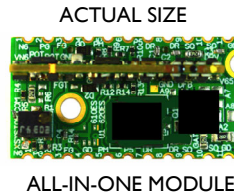


600E MX Series

Drop-In GaN Control Board

Controller Plus Switch for Fast Prototyping



XSYSTOR

PRODUCT FLYER
August 2021

General Description

The 600E MX Series are general purpose and complete solutions to operate most GaN devices. The on-board Controller and Switch provide bias adjustment, power sequence, and protection. Demonstrating device performance is as easy as dropping them in on GaN eval boards, sub-assemblies, and test apparatus. The tiny modules can be mounted on either metal surfaces or on printed circuit boards. Identical connections at opposite sides of the module simplifies placement for fast-prototyping. Drop it, set it, and forget it.

Features

Controller Assembly:

- Single power supply. Reliable Power Sequencing from all supply scenarios
- Drain switching is controlled by TTL logic in Active-Low or Active-High

Drain Switch Assembly:

- Rated for 80V, Ultra-low $R_{ds\ ON}$, Operation up to 150°C, with derated voltage and current
- Available in 8A or 16A CW operation with optimal heatsinking

Gate Bias Control:

- On-board potentiometer included for fine gate bias adjustment

Specification Snapshot

Parameter	Min	Max
Supply (+) Voltage	+20 V	+65 V
Supply (-) Voltage, Optional	-6 V	0 V
Internal (-) Supply V, Gate Pinchoff	-4.3 V	
Internal (-) Supply I	-30 mA	
Opt External Supply V & Pinchoff	-6.0 V	
Optional External (-6V) Supply I	-100 mA	
Gate Bias Voltage Range	-4.3V	-0.5 V
TTL Voltage Logic High	+2.5 V	+5.0 V
TTL Voltage Logic Low	0 V	+1.5 V
Avg Current from MOS peak rating		30%
MOS $R_{ds\ ON}$	0.02 Ω	0.05 Ω
Drain ON Prop Delay, loaded		600 ns
Drain ON Rise Time, loaded		300 ns
Drain OFF Prop Delay, loaded		10 μ s
Drain OFF Fall Time, loaded		5 μ s
Soldering Temp (10 sec)		+260°C
Operating Temperature	-40°C	+85°C
Storage Temperature	-65°C	+150°C

Propagation Delay is measured from 90% of TTL to 10% of Drain Voltage with device load. Rise/Fall Times are measured at 10% and 90% of signal. Both measurements are summed for total time.

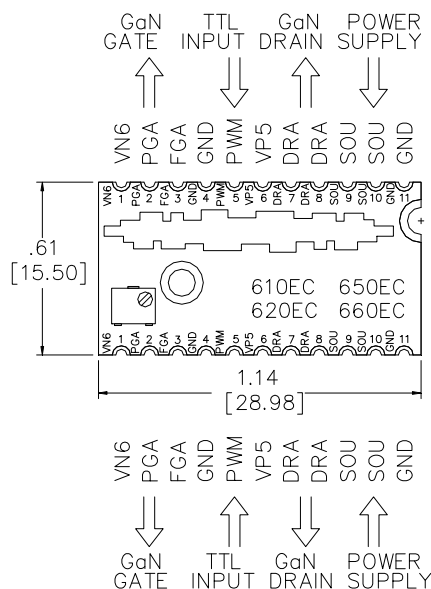
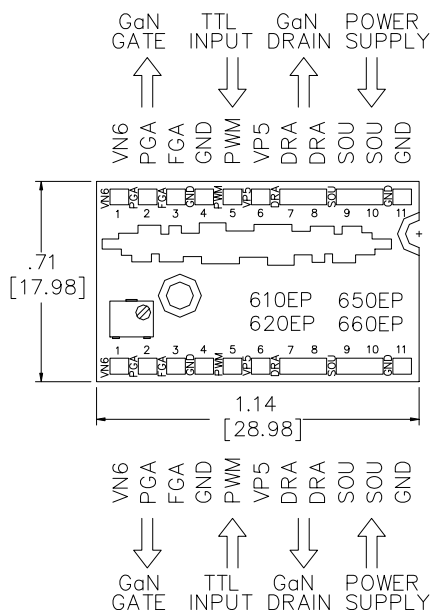
Ordering Information

Content Type	Mount Type	Shut-down Preset	TTL Enable	Misc Type	
610	EP	2R6	AL	20	MX
620	EC	2R0	AH	50	
650		1R4			
660		0R8			

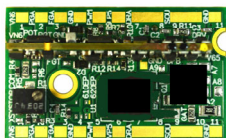
Example: 620EP2R0AL20MX

610_100X Controller & 8A Avg (16A Peak) Switch
620_200X Controller & 8A Avg (16A Peak) Switch
650_100X Controller & 16A Avg (36A Peak) Switch
660_200X Controller & 16A Avg (36A Peak) Switch
EP Mounts on Metal. Pads on top, Ground at bottom
EC Mounts on PCB. Castellated ports for solder reflow
2R6...0R8 Gate Threshold Shutdown Presets at -2.6V, -2.0V, -1.4V, -0.8V. Has provisions for fine adjustment using one resistor. Refer to XAN-2 application note
AL Active-Low (0V) TTL for Gate/Drain Voltage ON
AH Active-High (<5V) TTL for Gate/Drain Voltage ON
20 Supply range of +20V to +36V. General purpose
50 Supply range of +36V to +65V. General purpose

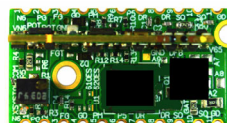
Eval Board Configurations



TYPE-EP typically mounts on metal surfaces, while TYPE-EC on printed circuit boards.



610EP, 620EP, 650EP, 660EP

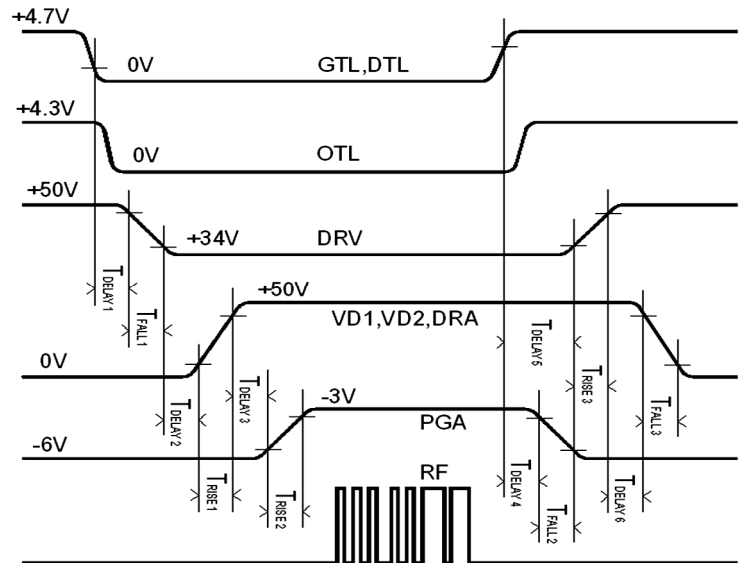


610EC, 620EC, 650EC, 660EC

I/O Pin Descriptions

610 PIN	630 PIN	LABEL	DESCRIPTION
1		VN6	Optional Neg Voltage Input (-6V min) for Gate Current Boost. Leave Open.
2	1	PGA	Neg Pulsed Voltage Output to Transistor Gate
3		FGA	Neg Fixed Voltage Output to Transistor Gate
4	4	GND	Ground
5	2	PWM	TTL/PWM Signal Input to Switch Transistor.
6		VP5	Optional Positive Voltage Input (+5V max). Leave Open.
7,8	7,8,9	DRA	High Voltage Output to Transistor Drain. Avoid excess wires or lines to minimize inductive parasitic. Max capacitive load is 500pF for optimum switching speed
9,10	10,11	SOU	High Voltage Power Supply Input. Connect high value storage capacitors here.
11		GND	Ground

Typical Timing Diagrams



- Refer to Application Note XAN-2 for further details.

Outline & Land Pattern

610EP, 620EP,
650EP, 660EP
OUTLINE

610EC, 620EC,
650EC, 660EC
OUTLINE

610EC, 620EC,
650EC, 660EC
LAND PATTERN

