GDU 90-20302



Gate Drive Unit

Replaces March 1998 version, DS4560-3.1

DS4560-4.0 January 2000

This datasheet should be used in conjunction with the application note AN4571, GDU9X-XXXXX Series, Gate Drive Unit.

APPLICATIONS KEY PARAMETERS

■ Used with Gate Turn-Off Thyristors in high current switching applications

 $\begin{array}{lll} I_{\text{FGM}} & 40\text{A} \\ I_{\text{G(ON)}} & 8\text{A} \\ \text{d}I_{\text{GQ}}/\text{d}t & 40\text{A}/\text{µs} \end{array}$

CONDITIONS - (UNLESS STATED OTHERWISE)

V ₁ = +5V	V ₂ = +15V		V ₃ = -15V		
Test circuit GTO		DG758BX			
GDU connection to GTO		500mm CO - AX cable type RC5327230			
Test circuit emitter and gate drive emitter		Honeywell sweetspot HFE 4020 - 013			
Test circuit emitter current		30mA			
Test circuit receiver and gate drive receiver		Honeywell sweetspot HFD 3029 - 002			

ELECTRICAL CHARACTERISTICS

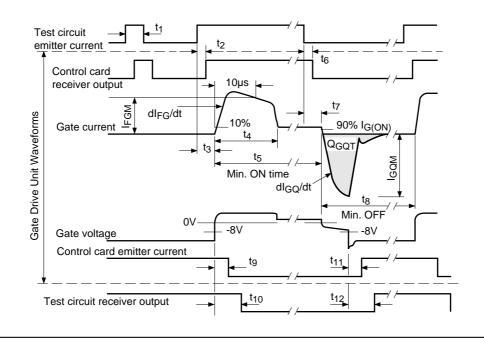
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Units
I _{V1}	+5V PSU current	500Hz, 50% duty cycle	-	-	4.40	А
I _{V2}	+15V PSU current	500Hz	-	-	0.48	А
I _{V3}	-15V PSU current	500Hz, I _T = 3000A GTO T _j = 125°C	-	-	10.0	А
V _{1(Min)}	+5V PSU minimum	-	3.8	-	-	V
V _{2(Min)}	+15V PSU minimum	-	14.0	-	-	V
V _{3(Min)}	-15V PSU minimum	-	14.0	-	-	V
I _{FGM}	Peak forward gate current	-	40	-	-	А
I _{G(ON)}	On-state gate current	-	-	8	-	А
dl _{FG} /dt	Rate of rise of positive gate current	Measured 10 - 75% I _{FGM}	-	40	-	A/μs
dl _{GQ} /dt	Rate of rise of negative gate current	I _T = 3000A, 90% I _{G(ON)} - 50% I _{GQM}	-	40	-	A/μs

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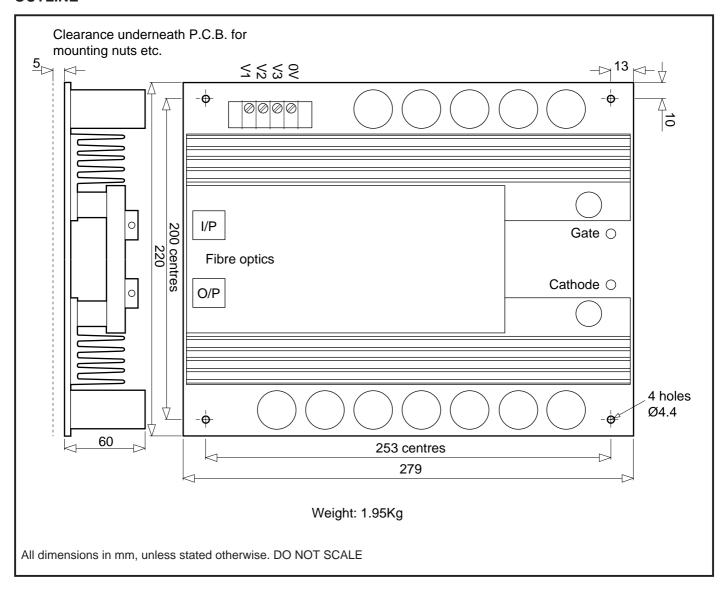
TIMING CHARACTERISTICS

Parameter Conditions		Min.	Тур.	Max.	Units
No response pulse width of input signal	Adjustable by R81 + R82	2	-	3	μs
Delay time emitter current to receiver o/p	-	0.4	-	0.8	μs
Turn-on delay emitter current to 10% I _{FGM}	-	5.2	-	6.2	μs
I _{FGM} pulse width	-	-	16	-	μs
Minimum on time 10% I _{FGM} to 90% I _{G(ON)}	Adjustable by R37	80	-	110	μs
Receiver storage time	-	0.5	-	0.9	μs
Turn-off delay. Emitter current to 90% I _{G(ON)}	-	1.5	-	2.3	μs
Minimum off time 90% I _{G(ON)} to 10% I _{FGM}	Adjustable by R38	80	-	110	μs
Delay time Gate volts to o/p emitter current	-	-	0.1	-	μs
Turn-off delay Gate volts to test receiver o/p	-	-	0.7	-	μs
Storage time Gate volts to o/p emitter current	Measured at low I _{GQM}	-	0.11	-	μs
Turn-on delay Gate volts to test receiver o/p	Measured at low I _{GQM}	-	0.81	-	μs
	No response pulse width of input signal Delay time emitter current to receiver o/p Turn-on delay emitter current to 10% I _{FGM} I _{FGM} pulse width Minimum on time 10% I _{FGM} to 90% I _{G(ON)} Receiver storage time Turn-off delay. Emitter current to 90% I _{G(ON)} Minimum off time 90% I _{G(ON)} to 10% I _{FGM} Delay time Gate volts to o/p emitter current Turn-off delay Gate volts to test receiver o/p Storage time Gate volts to o/p emitter current Turn-on delay	No response pulse width of input signal Delay time emitter current to receiver o/p Turn-on delay emitter current to 10% I _{FGM} I _{FGM} pulse width Minimum on time 10% I _{FGM} to 90% I _{G(ON)} Receiver storage time Turn-off delay. Emitter current to 90% I _{G(ON)} Minimum off time 90% I _{G(ON)} to 10% I _{FGM} Delay time Gate volts to o/p emitter current Turn-off delay Gate volts to o/p emitter current Measured at low I _{GOM} Management of the low I	No response pulse width of input signal Delay time emitter current to receiver o/p Turn-on delay emitter current to 10% I _{FGM} I _{FGM} pulse width Adjustable by R81 + R82 2 Delay time emitter - 0.4 Turn-on delay emitter - 5.2 I _{FGM} pulse width Adjustable by R37 80 Receiver storage time Adjustable by R37 80 Receiver storage time - 0.5 Turn-off delay 1.5 Minimum off time 90% I _{G(ON)} Minimum off time 90% I _{G(ON)} Delay time Gate volts to o/p emitter current Turn-off delay	No response pulse width of input signal Delay time emitter current to receiver o/p Turn-on delay emitter current to 10% I _{FGM} I _{FGM} pulse width Adjustable by R81 + R82 2 - Turn-on delay emitter current to 10% I _{FGM} I _{FGM} pulse width Adjustable by R37 Receiver storage time Adjustable by R37 Receiver storage time - Turn-off delay. Emitter current to 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Adjustable by R38 Redigner of time 90% I _{G(ON)} Redigner of time 90% I _{G(ON}	No response pulse width of input signal

* t_1 , t_3 , t_5 , t_8 are factory settings. t_1 Adjustment of t_1 alters t_3 . 1. Varies with t_{GQM} due to gate lead impdeance.



OUTLINE



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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 / clamping systems in line with advances in device types and the voltage 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 continues to offer high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

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

DEVICE CLAMPS

Disc devices require the correct clamping force to ensure their safe operation. The PACs range offers a varied selection of preloaded clamps to suit all of our manufactured devices. This include cube clamps for single side cooling of 'T' 22mm

Clamps are available for single or double side cooling, with high insulation versions for high voltage assemblies.

Please refer to our application note on device clamping, AN4839

HEATSINKS

Power Assembly has it's own proprietary range of extruded aluminium heatsinks. They have been designed to optimise the performance or our 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 the factory.



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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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