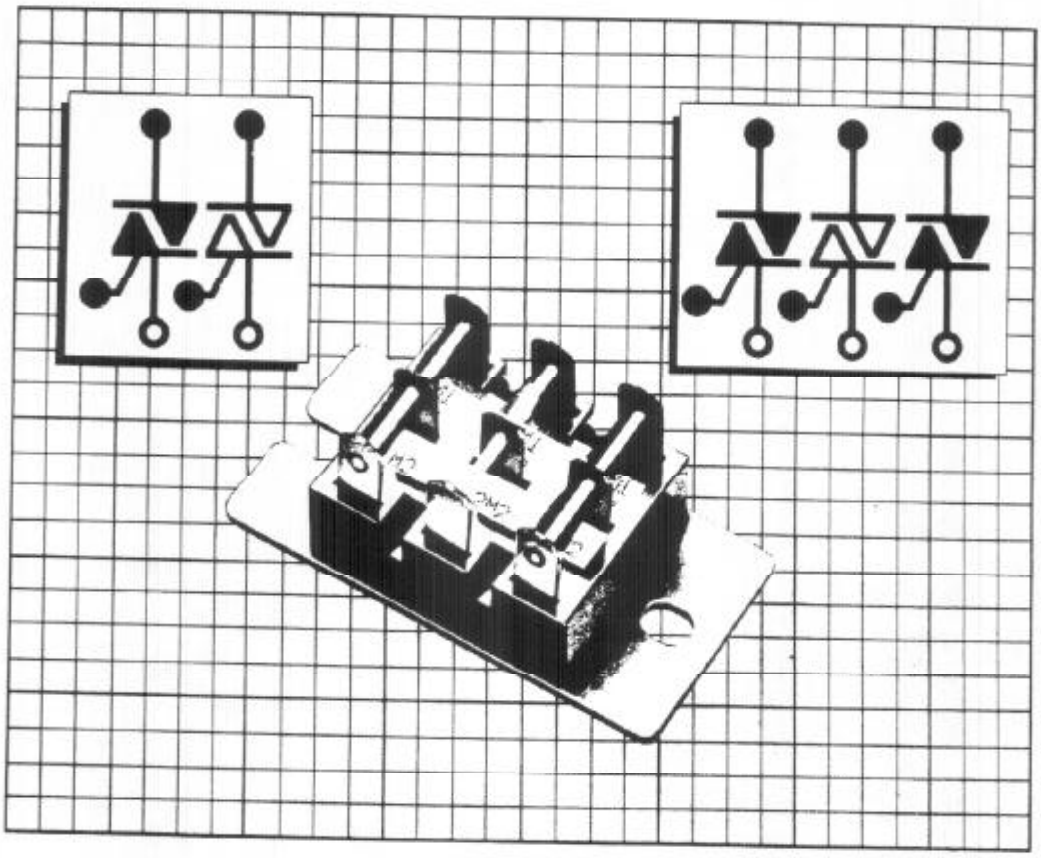
V25F-3



V25F-3

ISOLATED DUAL & TRIPLE TRIAC MODULES

Up to 40 AMPS & 1200V

SERIES

R15/25/40

V15/25/40 200V/μsec

Maximum Ratings: The following values are the absolute maximum values for operation with a AC (sinusoidal) supply voltage at frequencies up to 60 Hertz with either a resistive or inductive load.

		R15/V15	R25/V25	R40/V40	Units
Repetitive Peak Off-State Voltage: ①			200		
			400		
Gate open, T_j = −40 to 110°C	V_{DROM} ±		600		V (volts)
			800		
			1000		
			1200		
RMS On-State Current (Conduction Angle = 360°): Case Temperature T_C = 85°C	$I_{T(RMS)}$	15	25	40	A (Amperes)
Peak Surge (Non-Repetitive) On-State Current: For one cycle of applied principal voltage					
60 Hz (Sinusoidal)	I_{TSM}	150	250	370	A (Amperes)
50 Hz (Sinusoidal)	I_{TSM}	125	230	350	A
Rate-of-Change of On-State Current:	di/dt				A/μs
V_{DM} = V_{DROM} I_{GT} = 200mA t_r = 0.1 micro sec.		50	75	100	(Amperes/microsecond)
Fusing: I_{RMS} (Ampere) ②	I^2t	95	260	600	A^2S ($Ampere^2$ second)
Peak Gate-Trigger Current:	I_{GTM}	8	12	12	A (Amperes)
Gate Power Dissipation:					
Peak (For 1 micro sec max., $I_{GTM} \leq 4A$)	P_{GM}	20	40	40	W (Watts)
Average	$P_{G(AV)}$	.50	.75	.75	W
Temperature Range:					
Storage	T_{STG}		−40 to 125		°C (degrees Centigrade)
Operating (case)	T_C		−40 to 110		°C (degrees Centigrade)

For temperature measurement, use the bottom center of the baseplate.

UL RECOGNIZED

part number assignment

EXAMPLE:
R25C3 =
25 Amps. RMS at 600 PIV & 3 Triacs

First Digit	2nd & 3rd Digit	4th Digit	5th Digit
Series Type = R = V	RMS Current (each Triac) 15 = 15 Amps. 25 = 25 Amps. 40 = 40 Amps.	PIV Voltage A = 200 D = 800 B = 400 E = 1000 C = 600 F = 1200	Triacs Per Pkg. 2 = Two 3 = Three

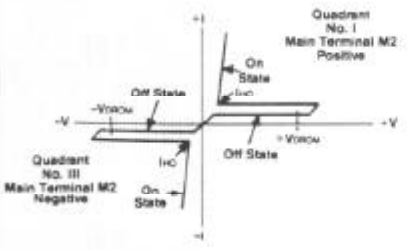


Fig. 1 — Principal Voltage-Current Characteristic

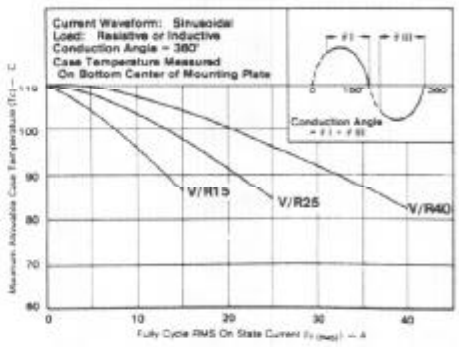


Fig 2 — Maximum Allowable Case Temperature vs. On-State Current

electrical characteristics

At Maximum Ratings and at Indicated Case Temperature (Tc) Unless Otherwise Specified

Characteristic	Symbol	Limits: For All Types Unless Otherwise Specified						Units
		R	V	R	V	R	V	
		Min.		Typ.		Max.		
Peak Off-State Current Gate open, Tj = 110°C, V_{DROM} = Max. rated value	I_{DROM}	—		0.2		4		mA (milliamperes)
Maximum On-State Voltage ① For i_T = 100A (Peak) Tc = 25°C For i_T = 56A (Peak) Tc = 25°C (Above for V/R40. See Fig. 3 for V/R15 & 25)	V_{TM} V_{TM}	— —		1.7 1.5		2.2 1.85		V (Volts)
DC Holding Current Gate open, Initial principal current 500 mA (DC) v_D = 12V Tc = 25°C Tc = −40°C (Above for V/R40. See Fig. 5 for V/R15 & 25)	I_{HO} I_{HO}	— —		25 —	50 75	60 90		mA (milliamperes)
Critical Rate-of-Rise of Commutation Voltage ① For v_D = V_{DROM}, ($I_{T(RMS)}$) V/R15 di/dt = 8A/ms, gate energized (15A Commutating) V/R25 di/dt = 14A/ms, gate energized (25A Commutating) V/R40 di/dt = 22A/ms, gate energized (40A Commutating)	dv/dt dv/dt dv/dt	3 4 6	200 200 200	20 25 30		— — —		V/μs (Volts/microsecond)
Critical Rate-of-Rise of Off-State Voltage ① For v_D = V_{DROM}, exponential voltage rise, gate open Tc = 110°C V/R15 V/R25 V/R40	dv/dt dv/dt dv/dt	10 15 20	200 200 200	50 75 100		— — —		V/μs (Volts/microsecond)
DC Gate-Trigger Current for Tc = 25°C ③ For v_D = 12V (DC) R_L = 30 ohm						Max.		
Mode — V_{MT2} — V_G						V25	V40	
1 positive positive	I_{GT}	—		15		50	150	200	mA
2 negative negative		—		20		50	150	200	
3 positive negative		—		60		100	200	250	(milliamperes)
4 negative positive		—		70		100	200	250	
DC Gate Trigger Current for Tc = −40°C ①② For v_D = 12V (DC) R_L = 30 ohm								
Mode — V_{MT2} — V_G						V25	V40	
1 positive positive	I_{GT}	—		—		90	300	400	mA
2 negative negative		—		—		90	300	400	
3 positive negative		—		—		210	350	450	(milliamperes)
4 negative positive		—		—		210	350	450	
(See Fig. 8 & 9)								
DC Gate-Trigger Voltage ①② For v_D = 12V (DC), R_L = 30 ohm Tc = 25°C Tc = −40°C For v_D = V_{DROM}, R_L = 125 ohm, Tc = 110°C (See Fig. 10)	V_{GT}	— — 0.2		1.35 1.6 —		2.5 3 —	3.5	V (Volts)
Gate Controlled Turn-on Time (Delay Time + Rise Time) For v_D = V_{DROM}, I_{GT} = 200 mA, t_r = 0.1 micro sec, i_T = 60A (peak), Tc = 25°C (See Fig. 11)	t_{gt}	—		1.7		3		μs (Microsecond)
Thermal Resistance, Junction to Case per Triac V/R15 V/R25 V/R40		— — —		— — —		3 .25 .2		°C/W (degrees Centigrade per watt)
Thermal Resistance Case to Sink ④		—		—		10		°C/W
Isolation Voltage (Terminals to Mounting Plate)		2500 RMS						V_{RMS} (Volts)

① For either voltage polarity (V_{MT2}) of main terminal M2 with reference to main terminal M1.

② For either voltage polarity of the gate (V_G) with reference to main terminal M1.

③ Case to heat sink mounting surface is to be smooth, flat, and greased (.002 T.I.R. flatness spec. and ≤ 50 micro-inch finish).

④ All ratings apply for either polarity of gate terminal referenced to main terminal M1.

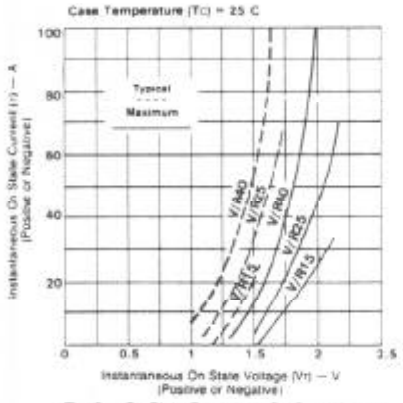


Fig. 3 — On-State Current vs. On-State Voltage

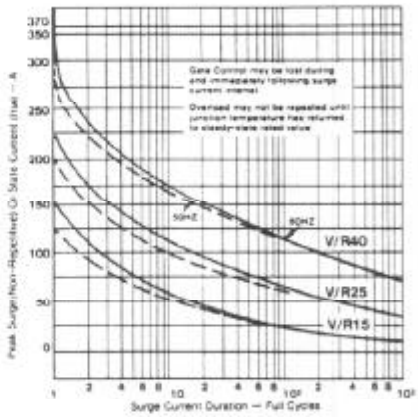


Fig. 4 — Peak Surge On-State Current vs. Surge Current Duration

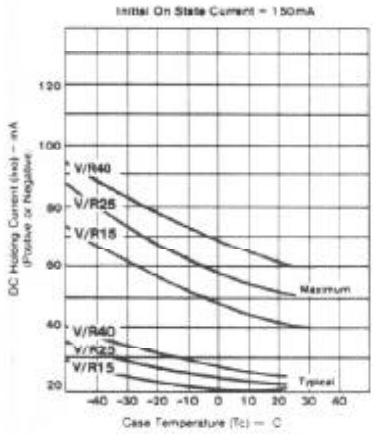


Fig. 6 — DC Holding Current vs. Case Temperature

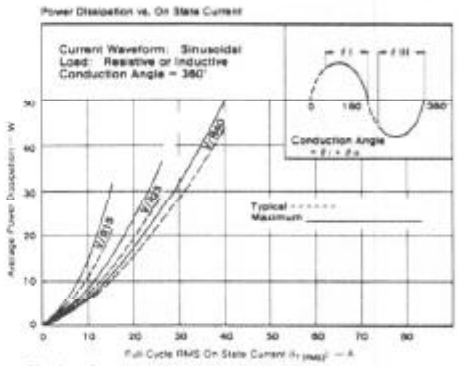


Fig. 5 — Power Dissipation vs. On-State Current Per Device

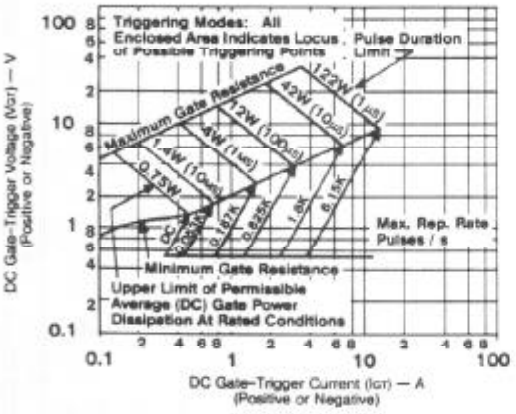


Fig. 7 — Gate Trigger Characteristics and Limiting Conditions for Determination of Permissive Gate Trigger Pulses

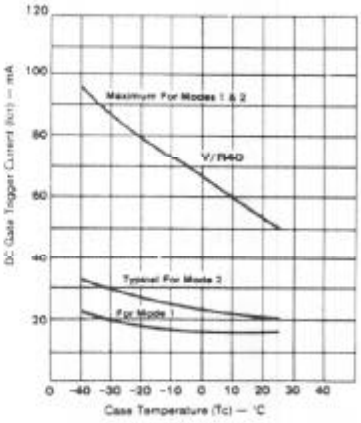


Fig. 8 — DC Gate Trigger Current vs. Case Temperature Modes 1 & 2

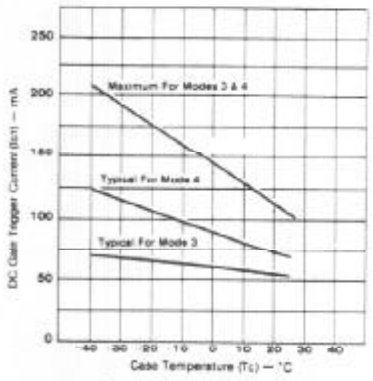


Fig. 9 — DC Gate Trigger Current vs. Case Temperature Modes 3 & 4

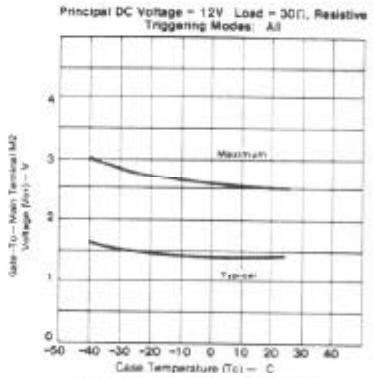


Fig. 10 — DC Gate Trigger Voltage vs. Case Temperature

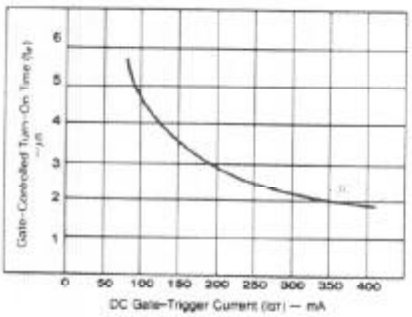


Fig. 11 — Turn-on Time vs. Gate-Trigger Current

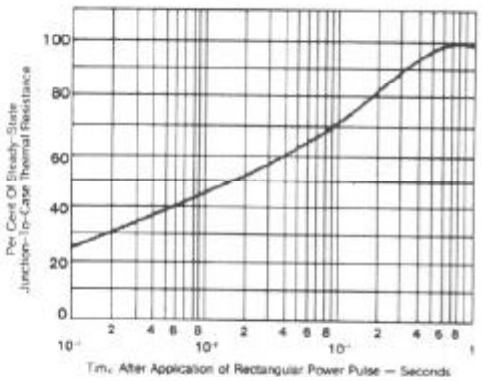


Fig. 12 — Transient Junction to Case Thermal Resistance vs. Time

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