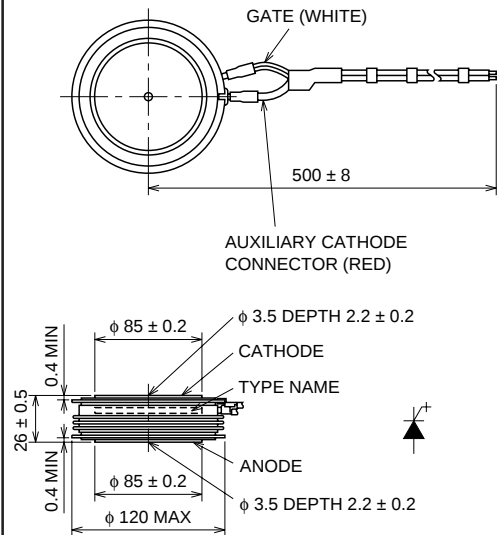


FG4000BX-90DAHIGH POWER INVERTER USE
PRESS PACK TYPE**FG4000BX-90DA**

- ITQRM Repetitive controllable on-state current 3000A
- IT(AV) Average on-state current 1000A
- VDRM Repetitive peak off state voltage 4500V
- Anode short type

OUTLINE DRAWING

Dimensions in mm

**APPLICATION**

Inverters, D.C. choppers, Induction heaters, D.C. to D.C. converters.

MAXIMUM RATINGS

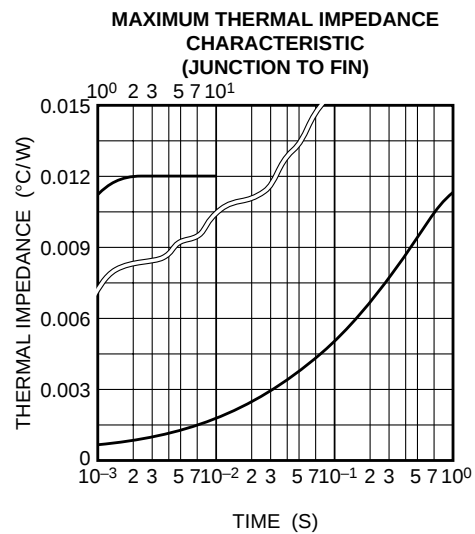
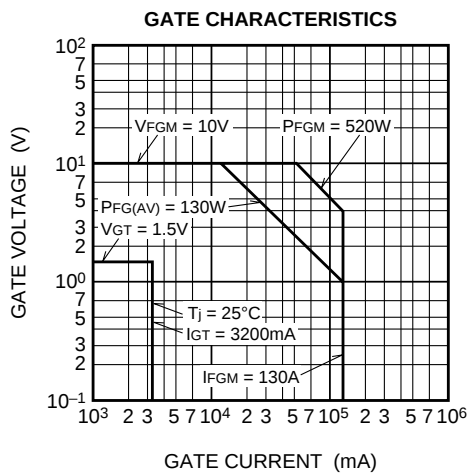
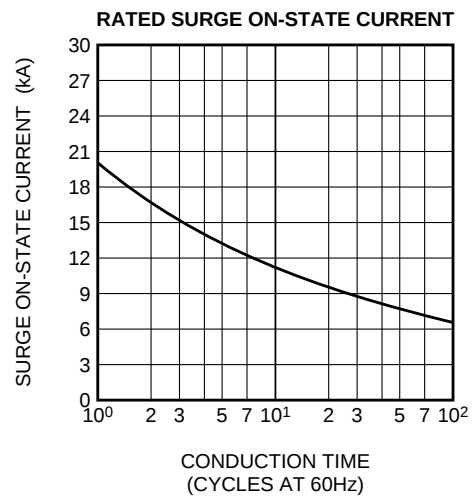
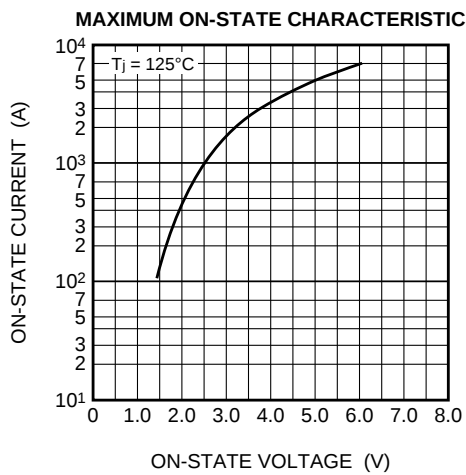
Symbol	Parameter	Voltage class	Unit
		90DA	
VRRM	Repetitive peak reverse voltage	19	V
VRSM	Non-repetitive peak reverse voltage	19	V
VR(DC)	DC reverse voltage	19	V
VDRM	Repetitive peak off-state voltage ⁺	4500	V
VDSM	Non-repetitive peak off-state voltage ⁺	4500	V
VD(DC)	DC off-state voltage ⁺	2500	V

⁺ : V_{GK} = -2V

Symbol	Parameter	Conditions	Ratings	Unit
ITQRM	Repetitive controllable on-state current	V _{DM} = 4500V, T _J = 125°C, C _s = 3.0μF, L _s = 0.25μH	3000	A
IT(RMS)	RMS on-state current		1600	A
IT(AV)	Average on-state current	f = 60Hz, sine wave θ = 180°, T _f = 78°C	1000	A
ITSM	Surge (non-repetitive) on-state current	One half cycle at 60Hz	20	kA
I ² t	Current-squared, time integration	One cycle at 60Hz	1.7 × 10 ⁶	A ² s
diT/dt	Critical rate of rise of on-state current	V _D = 3400V, I _{GM} = 25A, T _J = 125°C	500	A/μs
VFGM	Peak forward gate voltage		10	V
VRGM	Peak reverse gate voltage		19	V
IFGM	Peak forward gate current		130	A
IRGM	Peak gate reverse current		1100	A
PFGM	Peak forward gate power dissipation		520	W
PRGM	Peak reverse gate power dissipation		33	kW
PFG(AV)	Average forward gate power dissipation		130	W
PRG(AV)	Average reverse gate power dissipation		300	W
T _J	Junction temperature		-40 ~ +125	°C
T _{stg}	Storage temperature		-40 ~ +150	°C
—	Mounting force required	Recommended value 38	32 ~ 40	kN
—	Weight	Standard value	1600	g

FG4000BX-90DAHIGH POWER INVERTER USE
PRESS PACK TYPE**ELECTRICAL CHARACTERISTICS**

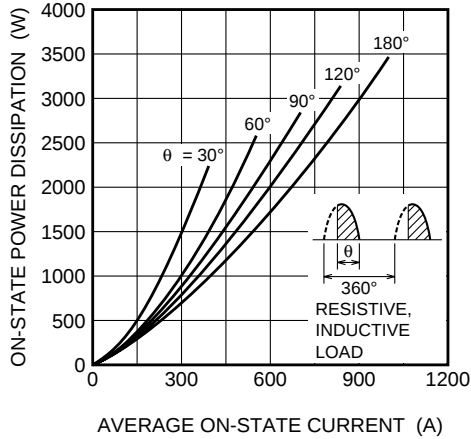
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V _{TM}	On-state voltage	T _j = 125°C, I _{TM} = 3000A, Instantaneous measurment	—	—	3.8	V
I _{RRM}	Repetitive peak reverse current	T _j = 125°C, V _{RRM} Applied	—	—	100	mA
I _{DRM}	Repetitive peak off-state current	T _j = 125°C, V _{DRM} Applied, V _{GK} = -2V	—	—	150	mA
I _{RG}	Reverse gate current	T _j = 125°C, V _{RG} = 19V	—	—	100	mA
dv/dt	Critical rate of rise of off-state voltage	T _j = 125°C, V _D = 2250V, V _{GK} = -2V	1000	—	—	V/μs
t _{gt}	Turn-on time	T _j = 125°C, I _{TM} = 3000A, I _{GM} = 25A, V _D = 3400V	—	—	6	μs
t _{gq}	Turn-off time	T _j = 125°C, I _{TM} = 3000A, V _{DM} = 4500V, diGQ/dt = -40A/μs V _{RG} = 17V, C _S = 3.0μF, L _S = 0.25μH	—	—	30	μs
I _{GQM}	Peak gate turn-off current		—	750	—	A
V _{GT}	Gate trigger voltage	DC METHOD : V _D = 24V, R _L = 0.1Ω, T _j = 25°C	—	—	1.5	V
I _{GT}	Gate trigger current		—	—	3200	mA
R _{th(j-f)}	Thermal resistance	Junction to fin	—	—	0.012	°C/W

PERFORMANCE CURVES

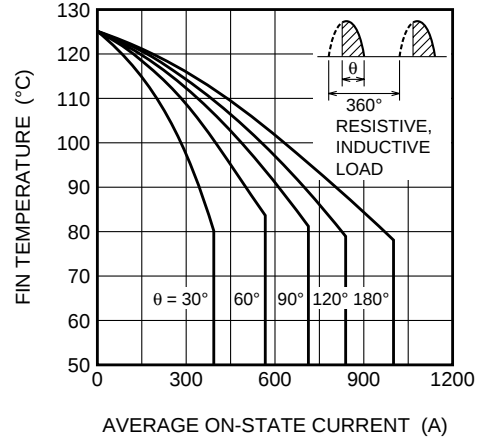
FG4000BX-90DA

HIGH POWER INVERTER USE
PRESS PACK TYPE

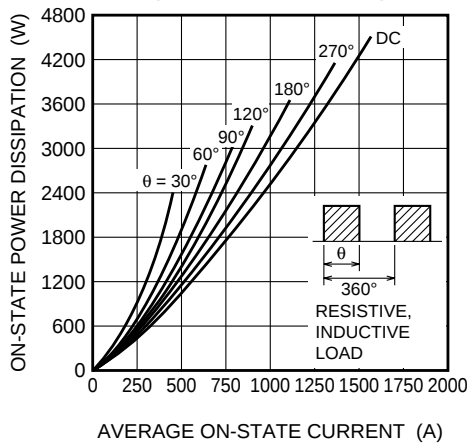
MAXIMUM ON-STATE POWER DISSIPATION
CHARACTERISTICS
(SINGLE-PHASE HALF WAVE)



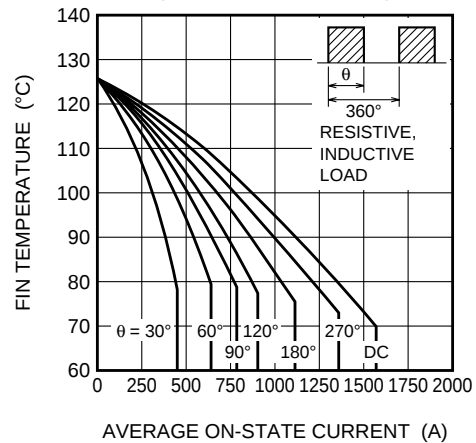
ALLOWABLE FIN TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE HALF WAVE)



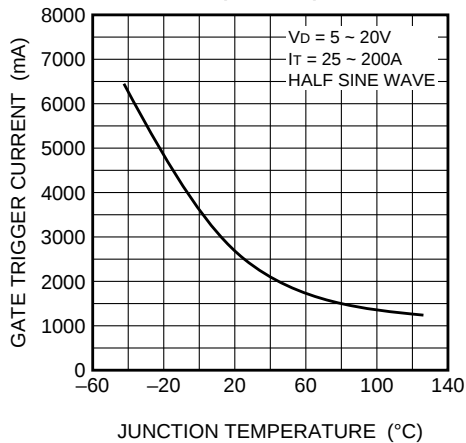
MAXIMUM ON-STATE POWER DISSIPATION
CHARACTERISTICS
(RECTANGULAR WAVE)



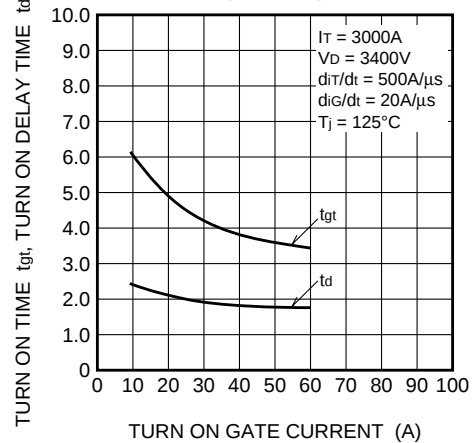
ALLOWABLE FIN TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(RECTANGULAR WAVE)



GATE TRIGGER CURRENT VS.
JUNCTION TEMPERATURE
(TYPICAL)



TURN ON TIME, TURN ON DELAY TIME
VS. TURN ON GATE CURRENT
(TYPICAL)



FG4000BX-90DA

HIGH POWER INVERTER USE
PRESS PACK TYPE

