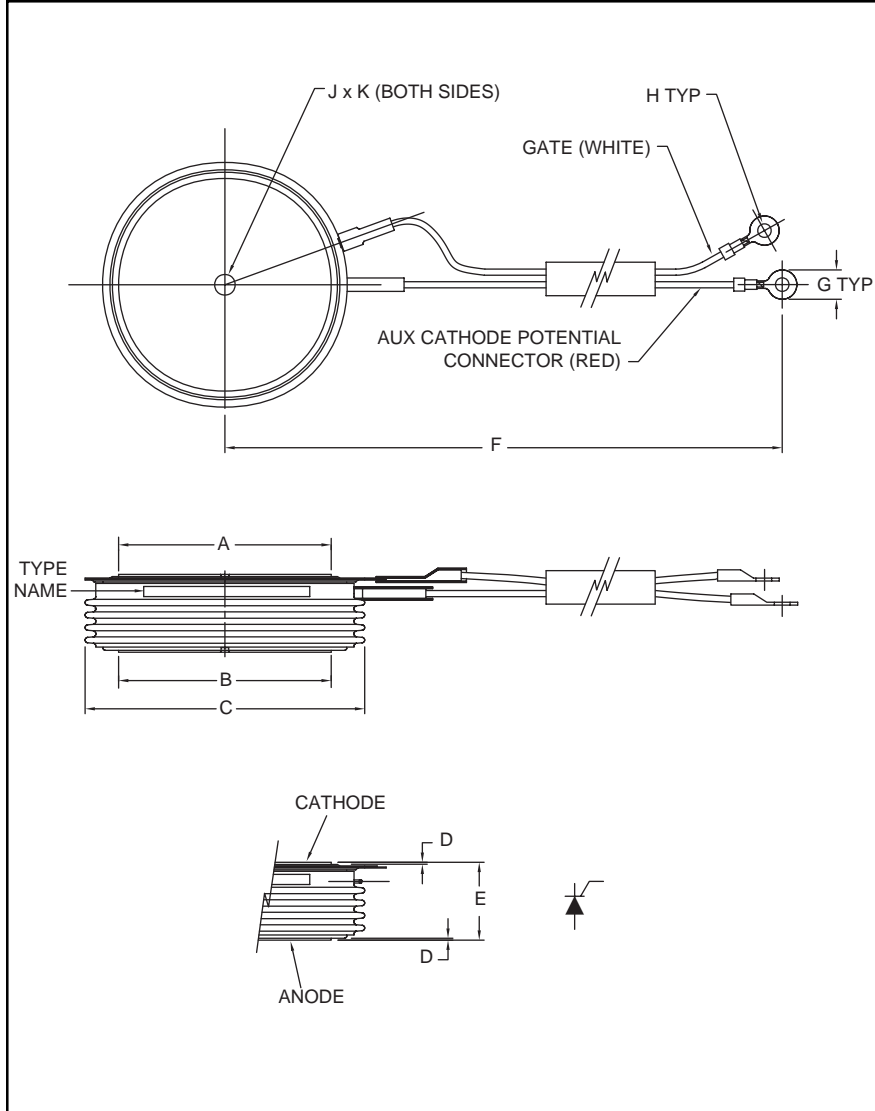


## Ultra High Voltage Thyristor 1500 Amperes/12000 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.13 Dia.	105.0 Dia.
B	4.13 Dia.	105.0 Dia.
C	6.5 Dia.	165.0 Dia.
D	0.2	0.40
E	1.38±0.02	35.0±0.5
F	17.99±0.39	457.0±10
G	0.30	7.5
H	0.17 Dia.	4.3 Dia.
J	0.14 Dia.	3.6±0.1 Dia.
K	0.09 Deep	2.2±0.1 Deep



### Description:

Powerex Ultra High Voltage Thyristors are used in high voltage AC Switch and Static Var Compensator (SVC) applications.

### Features:

- Average On-state Current ( $I_{T(AV)} = 1500A$ )
- Repetitive Peak Off-state Voltage ( $V_{DRM} = 12000V$ )
- Low On-state Voltage
- Press Pack Type

### Applications:

- High Voltage AC Switch
- Static Var Compensator (SVC)

### Ordering Information:

Example: Select the complete part module number you desire from the table below.

Device	Current Rating Amperes	Manu. Number	Type	Voltage Rating (x 50)
FT*	1500	A	U**	240

\* Press Pack Thyristor

\*\*Ultra High Voltage

Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

**FT1500AU-240**  
**Ultra High Voltage Thyristor**  
 1500 Amperes/12000 Volts

**Absolute Maximum Ratings,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Ratings	Symbol	FT1500AU-240	Units
Repetitive Peak Reverse Voltage	$V_{RRM}$	12000	Volts
Non-Repetitive Peak Reverse Voltage	$V_{RSM}$	12000	Volts
DC Reverse Voltage	$V_{R(DC)}$	9600	Volts
Repetitive Peak Off-state Voltage	$V_{DRM}$	12000	Volts
Non-Repetitive Peak Off-state Voltage	$V_{DSM}$	12000	Volts
RMS On-state Current	$I_{T(RMS)}$	2360	Amperes
Average On-state Current, $f = 60\text{Hz}$ , Sine Wave $\theta = 180^\circ\text{C}$ , $T_f = 88^\circ\text{C}$	$I_{T(AV)}$	1500	Amperes
Surge (Non-repetitive) On-state Current, One Half Cycle at 60Hz	$I_{TSM}$	34	kA
Current-squared, Time Integration, One Cycle at 60Hz	$I^2t$	$4.8 \times 10^6$	$\text{A}^2\text{s}$
Critical Rate of Rise of On-state Current, $V_D = 1/2 V_{DRM}$ , $I_G = 2.0\text{A}$ , $T_j = 125^\circ\text{C}$	$di_T/dt$	100	$\text{A}/\mu\text{s}$
Peak Forward Gate Power Dissipation	$P_{FGM}$	30	Watts
Average Forward Gate Power Dissipation	$P_{FG(AV)}$	8.0	Watts
Peak Forward Gate Voltage	$V_{FGM}$	20	Volts
Peak Reverse Gate Voltage	$V_{RGM}$	10	Volts
Peak Forward Gate Current	$I_{FGM}$	6.0	Amperes
Junction Temperature	$T_j$	-40 to 125	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 to 150	$^\circ\text{C}$
Mounting Force Required, Recommended Value 118	–	108 ~ 132	kN
Weight, Standard Value	–	4000	Grams
DC Off-state Voltage	$V_{D(DC)}$	9600	Volts

**Electrical Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

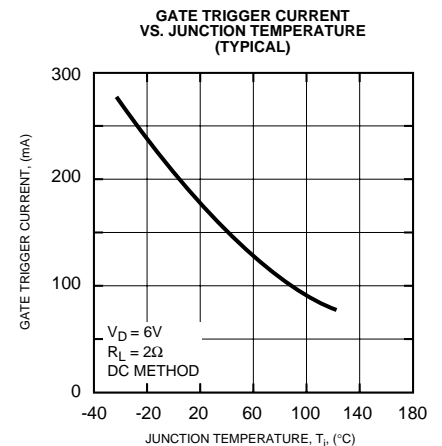
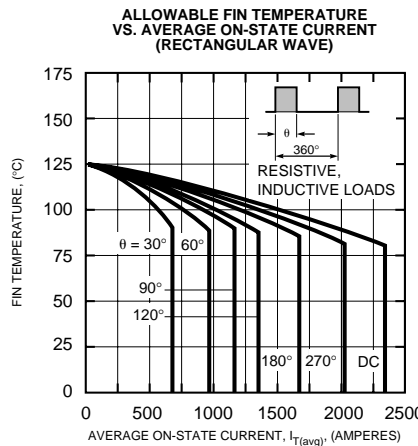
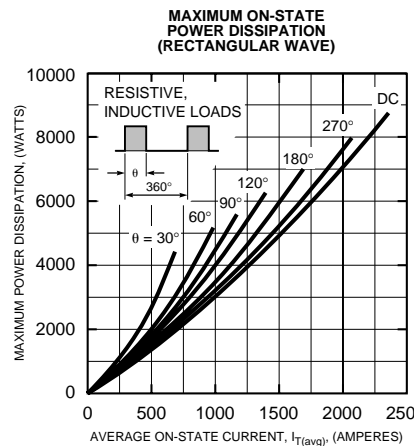
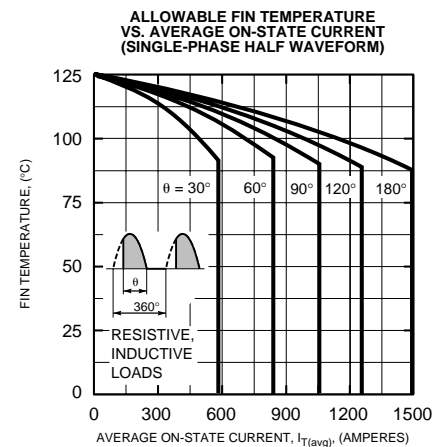
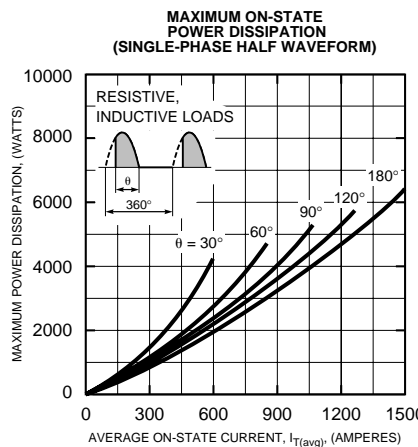
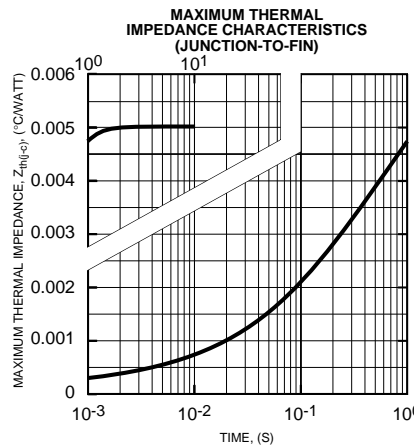
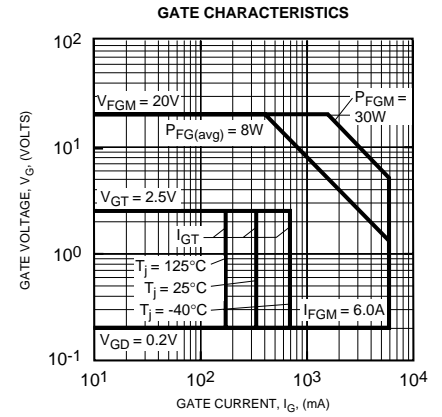
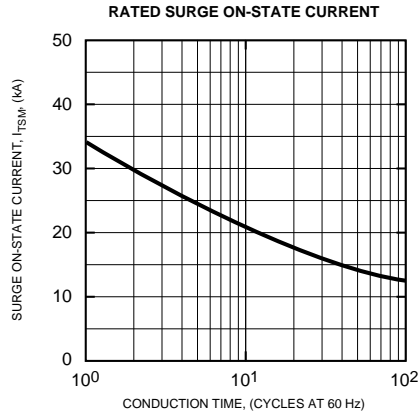
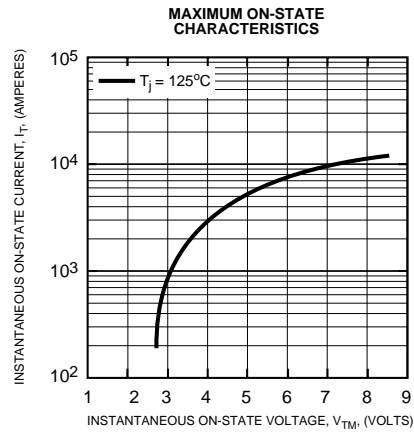
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Current	$I_{RRM}$	$T_j = 125^\circ\text{C}$ , $V_{RRM}$ Applied	–	–	1200	mA
Repetitive Peak Off-state Current	$I_{DRM}$	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ Applied	–	–	1200	mA
On-state Voltage	$V_{TM}$	$T_j = 125^\circ\text{C}$ , $I_{TM} = 3000\text{A}$ , Instantaneous Measurement	–	–	4.0	Volts
Critical Rate of Rise of Off-state Voltage	$dv/dt$	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	2000	–	–	$\text{V}/\mu\text{s}$
Gate Trigger Voltage	$V_{GT}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 2\Omega$	–	–	2.5	Volts
Gate Non-trigger Voltage	$V_{GD}$	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	0.2	–	–	Volts
Gate Trigger Current	$I_{GT}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 2\Omega$	–	–	350	mA

**Thermal and Mechanical Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Fin	$R_{th(j-f)}$	–	–	–	0.005	$^\circ\text{C}/\text{W}$

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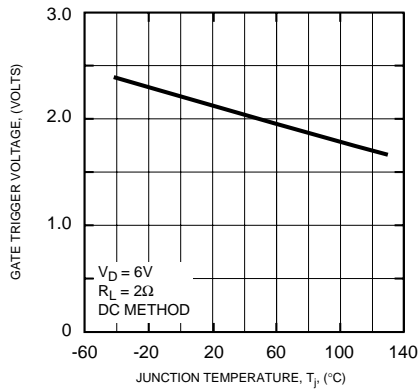
**FT1500AU-240**  
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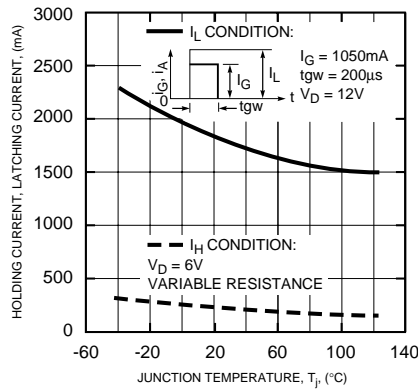
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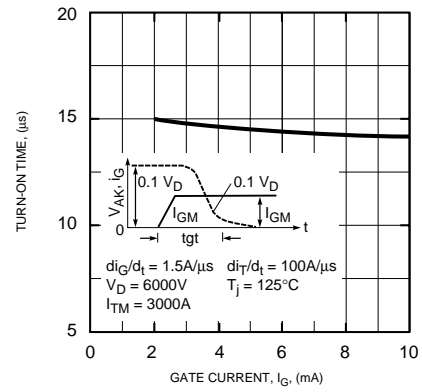
**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



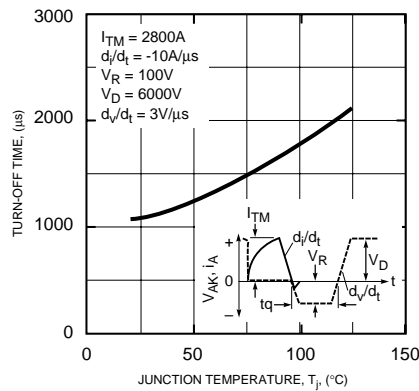
**HOLDING CURRENT, LATCHING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



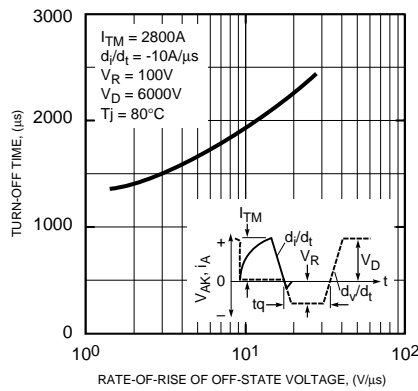
**TURN-ON TIME VS. GATE CURRENT (TYPICAL)**



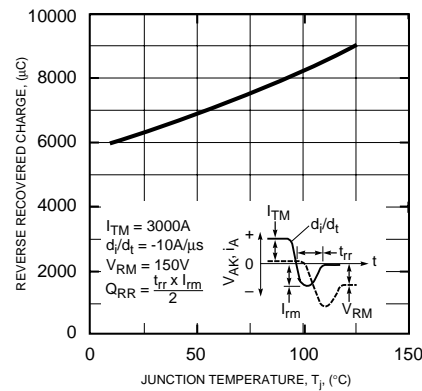
**TURN-OFF TIME VS. JUNCTION TEMPERATURE (TYPICAL)**



**TURN-OFF TIME VS. RATE-OF-RISE OF OFF-STATE VOLTAGE (TYPICAL)**



**REVERSE RECOVERED CHARGE VS. JUNCTION TEMPERATURE (TYPICAL)**



**REVERSE RECOVERED CHARGE VS. RATE-OF-DECREASE OF ON-STATE CURRENT (TYPICAL)**

