

4855452 INTERNATIONAL RECTIFIER

55C 04870 D

Data Sheet No. E2584B

INTERNATIONAL RECTIFIER



T-25-15

T50AC-A, 50AC-A SERIES

50A power triacs

Major Ratings and Characteristics

	T50AC-A	50AC-A	Units
$I_T(\text{RMS})$ @ $T_c = 85^\circ\text{C}$	—	50	A
$I_T(\text{RMS})$ @ $T_c = 75^\circ\text{C}$	50	—	A
I_{TSM} 50Hz	520		A
I_{TSM} 60Hz	550		A
I^2t 50Hz	1350		A ² s
I^2t 60Hz	1250		A ² s
di/dt	100		A/ μ s
I_{GT}	200		mA
dv/dt (commutating)	15		V/ μ s
T_J	—40 to 125		$^\circ\text{C}$
V_{RRM}, V_{DRM}	400 to 1200		V

Description

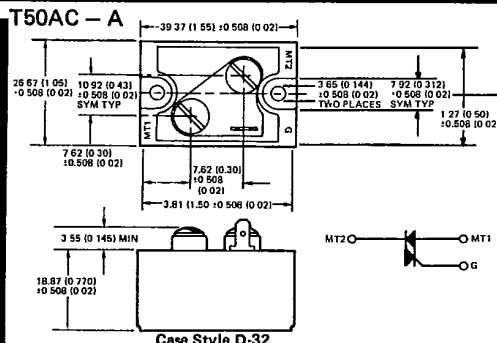
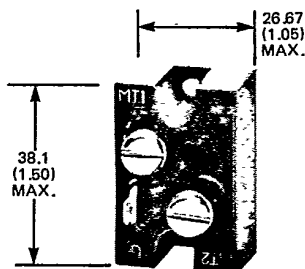
International Rectifier offers two ranges of 50A power triacs, the first is the 50AC-A range in a standard TO-65 package and the second is the T50AC-A range in the isolated base package. Applications include lamp dimmers and other industrial equipment.

Features

- High surge capability
- Choice of package style
 - $\frac{1}{4}$ " stud
 - Isolated base
- Available up to 1200V V_{RRM}, V_{DRM}
- High dynamic characteristics.

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CASE STYLE AND DIMENSIONS



Case Style D-32

All Dimensions in Millimeters and (Inches)

For 50AC-A case style see page A-77.

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ELECTRICAL SPECIFICATIONS

Voltage ratings

Part Number	V _{RRM} , V _{DRM} , Maximum repetitive peak reverse and off-state voltage gate open circuited	V _{RSM} Maximum non-repetitive peak reverse voltage
	V	V
T50AC40A	400	500
T50AC80A	800	700
T50AC80A	800	900
T50AC100A	1000	1100
T50AC120A	1200	1300

On-State

	T50AC-A	50AC-A	Units	Conditions
I _{T(RMS)} Maximum RMS on-state current	50		A	Max. T _C = 85°C : 50AC-A. Max. T _C = 75°C : T50AC-A
I _{TSM} Maximum peak one cycle non-repetitive surge current	380		A	t = 20ms Sinusoidal full-wave, Initial T _J = 125°C, rated V _{RRM} reapplied
	400		A	t = 16.7ms
I _{TSM} Maximum peak one half-cycle non-repetitive surge current	620		A	t = 10ms 100% rated V _{RRM} reapplied
	550		A	t = 8.3ms Sinusoidal half-wave Initial T _J = 125°C Either direction
	620		A	t = 10ms No voltage reapplied
	650		A	t = 8.3ms
I ² t Maximum I ² t capability for fusing	1350		A ² s	t = 10ms 100% rated V _{RRM} reapplied
	1250		A ² s	t = 8.3ms
	1900		A ² s	t = 10ms No voltage reapplied
	1760		A ² s	t = 8.3ms
I ² /t Maximum I ² /t capability for fusing ①	24 000		A ² /s	t = 0.1 to 10ms. No voltage reapplied, Initial T _J ≤ 125°C.
V _{TM} Maximum peak on-state voltage	2.0		V	T _J = 25°C, I _{TM} = 70A _{pk} , either direction
I _H Maximum holding current	90		mA	T _J = 25°C, anode supply = 22V, Initial I _T = 2A in either direction

Off-State

dv/dt Maximum critical rate-of-rise of commutation voltage	15	V/μs	T _J = 125°C, Rated V _{RRM} , either direction
dv/dt Maximum critical rate-of-rise of on-state voltage	200	V/μs	T _J = 125°C, Exponential to 100% rated V _{RRM} , either direction
I _{DM} Maximum peak off-state current	10	mA	T _J = 125°C, Rated V _{RRM} , either direction
V _{ins} RMS isolation voltage*	2500	V	Circuit to base, all terminals shorted

Switching

di/dt Maximum non-repetitive rate-of-rise of turned-on current	100	A/μs	T _J = 125°C, V _{DRM} = rated V _{DRM} , I _{TM} = 100A, gate pulse: 20V, 15μs, t _p ≥ 10μs. Per JEDEC standard RS - 397, 5.2.2.6
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Triggering

P _{GM} Maximum peak gate power	10	W	2.0ms pulse width
P _{G(AV)} Maximum average gate power	2	W	
I _{GM} Maximum peak positive or negative gate current	3	A	
V _{GM} Maximum peak positive or negative gate voltage	20	V	
I _{GT} Maximum DC gate current required to trigger	200	mA	MT2+ gate +
	200	mA	MT2- gate -
	200	mA	MT2+ gate -
	200	mA	MT2- gate +
V _{GT} Maximum DC gate voltage required to trigger	2.5	V	T _J = 25°C, 12V MT1 to MT2
V _{GD} Maximum required gate voltage not to trigger	0.2	V	

* This refers to T50AC-A series only.

① I²t for time t_x = I²√t_x · √t_x

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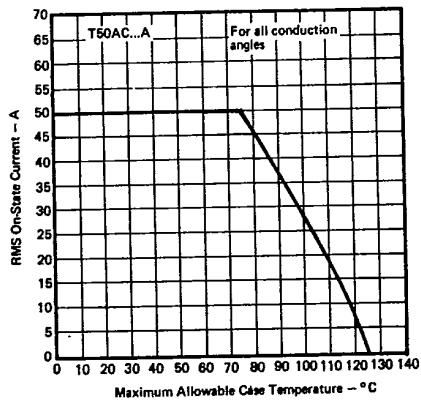
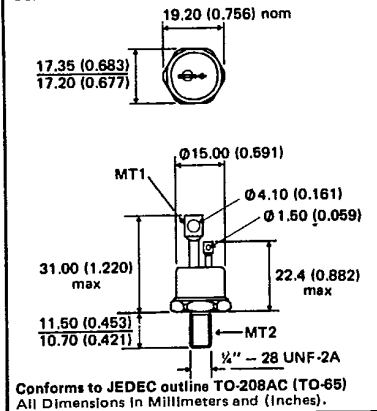
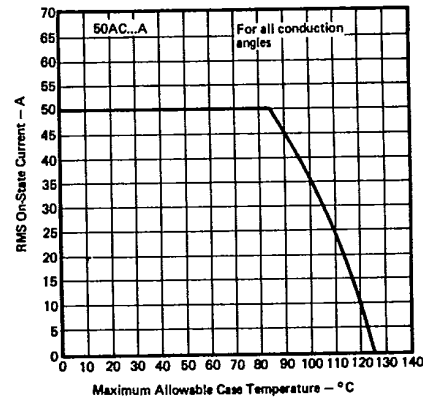
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Thermal and Mechanical Specifications

		T50AC-A	50AC-A	Units	Conditions
T_J	Maximum operating temperature range	-40 to 125		°C	
T_{stg}	Maximum storage temperature range	-40 to 125		°C	
R_{thJC}	Maximum internal thermal resistance, junction to case	0.70	0.45	K/W	DC operation
R_{thCS}	Maximum thermal resistance, case to heatsink	0.25	0.25	K/W	Mounting surface smooth, flat and greased
T	Mounting torque Device to heatsink ± 10%	15	20(27.5)	lbf.in	50AC-A. Lubricated (non-lubricated) threads. T50AC-A. M3.5 (6-32UNF) mounting screws. Non-lubricated threads. A mounting grease is recommended and the torque should be re-checked after a period of about 3 hours to allow for spreading of the compound. Non-lubricated threads.
		0.18	0.23(0.32)	kgf.m	
		1.7	2.3(3.1)	Nm	
		4.5	—	lbf.in	
		0.13	—	kgf.m	
	Terminals MT1 and MT2	1.3	—	Nm	
Case style		TO-208AC (TO-65)			JEDEC
wt	Approximate weight	54 (1.9)	28 (1.0)	g (oz)	

50AC-A outline

Fig. 1 — RMS On-State Current
Vs. Maximum Allowable Case Temperature,
T50AC-A SeriesFig. 2 — RMS On-State Current
Vs. Maximum Allowable Case Temperature,
50AC-A Series

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T50AC-A, 50AC-A Series

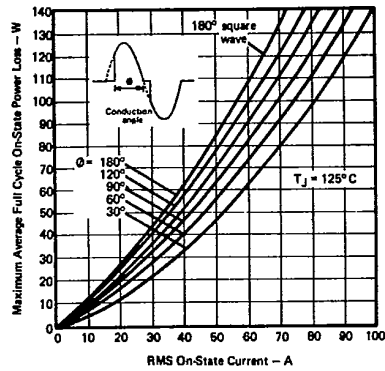


Fig. 3 - Maximum Low Level On-State Power Loss Vs. RMS On-State Current, Both Series

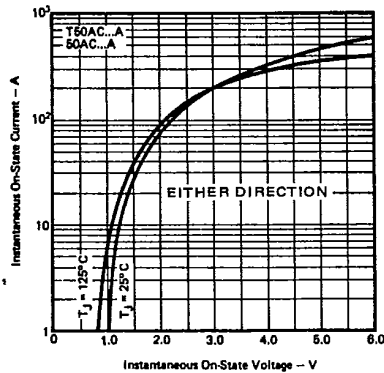


Fig. 5 - Maximum Instantaneous On-State Voltage Vs. Instantaneous On-State Current, Both Series

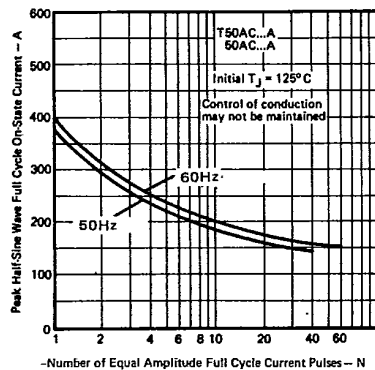


Fig. 7 - Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, Both Series

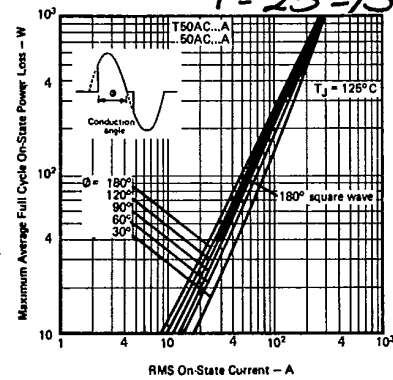
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Fig. 4 - Maximum High Level On-State Power Loss Vs. RMS On-State Current, Both Series

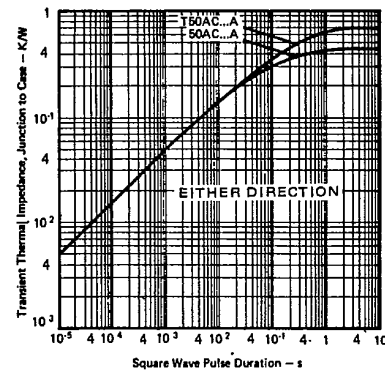


Fig. 6 - Maximum Transient Thermal Impedance Vs. Square Wave Pulse Duration, Both Series

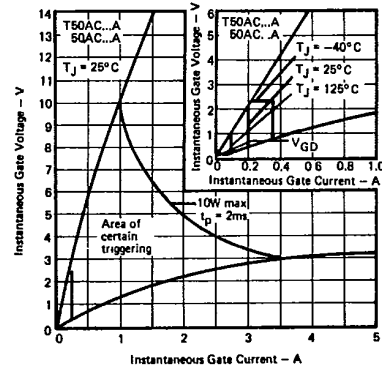


Fig. 8 - Gate Characteristics, Both Series