

**APPLICATIONS**

- High Power Inverters And Choppers
- UPS
- Railway Traction
- Induction Heating
- AC Motor Drives
- Cycloconverters

**FEATURES**

- Double Side Cooling
- High Surge Capability
- High Voltage

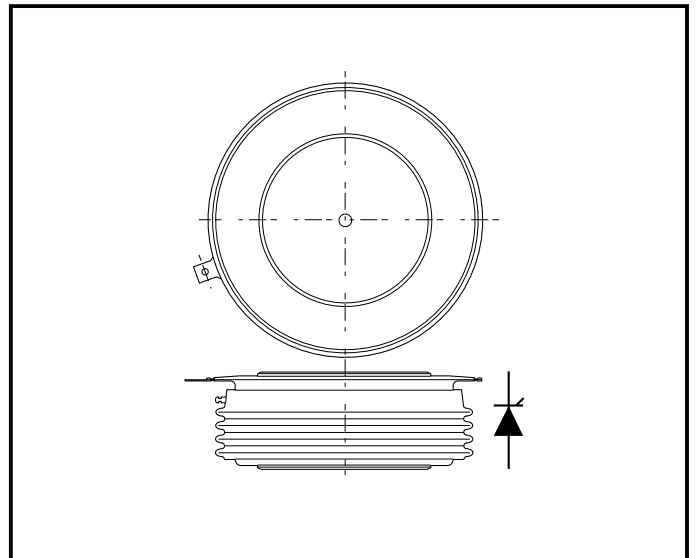
**VOLTAGE RATINGS**

Type Number	Repetitive Peak Voltages		Conditions
	$V_{DRM}$	$V_{RRM}$	
TF921 25H	2500		$V_{RSM} = V_{RRM} + 100V$ $I_{DRM} = I_{RRM} = 100mA$ at $V_{RRM}$ or $V_{DRM}$ & $T_{vj}$
TF921 24H	2400		
TF921 22H	2200		

Lower voltage grades available.

**KEY PARAMETERS**

$V_{DRM}$	<b>2500V</b>
$I_{T(RMS)}$	<b>1570A</b>
$I_{TSM}$	<b>13600A</b>
$dV/dt$	<b>500V/<math>\mu s</math></b>
$dI/dt$	<b>500A/<math>\mu s</math></b>
$t_q$	<b>120<math>\mu s</math></b>



Outline type code: **MU169**.  
See Package Details for further information.

**CURRENT RATINGS**

Symbol	Parameter	Conditions	Max.	Units
$I_{T(AV)}$	Mean on-state current	Half sinewave, 50Hz, $T_{case} = 80^{\circ}C$	1000	A
$I_{T(RMS)}$	RMS value	Half sinewave, 50Hz, $T_{case} = 80^{\circ}C$	1570	A

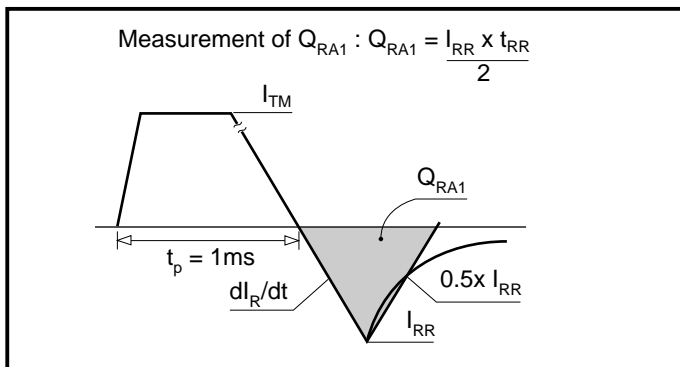
**SURGE RATINGS**

Symbol	Parameter	Conditions	Max.	Units
$I_{TSM}$	Surge (non-repetitive) on-state current	10ms half sine; $V_R = 0\% V_{RRM}$ ; $T_j = 125^\circ\text{C}$	13.6	kA
$I^2t$	$I^2t$ for fusing	10ms half sine; $V_R = 0\% V_{RRM}$ ; $T_j = 125^\circ\text{C}$	$930 \times 10^3$	$\text{A}^2\text{s}$

**THERMAL AND MECHANICAL DATA**

Symbol	Parameter	Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.02	$^\circ\text{C/W}$
		Single side cooled	Anode dc	-	-	$^\circ\text{C/W}$
			Cathode dc	-	-	$^\circ\text{C/W}$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 23.5kN with mounting compound	Double side	-	0.006	$^\circ\text{C/W}$
			Single side	-	0.012	$^\circ\text{C/W}$
$T_{vj}$	Virtual junction temperature	On-state (conducting)	-	135	$^\circ\text{C}$	
		Reverse (blocking)	-	125	$^\circ\text{C}$	
$T_{stg}$	Storage temperature range		-40	150	$^\circ\text{C}$	
-	Clamping force		22.3	24.6	kN	

**MEASUREMENT OF RECOVERED CHARGE -  $Q_{RA1}$**



**DYNAMIC CHARACTERISTICS**

Symbol	Parameter	Conditions	Min.	Max.	Units	
$V_{TM}$	Maximum on-state voltage	At 1500A peak, $T_{case} = 25^{\circ}C$	-	1.85	V	
$I_{RRM}/I_{DRM}$	Peak reverse and off-state current	At $V_{RRM}/V_{DRM}$ , $T_{case} = 125^{\circ}C$	-	100	mA	
dV/dt	Maximum linear rate of rise of off-state voltage	Linear to 60% $V_{DRM}$ , $T_j = 125^{\circ}C$ , Gate open circuit	-	500	V/ $\mu$ s	
di/dt	Rate of rise of on-state current	Gate source 20V, 20 $\Omega$	Repetitive 50Hz	-	500	A/ $\mu$ s
		$t_r \leq 0.5\mu$ s, $T_j = 125^{\circ}C$	Non-repetitive	-	800	A/ $\mu$ s
$V_{T(TO)}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	1.1	V	
$r_T$	On-state slope resistance	At $T_{vj} = 125^{\circ}C$	-	0.375	m $\Omega$	
$t_{gd}$	Delay time	$T_j = 25^{\circ}C$ , $I_T = 50A$ , $V_D = 300V$ , $I_G = 1A$ , $di/dt = 50A/\mu$ s, $dI_G/dt = 1A/\mu$ s	1.5*	-	$\mu$ s	
$t_{(ON)TOT}$	Total turn-on time		3*	-	$\mu$ s	
$I_H$	Holding current	$T_j = 25^{\circ}C$ , $I_{TM} = 1A$ , $V_D = 12V$	100*	-	mA	
$I_L$	Latching current	$T_j = 25^{\circ}C$ , $I_G = 0.5A$ , $V_D = 12V$	300*	-	mA	
$t_q$	Turn-off time	$T_j = 125^{\circ}C$ , $I_T = 1380A$ , $V_R = 100V$ , $dV/dt = 20V/\mu$ s to $0.6V_{DRM}$ , $dI_R/dt = 50A/\mu$ s, $t_p = 1ms$ .	$t_q$ code: H	-	120	$\mu$ s
$Q_{RR}$	Reverse recovery charge		-	2200	$\mu$ C	

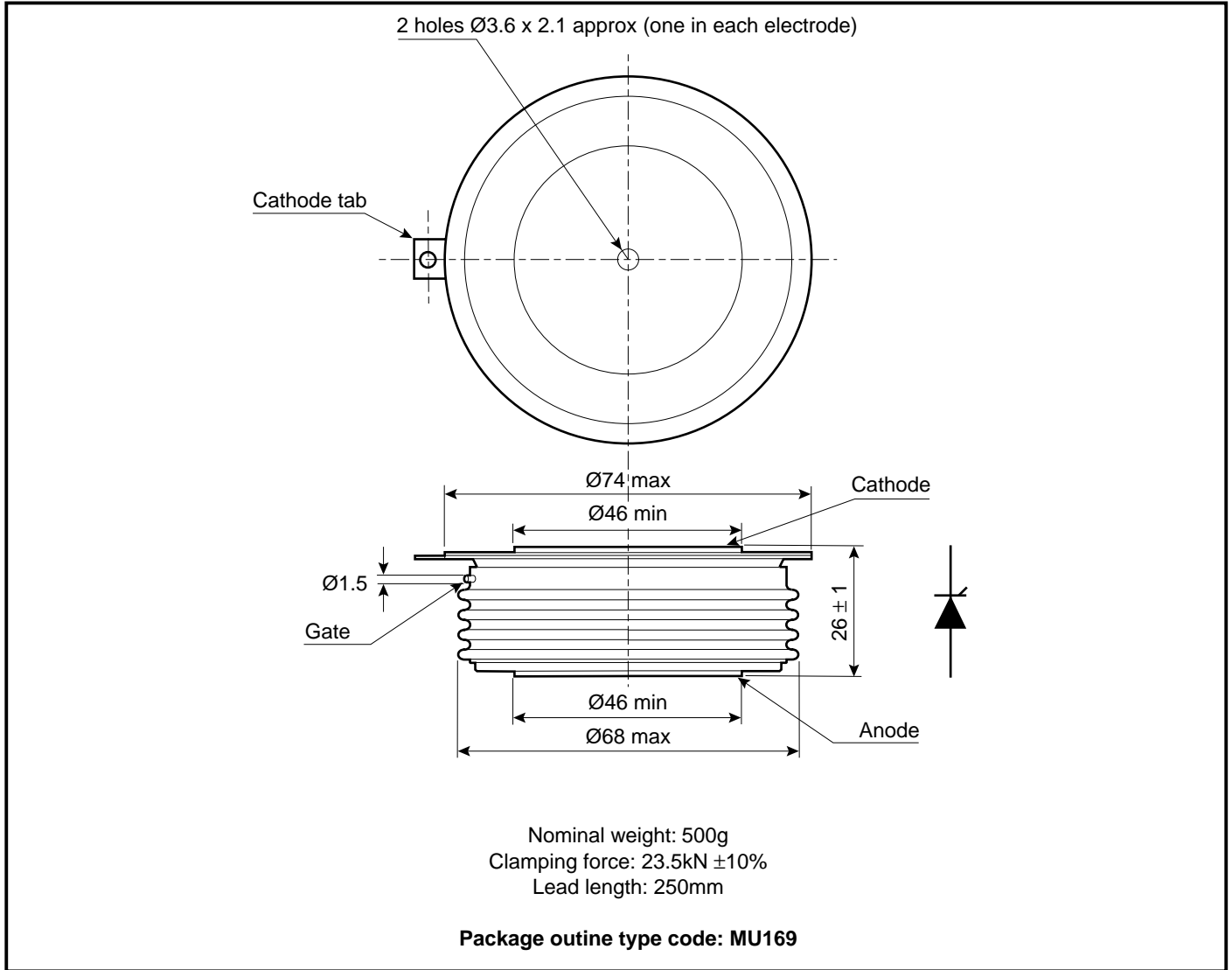
\*Typical value.

**GATE TRIGGER CHARACTERISTICS AND RATINGS**

Symbol	Parameter	Conditions	Typ.	Max.	Units
$V_{GT}$	Gate trigger voltage	$V_{DRM} = 12V$ , $T_{case} = 25^{\circ}C$ , $R_L = 6\Omega$	-	3.0	V
$I_{GT}$	Gate trigger current	$V_{DRM} = 12V$ , $T_{case} = 25^{\circ}C$ , $R_L = 6\Omega$	-	250	mA
$V_{GD}$	Gate non-trigger voltage	At $V_{DRM}$ , $T_{case} = 125^{\circ}C$ , $R_L = 1k\Omega$	-	0.25	V
$V_{FGM}$	Peak forward gate voltage	Anode positive with respect to cathode	-	30	V
$V_{FGN}$	Peak forward gate voltage	Anode negative with respect to cathode	-	0.25	V
$V_{RGM}$	Peak reverse gate voltage		-	5.0	V
$I_{FGM}$	Peak forward gate current	Anode positive with respect to cathode	-	10	A
$P_{GM}$	Peak gate power		-	50	W
$P_{G(AV)}$	Mean gate power		-	3.0	W

**PACKAGE DETAILS**

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise.  
DO NOT SCALE.



## POWER ASSEMBLY CAPABILITY

The Power Assembly group was set up to provide a support service for those customers requiring more than the basic semiconductor, and has developed a flexible range of heatsink and clamping systems in line with advances in device voltages and current capability of our semiconductors.

We offer an extensive range of air and liquid cooled assemblies covering the full range of circuit designs in general use today. The Assembly group offers high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

Using the latest CAD methods our team of design and applications engineers aim to provide the Power Assembly Complete Solution (PACs).

## HEATSINKS

The Power Assembly group has its own proprietary range of extruded aluminium heatsinks which have been designed to optimise the performance of Dynex semiconductors. Data with respect to air natural, forced air and liquid cooling (with flow rates) is available on request.

For further information on device clamps, heatsinks and assemblies, please contact your nearest sales representative or Customer Services.



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**Preliminary Information:** The product is in design and development. The datasheet represents the product as it is understood but details may change.

**Advance Information:** The product design is complete and final characterisation for volume production is well in hand.

**No Annotation:** The product parameters are fixed and the product is available to datasheet specification.

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