

(SG4000GXH26)

INVERTER APPLICATION

- Repetitive Peak Off-State Voltage : $V_{DRM} = 4500V$
- R.M.S On-State Current : $I_T (RMS) = 1900A$
- Peak Turn-Off Current : $I_{TGQM} = 4000A$
- Critical Rate of Rise of On-State Current : $di / dt = 500A / \mu s$
- Critical Rate of Rise of Off-State Voltage : $dv / dt = 1000V / \mu s$

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-state Voltage (Note 1)	V_{DRM}	4500	V
Repetitive Peak Reverse Voltage	V_{RRM}	16	V
Peak Turn-Off Current (Note 2)	I_{TGQM}	4000 (6 μ F) 3000 (3 μ F)	A
R.M.S On-State Current (Note 3)	$I_T (RMS)$	1900	A
Peak One Cycle Surge On-State Current (non repetitive, 10ms width half sine waveform)	I_{TSM}	20000	A
Critical Rate Of Rise Of On-State Current (Note 4)	di / dt	500	A / μs
Peak Forward Gate Current	I_{FGM}	100	A
Average Forward Gate Power Dissipation	$P_{FG} (AV)$	100	W
Average Reverse Gate Power Dissipation	$P_{RG} (AV)$	300	W
R.M.S Gate Current (Note 5)	$I_G (RMS)$	84	A
Peak Reverse Gate Voltage (at Static)	V_{RGM}	16	V
Operating Junction Temperature Range	T_j	-40~125	°C
Storage Temperature Range	T_{stg}	-40~150	°C
Mounting Force	—	38.7 \pm 5.4	kN

Note 1 $V_{GK} = -2V$

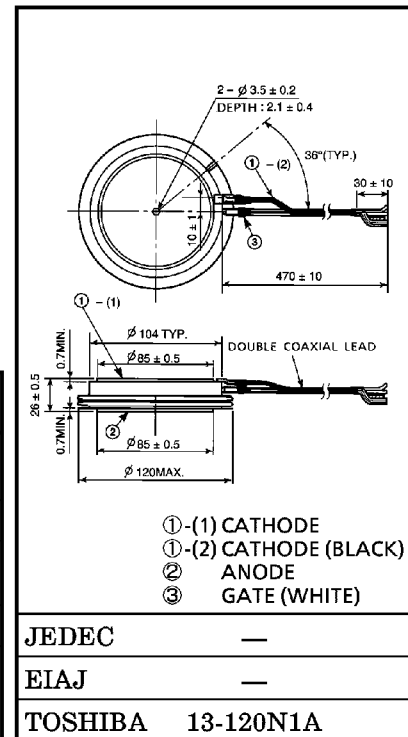
Note 2 $V_{DM} = 4000V$, $R_s = 5\Omega$, $di_{GQ} / dt = 50A / \mu s$, $V_{DSP} \leq 1000V^*$, $L_s \leq 0.2\mu H$
 *FOR 3 μ F-3000A, 1200V FOR 6 μ F-4000A

Note 3 50Hz Half Sine Waveform at $T_f = 71^\circ C$

Note 4 $V_D = 1/2 V_{DRM}$, $I_{GM} = 25A$

Note 5 Ambient Temperature of coaxial gate-cathode lead = 90°C

Unit in mm



Weight : 1700g

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-state Current	I_{DRM}	$V_{DRM} = \text{RATED}$, $V_{GK} = -2V$, $T_j = 125^\circ\text{C}$	—	—	100	mA	
Repetitive Peak Reverse Current	I_{RRM}	$V_{RRM} = \text{RATED}$, $T_j = 125^\circ\text{C}$	—	—	10	mA	
Repetitive Peak Reverse Gate Current	I_{RGM}	$V_{RGM} = 16V$, $T_j = 125^\circ\text{C}$	—	—	10	mA	
Peak On-State Voltage	V_{TM}	$I_{TM} = 4000A$, $T_j = 125^\circ\text{C}$	—	—	4.0	V	
Gate Trigger Voltage	V_{GT}	$V_D = 24V$, $R_L = 0.1\Omega$	$T_j = -40^\circ\text{C}$	—	—	1.7	V
			$T_j = 25^\circ\text{C}$	—	—	1.5	V
Gate Trigger Current	I_{GT}		$T_j = -40^\circ\text{C}$	—	—	10	A
			$T_j = 25^\circ\text{C}$	—	—	4	A
Turn-On Delay Time	t_d	$V_D = 1/2 V_{DRM}$, $di/dt = 500A/\mu s$,	—	—	3	μs	
Turn-On Time	t_{gt}	$I_{GM} = 25A$, $T_j = 25^\circ\text{C}$	—	—	10	μs	
Critical Rate Of Rise Of Off-State Voltage	dv/dt	$V_{DRM} = 2/3 \text{ RATED}$, $T_j = 125^\circ\text{C}$, $V_{GK} = -10V$	1000	—	—	$V/\mu s$	
Storage Time	t_s	$I_{TGQ} = 4000A$, $V_{DM} = 4000V$,	—	—	30	μs	
Gate Turn-Off Time	t_{gq}	$V_D = 1/2 V_{DRM}$,	—	—	32	μs	
Tail Time	t_{tail}	$di_{GQ}/dt = 50A/\mu s$, $C_s = 6\mu F$, $R_s = 5\Omega$,	—	—	150	μs	
Gate Turn-Off Current	I_{GQ}	$T_j = 125^\circ\text{C}$, $L_s \leq 0.2\mu H$	—	850	—	A	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.011	$^\circ\text{C}/W$	

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