

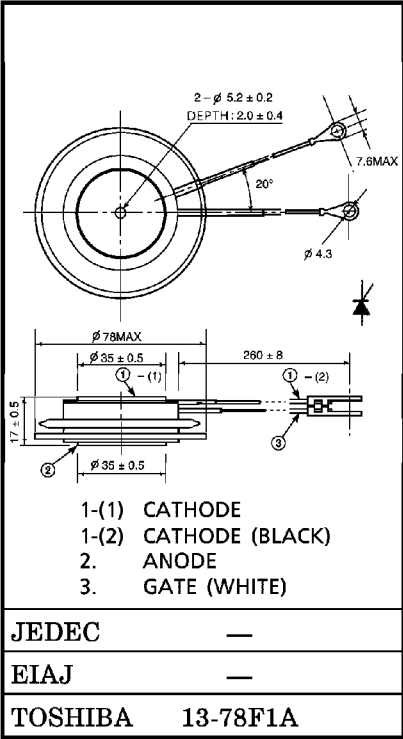
TOSHIBA ALLOY-FREE THYRISTOR

SF800U29

HIGH POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage :  $V_{DRM}$
- Repetitive Peak Reverse Voltage :  $V_{RRM}$
- Average On-State Current :  $I_T(AV)=800A$
- Critical Rate of Rise of On-State Current :  $di/dt=200A/\mu s$
- Critical Rate of Rise of Off-State Voltage :  $dv/dt=500V/\mu s$
- Flat Package

Unit in mm



Weight : 250g

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## MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	$V_{\text{DRM}}$ $V_{\text{RRM}}$	1600	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive < 5ms, $T_j = 0 \sim 125^\circ\text{C}$ )	$V_{\text{RSM}}$	1700	V
R.M.S On-State Current	$I_{\text{T}}(\text{RMS})$	1260	A
Average On-State Current	$I_{\text{T}}(\text{AV})$	800	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{\text{TSM}}$	12000 (50Hz) 13200 (60Hz)	A
$I^2t$ Limit Value	$I^2t$	$720 \times 10^3$	$\text{A}^2\text{s}$
Critical Rate of Rise of On-State Current (Note)	$di / dt$	200	$\text{A} / \mu\text{s}$
Peak Gate Power Dissipation	$P_{\text{GM}}$	20	W
Average Gate Power Dissipation	$P_{\text{G}}(\text{AV})$	4	W
Peak Forward Gate Current	$I_{\text{GM}}$	4	A
Peak Forward Gate Voltage	$V_{\text{FGM}}$	20	V
Peak Reverse Gate Voltage	$V_{\text{RGM}}$	5	V
Junction Temperature	$T_j$	$-40 \sim 125$	$^\circ\text{C}$
Storage Temperature Range	$T_{\text{stg}}$	$-40 \sim 125$	$^\circ\text{C}$
Mounting Force	—	$14.7 \pm 1.5$	kN

Note :  $V_{\text{D}} = 1/2$  Rated,  $T_j = 120^\circ\text{C}$ , Gate Supply ( $V_{\text{G}} = 15\text{V}$ ,  $R_{\text{G}} = 8\Omega$ ,  $t_{\text{r}} \leq 1\mu\text{s}$ )

## ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	$I_{\text{DRM}}$ $I_{\text{RRM}}$	$V_{\text{DRM}} = V_{\text{RRM}} = 1600\text{V}$ $T_{\text{j}} = 125^{\circ}\text{C}$		—	35	mA
Peak On-State Voltage	$V_{\text{TM}}$	$I_{\text{TM}} = 2500\text{A}$ , $T_{\text{j}} = 25^{\circ}\text{C}$		—	2.15	V
Gate Trigger Voltage	$V_{\text{GT}}$	$V_{\text{D}} = 6\text{V}$ , $R_{\text{L}} = 6\Omega$	$T_{\text{j}} = -40^{\circ}\text{C}$	—	5.0	V
			$T_{\text{j}} = 25^{\circ}\text{C}$	—	4.0	
Gate Trigger Current	$I_{\text{GT}}$		$T_{\text{j}} = -40^{\circ}\text{C}$	—	460	mA
			$T_{\text{j}} = 25^{\circ}\text{C}$	—	320	
Gate Non-Trigger Voltage	$V_{\text{GD}}$	$V_{\text{D}} = 1/2 \text{ Rated}$ , $T_{\text{j}} = 125^{\circ}\text{C}$		0.2	—	V
Gate Non-Trigger Current	$I_{\text{GD}}$			5	—	mA
Delay Time	$t_{\text{d}}$	$V_{\text{D}} = 1/2 \text{ Rated}$ , $T_{\text{j}} = 25^{\circ}\text{C}$ Gate Supply ( $V_{\text{G}} = 15\text{V}$ , $R_{\text{G}} = 8\Omega$ , $t_{\text{r}} \leq 1\mu\text{s}$ )		—	4	$\mu\text{s}$
Gate Turn-On Time	$t_{\text{gt}}$			—	6	$\mu\text{s}$
Holding Current	$I_{\text{H}}$	$T_{\text{j}} = 25^{\circ}\text{C}$ , $R_{\text{L}} = 6\Omega$		—	300	mA
Critical Rate of Rise of Off-State Voltage	$\text{dv} / \text{dt}$	$V_{\text{DRM}} = 2/3 \text{ Rated}$ , $T_{\text{j}} = 125^{\circ}\text{C}$ Gate Open, Exponential Rise		500	—	$\text{V} / \mu\text{s}$
Thermal Resistance (Junction to Case)	$R_{\text{th(j-f)}}$	DC		—	0.04	$^{\circ}\text{C} / \text{W}$