FAST TURN-OFF ASYMMETRICAL THYRISTOR

ACR 22U
$I_{T(AV)} = 22A$
$t_q = 5.5\mu s$

VOLTAGE RATINGS Type Number	Repetitive peak voltages V_{DRM}	V_{RRM}	Crest (peak) working voltages V_{DWM}	V_{RWM}
ACR22U04LG	400	10	400	10
ACR22U06LG	600	10	600	10
ACR22U08LG	800	10	800	10
ACR22U10LG	1000	10	1000	10
ACR22U12LG	1200	10	1200	10

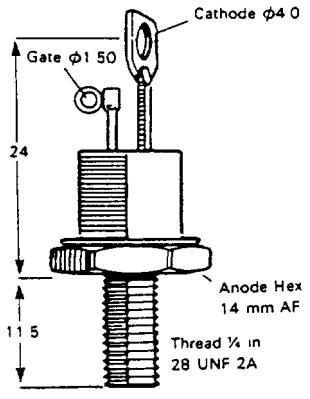
Applications

- High frequency inverters
- Regulated Power Supplies
- Cycloconverters
- Ultrasonic Generators
- Induction Heaters
- Electronic Welding

Features

The ACR22U is a glass passivated asymmetrical thyristor

This device has exceptionally fast turn-off capabilities combined with good turn-on characteristics.



Conforms to SO-28
TO-48

Weight 10 5g

Torque Max 4 0 Nm
Rec. 3 5 Nm

Current Ratings

			UNITS
$I_{T(AV)}$	Mean on-state current	Half wave resistive load T_{case} = 70°C	22 A
I_T	Continuous (direct) on-state current	T_{case} = 85°C	22A
I_{RMS}	RMS value	Max value	35A

Surge Ratings

I_{TSM}	Surge (non-repetitive) on-state current	T_J = 125°C		220 A
I^2t	I^2t for fusing	10ms half sine		242 A^2s
di/dt	Rate of rise of on-state current	From V_{DRM} to 125A, Gate source 15V, 15Ω, rise time, 50ns		2000 A/μs
dv/dt	Min linear rate of rise of off-state voltage	Gate open circuit T_{case} = 125°C	Fig. 1	†500V/μs
†Available up to 1000V/μs		To V_{DRM}		

Gate Ratings

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	Mean gate power	Averaging time = 10ms max.	Forward = 10W Reverse = 6W

Temperature & Frequency Ratings

T_{vj}	Virtual junction temperature	125°C
T_{stg}	Store temperature range	−55 to 125°C

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

				LIMIT Min	Typ.	Max	Units
V_{TM}	On-state voltage	I_T = 100A	Fig. 5	–		2.7	V
I_{DM}	Peak off-state current	T_{case} = 125°C @ V_{DRM}		–	–	10	mA
I_{RM}	Peak reverse current	T_{case} = 125°C @ V_{RRM}		–	–	10	mA
I_L	Latching current			–	45	–	mA
I_H	Holding current			–	35	–	mA
I_{GT}	Gate trigger current	V_{DWM} = 12V, R_L = 30Ω		–	60	200*	mA
V_{GT}	Gate trigger voltage	V_{DWM} = 12V, R_L = 30Ω		–	0 9	3	V
t_d	Delay time	V_D = 300V, gate source = 15V, 15Ω		–	–	250	ns
t_q	Circuit commutated turn-off time	I_T = 50A sq. wave 50μs pulse, T_c = 120°C, di/dt = 50A/μs, dv/dt = 600V/μs to VDRM Gate voltage at turn-off > −1V Mounting torque 3.5 Nm (with mounting grease)	Fig. 6	–	–	5 5	μs
$R_{th(j-h)}$	Thermal resistance					1 05	°C/W

*Recommended gate source is 15V, 15Ω with 50ns rise time or minimum gate current 500mA

Marconi
Electronic Devices
POWER SEMICONDUCTOR DIVISION

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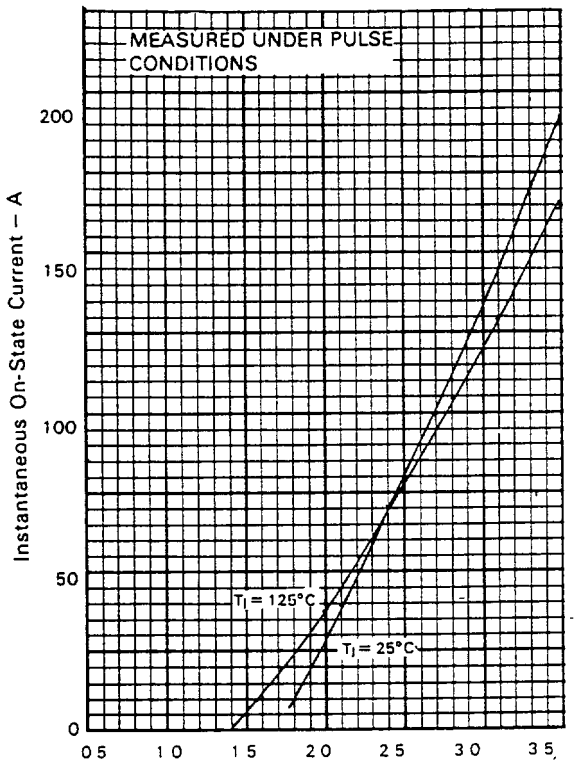
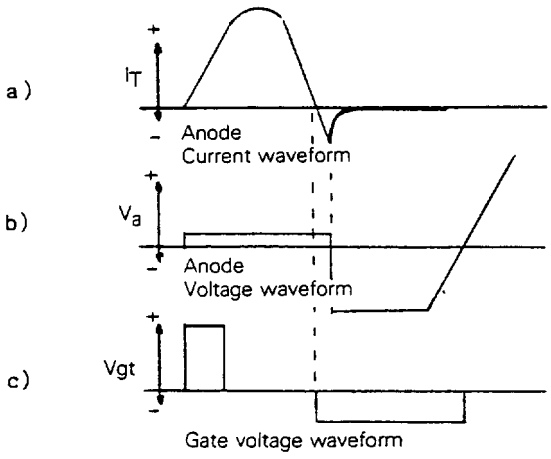
Fig. 5.
ON-STATE CHARACTERISTICS





WAVEFORM OF GATE VOLTAGE AT TURN-OFF

Fig. 6. TYPICAL CIRCUIT COMMUTATED TURN-OFF TIME VS. GATE VOLTAGE AT TURN-OFF

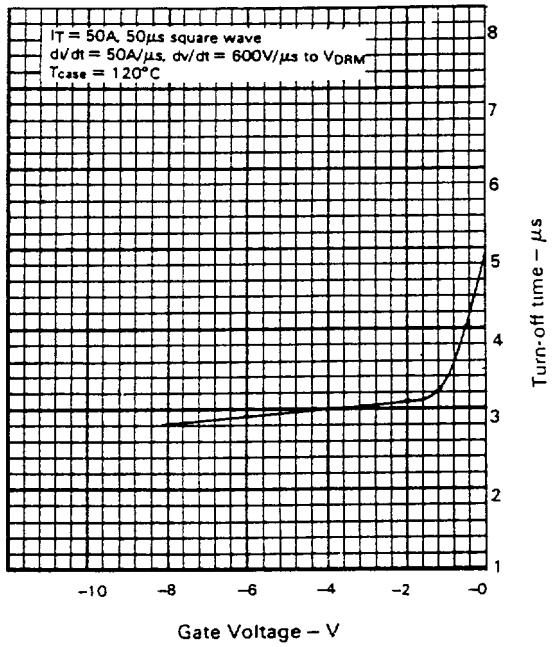


Fig. 7 MAXIMUM ENERGY LOSS/PULSE WHEN SWITCHING A HALF SINUSOIDAL PULSE FROM 600V

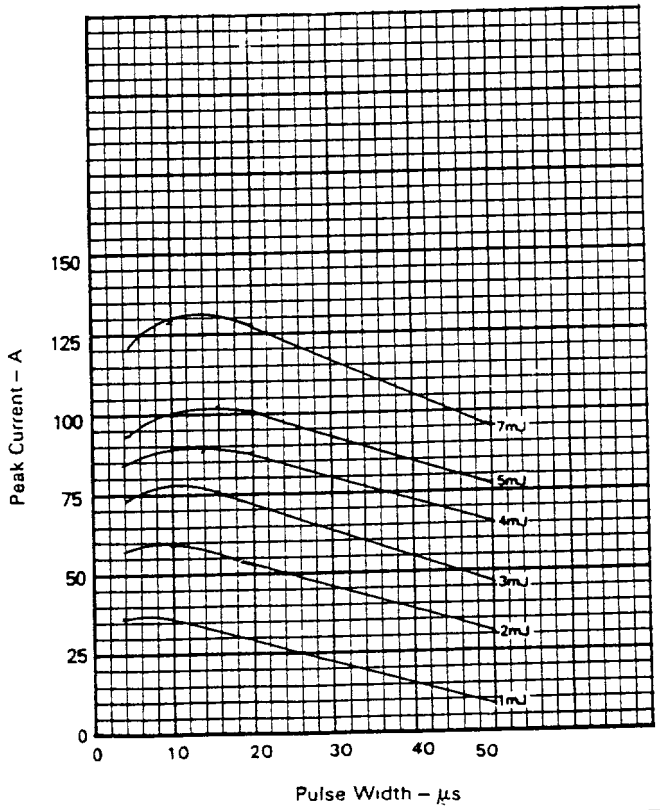


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Fig. 1 MINIMUM LINEAR CRITICAL RATE OF RISE OF OFF-STATE VOLTAGE VS GATE VOLTAGE

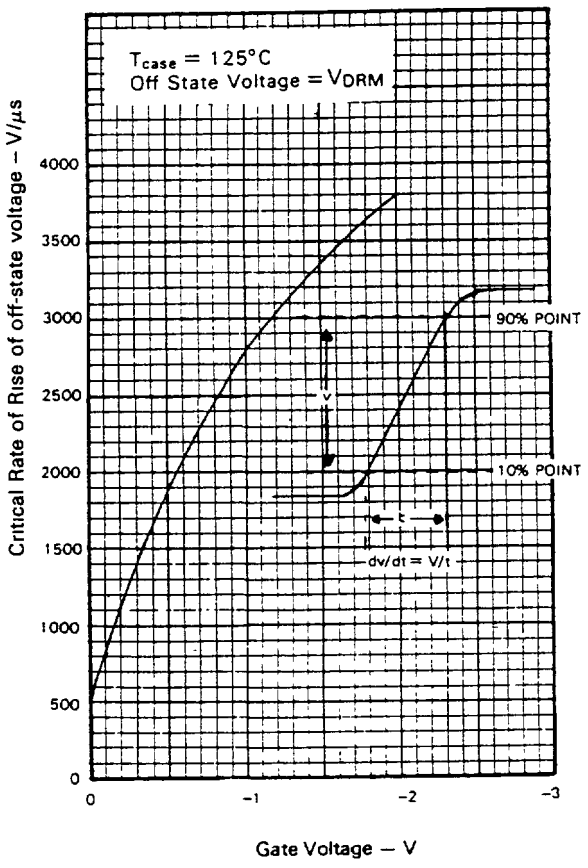
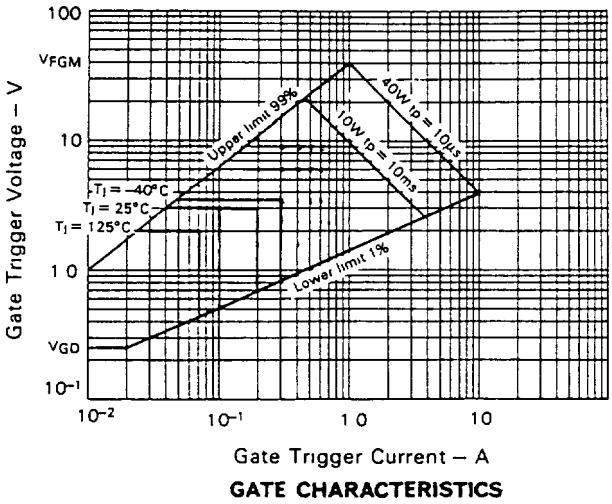


Fig. 2. GATE CHARACTERISTICS



GATE CHARACTERISTICS

Fig. 3 REVERSE GATE CHARACTERISTICS

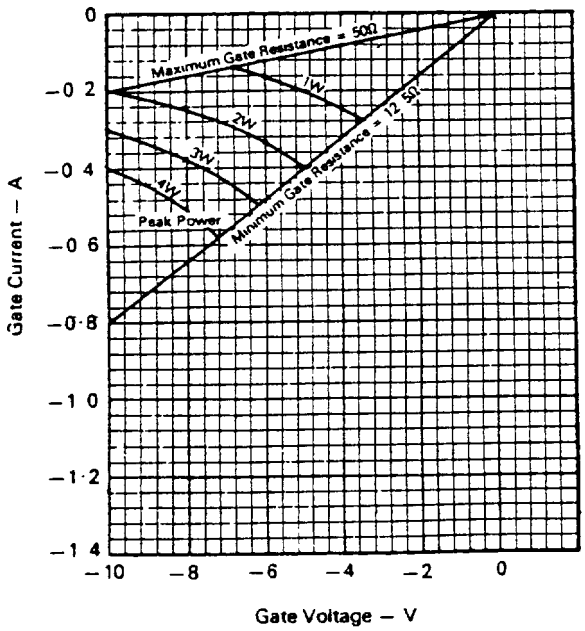
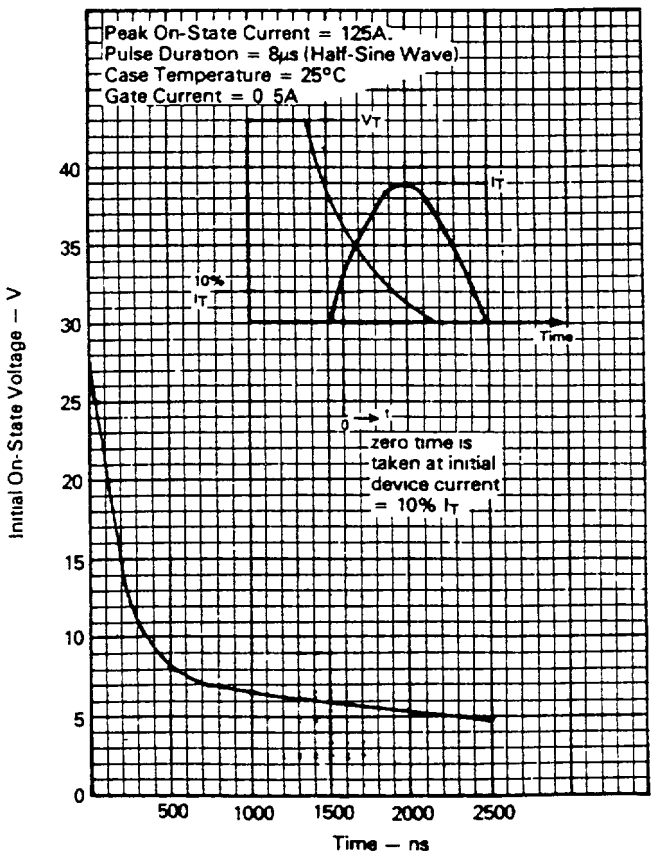


Fig. 4. TYPICAL INITIAL ON-STATE VOLTAGE VS TIME



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