

**APPLICATIONS**

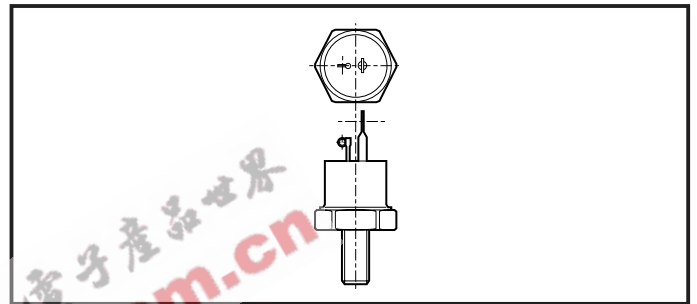
- Pulse Modulators
- Laser Diode Triggering
- Capacitor Discharge Applications

**KEY PARAMETERS**

$V_{DRM}$	<b>1600V</b>
$I_{T(AV)}$	<b>50A</b>
$I_{TSM}$	<b>800A</b>
$dIdt$	<b>2000A/μs</b>
$dV/dt$	<b>300V/μs</b>
$t_{on}$	<b>350ns</b>

**FEATURES**

- The XT2116 is Asymmetrical Thyristor in which the reverse voltage capability has been sacrificed to enable a high forward blocking characteristic combined with excellent turn-on performance.
- Designed for rapid and efficient switching of high current pulses.



Outline type code: SO28.  
See Package Details for further information.

**VOLTAGE RATINGS**

Type Number	Max. Rise Time $t_r$ ( $T_{case} = 25^\circ C$ ) ns	Repetitive Peak Voltage		Peak Working Voltages	
		$V_{DRM}$ V	$V_{RRM}^*$ V	$V_{DWM}$ V	$V_{RWM}^*$ V
XT2116 - 1601	100	1600	< 2	1600	< 2
XT2116 - 1401	120	1400	< 2	1400	< 2
XT2116 - 1201	120	1200	< 2	1200	< 2
XT2116 - 1001	140	1000	< 2	1000	< 2
XT2116 - 801	160	800	< 2	800	< 2

**CURRENT RATINGS**

Symbol	Parameter	Conditions	Max.	Units
$I_{T(AV)}$	Mean on-state current	Half wave resistive load, $T_{case} = 80^\circ C$	50	A
$I_{T(RMS)}$	RMS value	$T_{case} = 80^\circ C$	79	A
$I_T$	Continuous (direct) on-state current	$T_{case} = 85^\circ C$	68	A

# XT2116

## SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{TSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 125^{\circ}C$	800	A
$I^2t$	$I^2t$ for fusing		3200	A <sup>2</sup> s

## THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	d.c.	-	0.35	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Mounting torque 3.5Nm with mounting compound	-	0.25	$^{\circ}C/W$
$T_{vj}$	Virtual junction temperature	On-state (conducting)	-	125	$^{\circ}C$
$T_{stg}$	Storage temperature range		-55	125	$^{\circ}C$
-	Mounting torque		3.5*	4.0	Nm

\* Recommended value.

## DYNAMIC CHARACTERISTICS

$T_{case} = 25^{\circ}C$  unless otherwise stated.

Symbol	Parameter	Conditions	Typ.	Max.	Units
$V_{TM}$	Maximum on-state voltage	At $I_T = 100A$	-	2.0	V
$I_{RRM}/I_{DRM}$	Peak reverse and off-state current	At $V_{RRM}/V_{DRM}$	-	10/10	mA
dV/dt	Maximum linear rate of rise of off-state voltage	$T_j = 125^{\circ}C$ , $T_o V_{DRM}$ , $R_{GK} = 47\Omega$	-	300	V/ $\mu s$
dI/dt	Rate of rise of on-state current	Half sine wave of $2\mu s$ , $T_j = 125^{\circ}C$ Gate source 20V, $10\Omega$ . $t_r = 160ns$	-	2000	A/ $\mu s$
$I_L$	Latching current	-	45	-	mA
$I_H$	Holding current	-	35	-	mA
$t_d$	Delay time	$V_D = 400V$ , gate source = 500mA, $t_r = 50ns$	-	250	ns
$t_q$	Circuit commutated turn-off time	$I_T = 25A$ , $V_{RM} = 0V$ , $V_{DR} = V_{DWM}$ , $T_{case} = 120^{\circ}C$ , $R_{GK} = 47\Omega$ , dV/dt = 100V/ $\mu s$ .	-	120†	$\mu s$

† Available to 10 $\mu s$ .

**GATE TRIGGER CHARACTERISTICS AND RATINGS**

$T_{case} = 25^{\circ}C$  unless otherwise stated.

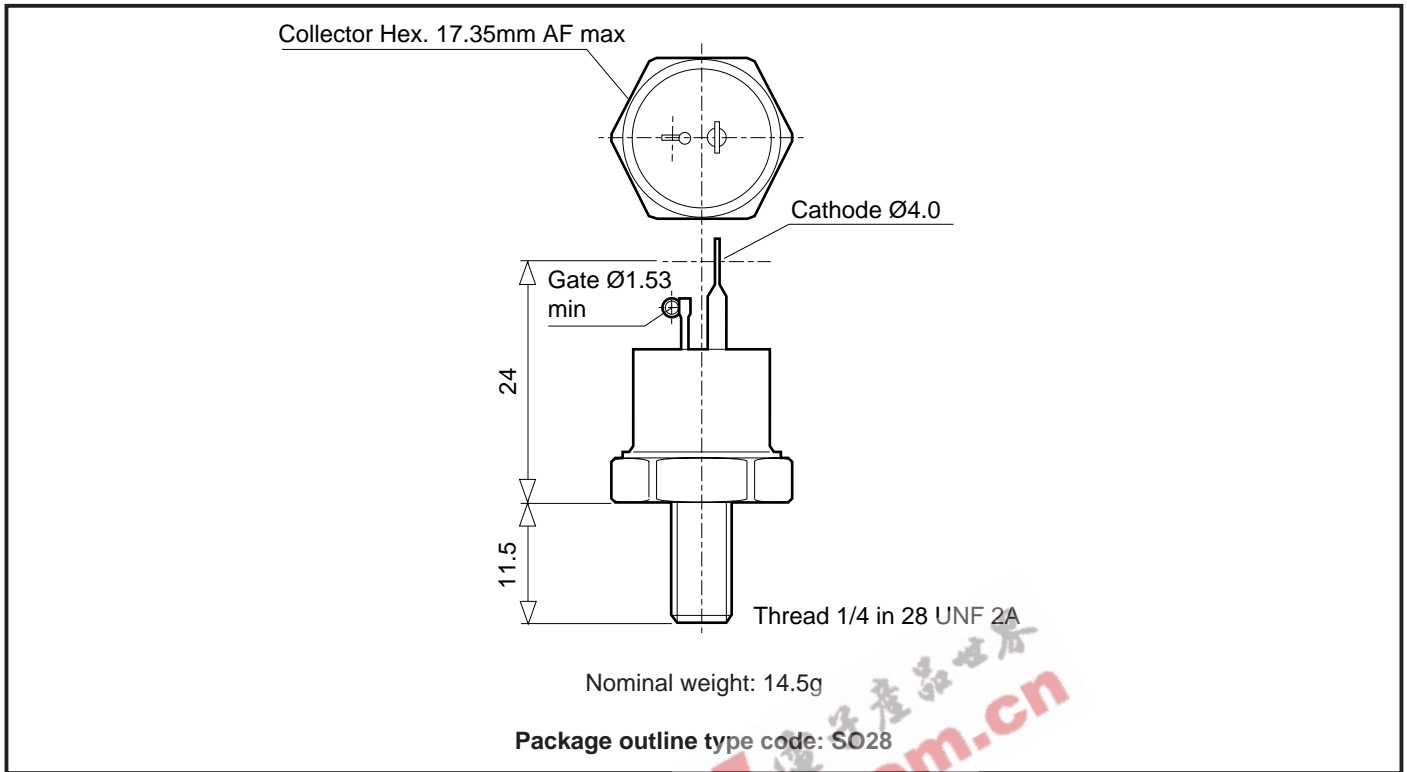
Symbol	Parameter	Conditions	Typ.	Max.	Units
$V_{GT}$	Gate trigger voltage	$V_{DWM} = 12V$	0.9	3.0	V
$I_{GT}$	Gate trigger current	$V_{DWM} = 12V$	-	100*	mA
$V_{FGM}$	Peak forward gate voltage	-	-	40	V
$V_{RGM}$	Peak reverse gate voltage	-	-	10	V
$I_{FGM}$	Peak forward gate current	-	-	10	A
$P_{GM}$	Peak gate power	-	-	40	W
$P_{G(AV)}$	Average gate power	-	-	10	W

\*Recommended trigger current not less than 500mA,  $t_r < 50ns$ .



**PACKAGE DETAILS**

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



<http://www.dynexsemi.com>

e-mail: [power\\_solutions@dynexsemi.com](mailto:power_solutions@dynexsemi.com)

**HEADQUARTERS OPERATIONS**  
**DYNEX SEMICONDUCTOR LTD**  
 Doddington Road, Lincoln.  
 Lincolnshire. LN6 3LF. United Kingdom.  
 Tel: 00-44-(0)1522-500500  
 Fax: 00-44-(0)1522-500550

**CUSTOMER SERVICE CENTRES**  
**France, Benelux, Italy and Spain** Tel: +33 (0)1 69 18 90 00. Fax: +33 (0)1 64 46 54 50  
**North America** Tel: 011-800-5554-5554. Fax: 011-800-5444-5444  
**UK, Germany, Scandinavia & Rest Of World** Tel: +44 (0)1522 500500. Fax: +44 (0)1522 500020

**DYNEX POWER INC.**  
 Unit 7 - 58 Antares Drive,  
 Nepean, Ontario, Canada K2E 7W6.  
 Tel: 613.723.7035  
 Fax: 613.723.1518  
 Toll Free: 1.888.33.DYNEX (39639)

**SALES OFFICES**  
**France, Benelux, Italy and Spain** Tel: +33 (0)1 69 18 90 00. Fax: +33 (0)1 64 46 54 50  
**Germany** Tel: 07351 827723  
**North America** Tel: (613) 723-7035. Fax: (613) 723-1518. Toll Free: 1.888.33.DYNEX (39639) /  
 Tel: (831) 440-1988. Fax: (831) 440-1989 / Tel: (949) 733-3005. Fax: (949) 733-2986.  
**UK, Germany, Scandinavia & Rest Of World** Tel: +44 (0)1522 500500. Fax: +44 (0)1522 500020  
 These offices are supported by Representatives and Distributors in many countries world-wide.  
 © Dynex Semiconductor 2000 Publication No. DS4674-3 Issue No. 3.0 January 2000  
**TECHNICAL DOCUMENTATION – NOT FOR RESALE. PRINTED IN UNITED KINGDOM**

**Datasheet Annotations:**

- Dynex Semiconductor annotate datasheets in the top right hand corner of the front page, to indicate product status. The annotations are as follows:-
- Target Information:** This is the most tentative form of information and represents a very preliminary specification. No actual design work on the product has been started.
- 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.

This publication is issued to provide information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. The Company reserves the right to alter without prior notice the specification, design or price of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to the Company's conditions of sale, which are available on request.

All brand names and product names used in this publication are trademarks, registered trademarks or trade names of their respective owners.