

GDU 91-20222

Gate Drive Unit

DS4570-4.0 January 2000

Replaces March 1998 version, DS4570-3.1

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

APPLICATIONS

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

KEY PARAMETERS

I_{FGM} I_{G(ON)} dI_{AA}/dt

30A	
4A	
30Α/ μs	

CONDITIONS - (UNLESS STATED OTHERWISE)

V ₁ = +5V	V ₂ = +15V		V ₃ = -15V	
Test circuit GTO		DG408BP		
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	-	-	2.2	А
I _{V2}	+15V PSU current	500Hz	-	-	0.55	А
I _{V3}	-15V PSU current	500Hz, I _T = 1000A GTO T _j = 125°C	-	-	3.0	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	-	30	-	-	А
I _{G(ON)}	On-state gate current	-	-	4	-	А
dl _{FG} /dt	Rate of rise of positive gate current	Measured 10 - 75% I _{FGM}	-	30	-	A/μs
dl _{gq} /dt	Rate of rise of negative gate current	I _T = 1000A, 90% I _{G(ON)} - 50% I _{GQM}	-	30	-	A/μs

TIMING CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Units	
t ₁ *†	No response pulse width of input signal	Adjustable by R81 + R82	2	-	3	μs	
t ₂	Delay time emitter current to receiver o/p		0.4	-	0.8	μs	
t ₃ *†	Turn-on delay emitter current to 10% I _{FGM}	-	5.2	-	6.2	μs	
t ₄	I _{FGM} pulse width	-	-	25	-	μs	
t ₅ *	Minimum on time 10% I _{FGM} to 90% I _{G(ON)}	Adjustable by R37	80	-	110	μs	
t ₆	Receiver storage time	-	0.5	-	0.9	μs	
t ₇	Turn-off delay. Emitter current to 90% I _{G(ON)}	-	1.5	-	2.3	μs	
t ₈ *	Minimum off time 90% $I_{G(ON)}$ to 10% I_{FGM}	Adjustable by R38	80	-	110	μs	
t ₉	Delay time Gate volts to o/p emitter current	-	-	0.1	-	μs	
t ₁₀	Turn-off delay Gate volts to test receiver o/p	-	-	0.7	-	μs	
t ₁₁	Storage time Gate volts to o/p emitter current	Measured at low I_{GQM}	-	0.11	-	μs	
t ₁₂	Turn-on delay Gate volts to test receiver o/p	Measured at low I _{GQM}	-	0.81	-	μs	
* t_1, t_3, t_5, t_8 are	e factory settings. [†] Adjustment of t ₁ a	In the second s	ate lead	impedan	ce.	I	
Test circuit emitter current emitter current Control card receiver output Gate current Gate current Test circuit receiver output Test circuit receiver output							

OUTLINE



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.



Datasheet Annotations:

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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.

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