MITSUBISHI SOFT RECOVERY DIODES

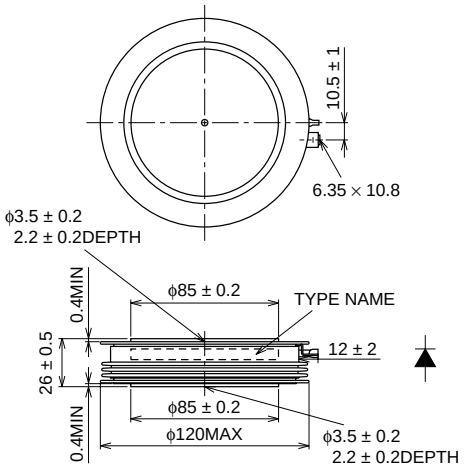
FD1500BV-90DA

HIGH POWER, HIGH FREQUENCY, PRESS PACK TYPE

FD1500BV-90DA

- $I_{F(AV)}$ Average forward current 1500A
- V_{RRM} Repetitive peak reverse voltage 4500V
- Q_{RR} Reverse recovery charge 3600μC
- Press pack type

OUTLINE DRAWING Dimensions in mm



APPLICATION

Free wheel 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
V_{LTDS}	Long term DC stability voltage at 100FIT	3000	V

Symbol	Parameter	Conditions	Ratings	Unit
$I_{F(RMS)}$	RMS forward current	Applied for all conduction angles	2350	A
$I_{F(AV)}$	Average forward current	f = 60Hz, sine wave θ = 180°, T_f = 65°C	1500	A
I_{FSM}	Surge forward current	One half cycle at 60Hz, T_j=125°C	30	kA
I^2t	Current-squared, time integration		3.7×10^6	A^2s
di/dt	Critical rate of rise of reverse recovery current	I_{FM} = 1500A, $V_R \leq$ 2250V, T_j = 125°C, With clamp circuit (Refer to Fig. 1 and Fig. 2)	2000	A/μs
T_j	Junction temperature		–20 ~ 125	°C
T_{stg}	Storage temperature		–40 ~ 150	°C
—	Mounting force required	(Recommended value 47kN)	39 ~ 55	kN
—	Weight	Typical 1220g	—	g

MITSUBISHI ELECTRIC

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ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{RRM}	Repetitive peak reverse current	V_{RM} = 4500V, T_j = 125°C	—	—	150	mA
V_{FM}	Forward voltage	I_{FM} = 3400A, T_j = 125°C	—	—	3.5	V
Q_{RR}	Reverse recovery charge	I_{FM} = 1500A, di/dt = 1000A/µs, V_R = 2250V,	—	—	3600	µC
Erec	Reverse recovery loss	T_j = 125°C	—	8.0	—	J/P
tb/ta	Soft recovery rate	With clamp circuit (Refer to Fig. 1 and Fig. 2)	—	2	—	—
$R_{th(j-f)}$	Thermal resistance	Junction to fin	—	—	0.11	°C/W

Fig. 1 (Definition of reverse recovery waveform)

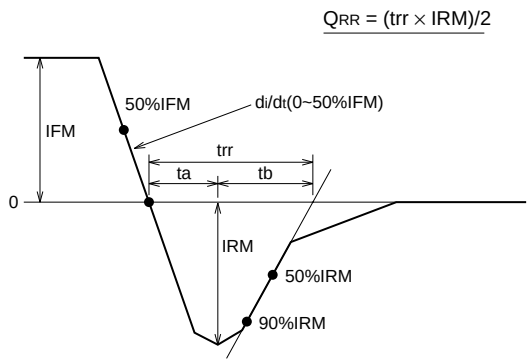
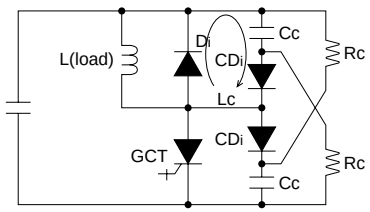


Fig. 2 (Reverse recovery test circuit)



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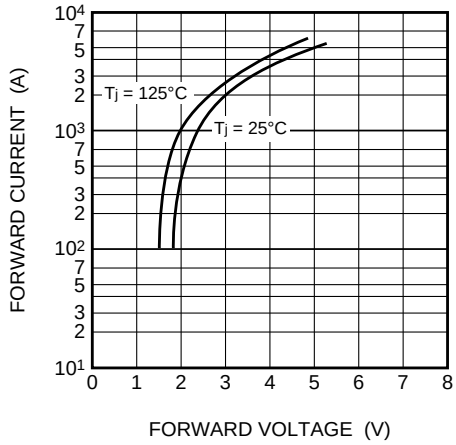
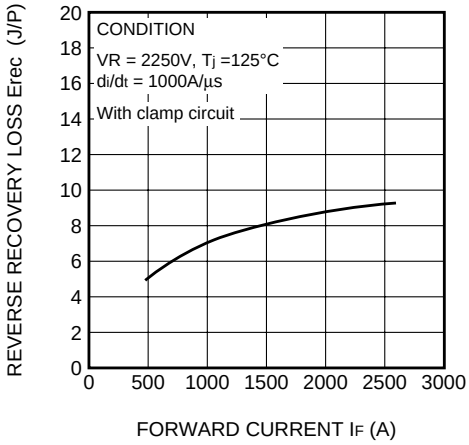
PERFORMANCE CURVES

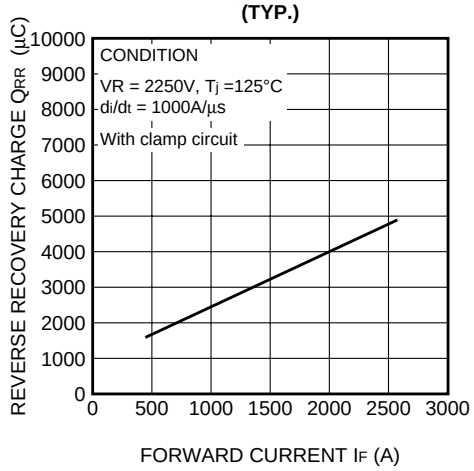
MAXIMUM FORWARD CHARACTERISTICS



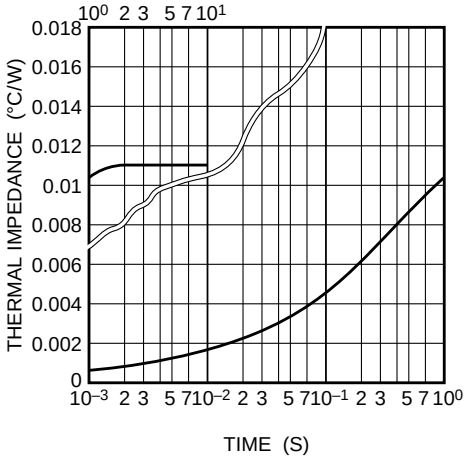
Erec VS IF (TYP.)



QRR VS IF (TYP.)



MAXIMUM THERMAL IMPEDANCE CHARACTERISTIC (JUNCTION TO FIN)



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