Junction to Fin	—	—	0.0071	K/W

MITSUBISHI ELECTRIC

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FD1500CV-90DA

HIGH POWER, HIGH FREQUENCY
PRESS PACK TYPE

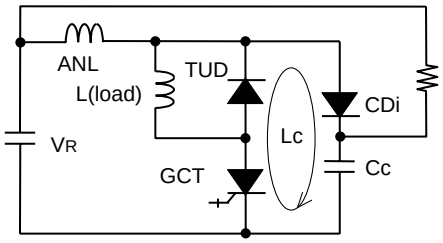


Fig. 1 Reverse recovery test circuit

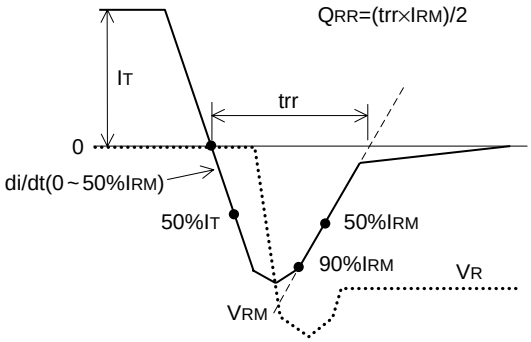
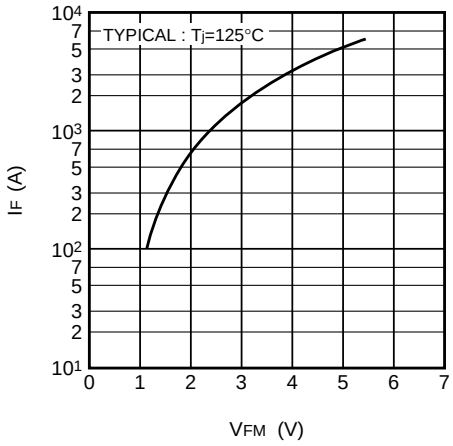


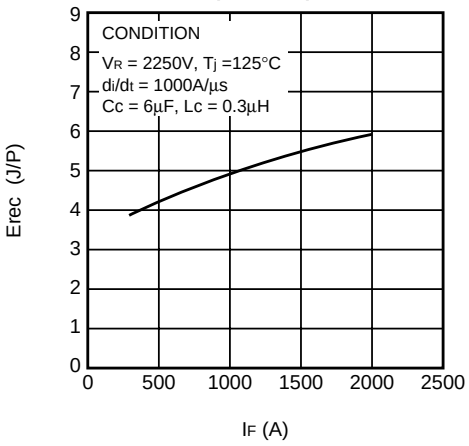
Fig. 2 Reverse recovery waveform

PERFORMANCE CURVES

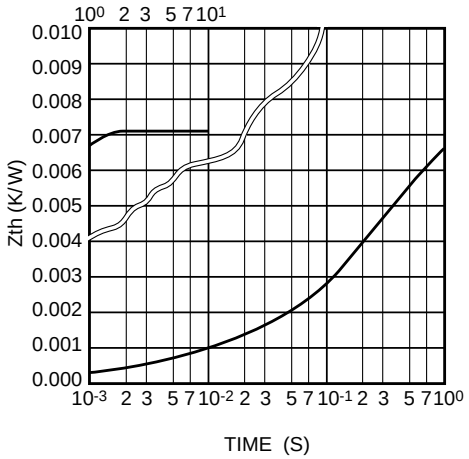
MAXIMUM ON STATE CHARACTERISTIC



Erec VS IF (TYPICAL)



MAXIMUM THERMAL IMPEDANCE CHARACTERISTIC (JUNCTION TO FIN)



MITSUBISHI ELECTRIC