DYNEX SEMICONDUCTOR

XT2116

Fast Turn-on Asymmetric Thyristor

Replaces March 1998 version, DS4674-2.2 DS4674-3.0 January 2000

APPLICATIONS

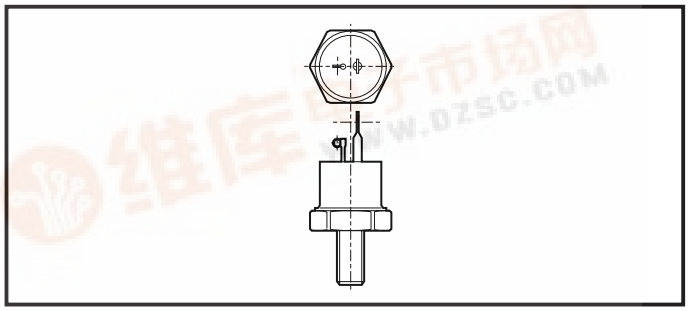
- Pulse Modulators
- Laser Diode Triggering
- Capacitor Discharge Applications

KEY PARAMETERS

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

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°C) ns	Repetitive Peak Voltage V_{DRM} V	Repetitive Peak Voltage V_{RRM}* V	Peak Working Voltages V_{DWM} V	Peak Working Voltages 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°C	50	A
$I_{T(RMS)}$	RMS value	T_{case} = 80°C	79	A
I_T	Continuous (direct) on-state current	T_{case} = 85°C	68	A

SURGE RATINGS

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

THERMAL AND MECHANICAL DATA

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

** Recommended value.*

DYNAMIC CHARACTERISTICS

T_{case} = 25°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°C, To V_{DRM}, R_{GK} = 47Ω	-	300	V/µs
dI/dt	Rate of rise of on-state current	Half sine wave of 2µs, T_j = 125°C Gate source 20V, 10Ω. t_r = 160ns	-	2000	A/µs
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°C, R_{GK} = 47Ω, dV/dt = 100V/µs.	-	120†	µs

† Available to 10µs.

GATE TRIGGER CHARACTERISTICS AND RATINGS

T_{case} = 25°C unless otherwise stated.

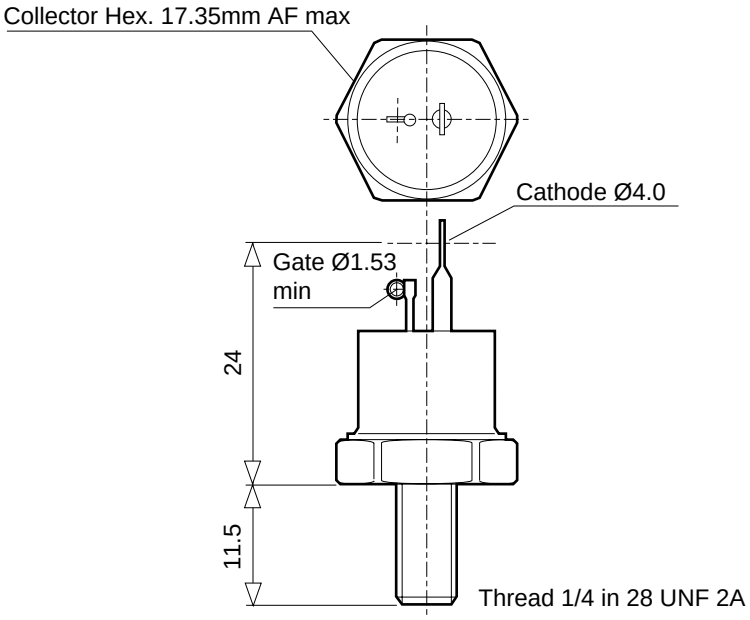
Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{GT}	Gate trigger voltage	V_{DWM} = 12V	0.9	3.0	V
I_{GT}	Gate trigger current	V_{DWM} = 12V	-	100*	mA
V_{FGM}	Peak forward gate voltage	-	-	40	V
V_{RGM}	Peak reverse gate voltage	-	-	10	V
I_{FGM}	Peak forward gate current	-	-	10	A
P_{GM}	Peak gate power	-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

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

XT2116

PACKAGE DETAILS

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



Nominal weight: 14.5g

Package outline type code: SO28

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Dynex Semiconductor annotate datasheets in the top right hard 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.