

# SG1500(R,U,W)22

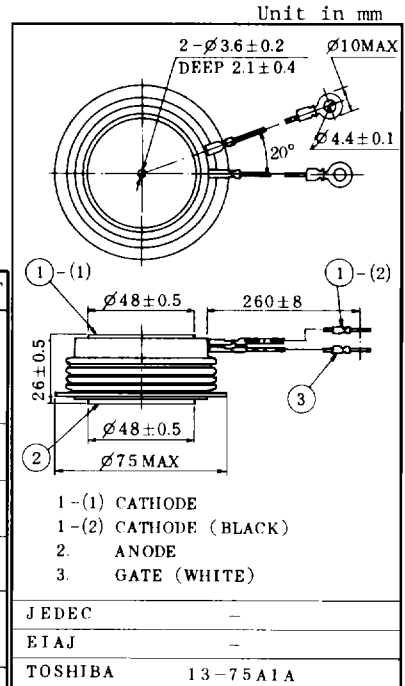
GATE TURN-OFF THYRISTOR

CHOPPER, INVERTER APPLICATION

- Repetitive Peak Off-State Voltage :  $V_{DRM}=1300, 1600, 1800V$
- R.M.S On-State Current :  $I_{T(RMS)}=550A$
- Peak Turn-Off Current :  $I_{TGQM}=1500A$
- 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	SG1500R22	$V_{DRM}$	1300	V
	SG1500U22		1600	
	SG1500W22		1800	
Repetitive Peak Reverse Voltage		$V_{RRM}$	15	V
Peak Turn-Off Current (Note 1)		$I_{TGQM}$	1500	A
R.M.S On-State Current (Note 2)		$I_{T(RMS)}$	550	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		$I_{TSM}$	8000(50Hz)	A
			8800(60Hz)	
Critical Rate of Rise of On-State Current (Note 3)		$di/dt$	500	A/ $\mu s$
Peak Forward Gate Current (Note 4)		$I_{FGM}$	40	A
Average Forward Gate Power Dissipation		$P_{G(AV)}$	8	W
R.M.S Reverse Gate Current		$I_{RG(RMS)}$	60	A
Peak Reverse Gate Power Dissipation (Note 5)		$P_{RGM}$	10	kW
Peak Reverse Gate Voltage		$V_{RGM}$	15	V
Storage Temperature		$T_{stg}$	-40~125	$^{\circ}C$
Operating Junction Temperature Range		$T_j$	-40~125	$^{\circ}C$
Mounting Force		-	1200 $\pm$ 120	kg



Weight : 500g

Note 1 :  $V_D=1/2$  Rated,  $C_S=3\mu F$ ,  $R_S=20\Omega$ ,  $di_{RG}/dt=30A/\mu s$ ,  $I_{RG} \leq 370A$   
 $T_j=125^{\circ}C$ , ( $V_{DSP} \leq 400V$ )

Note 2 : Half Sine Waveform

Note 3 :  $V_D=1/2$  Rated,  $I_{TM}=1500A$ ,  $I_G=15A$ ,  $t_r=1\mu s$ ,  $f=50Hz$ ,  $T_j=125^{\circ}C$

Note 4 : Pulse Width : Max. 20 $\mu s$ , Duty : Max. 20%

Note 5 : Pulse Width : Max. 30 $\mu s$ , Duty : Max. 2%

## ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}=\text{Rated}$ , $R_{GK}=20\Omega$ $T_j=125^\circ\text{C}$	-	-	40	mA	
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RRM}=\text{Rated}$ , $T_j=125^\circ\text{C}$	-	-	100	mA	
Repetitive Peak Reverse Gate Current	$I_{RGM}$	$V_{RGM}=\text{Rated}$ , $T_j=125^\circ\text{C}$	-	-	100	mA	
Peak On-State Voltage	$V_{TH}$	$I_{TM}=1500\text{A}$ , $T_c=125^\circ\text{C}$	-	-	3.0	V	
Gate Trigger Voltage	$V_{GT}$	$V_D=24\text{V}$ $R_L=0.1\Omega$	$T_c=-40^\circ\text{C}$	-	-	-	V
			$T_c=25^\circ\text{C}$	-	-	1.0	
Gate Trigger Current	$I_{GT}$	$R_L=0.1\Omega$	$T_c=-40^\circ\text{C}$	-	-	-	A
			$T_c=25^\circ\text{C}$	-	-	2.0	
Gate Non-Trigger Voltage	$V_{GD}$	$V_D=1/2$ Rated	0.3	-	-	V	
Gate Non-Trigger Current	$I_{GD}$	$T_c=125^\circ\text{C}$	10	-	-	mA	
Delay Time	$t_d$	$V_D=1/2$ Rated $di/dt=300\text{A}/\mu\text{s}$	-	-	2.5	$\mu\text{s}$	
Turn-On Time	$t_{gt}$	$I_{TM}=1500\text{A}$ , $I_G=15\text{A}$ $t_r=1\mu\text{s}$ , $T_c=25^\circ\text{C}$	-	-	10.0	$\mu\text{s}$	
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{DRM}=2/3$ Rated $T_j=125^\circ\text{C}$ , $V_{GK}=-4\text{V}$ Exponential Rise	1000	-	-	$\text{V}/\mu\text{s}$	
Holding Current	$I_H$	$T_c=25^\circ\text{C}$ , $R_L=0.1\Omega$	-	40	-	A	
Storage Time	$t_s$	$I_T=1500\text{A}$ , $V_D=1/2$ Rated	-	-	20	$\mu\text{s}$	
Gate Turn-Off Time	$t_{gq}$	$V_{DM}=2/3$ Rated, $C_S=3\mu\text{F}$	-	-	22	$\mu\text{s}$	
Tail Time	$t_{tail}$	$di_{RG}/dt=30\text{A}/\mu\text{s}$	-	-	50	$\mu\text{s}$	
Turn-Off Gate Current	$I_{RG}$	$T_c=120^\circ\text{C}$	-	370	400	A	
Thermal Resistance	$R_{th(j-f)}$	Junction to Fin	-	-	0.035	$^\circ\text{C}/\text{W}$	

# SG1500(R,U,W)22

