10RIA120M

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Features

- Hermetic glass -metal seal
- tested according to IEC standards

10A

Typical Applications

- DC motor controls
- Controlled DC power supplies
- AC switch and thermal control
- Synchronous motor excitation

Major Ratings and Characteristics

Parameters		10RIA120M	Units
$I_{T(AV)}$		10	A
	@ T_C	85	°C
$I_{T(RMS)}$		16	A
I_{TSM}	@ 50Hz	310	A
	@ 60Hz	322	A
I^2t	@ 50Hz	523	A^2s
	@ 60Hz	477	A^2s
V_{DRM}/V_{RRM}		400 to 1600	V
Tq	typical	200	μs
T_J	range	- 40 to 125	°C

10RIA120M

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} /V_{DRM}, maximum repetitive peak reverse voltage V	V_{RSM}, maximum non-repetitive peak rev. voltage V	I_{RRM} /I_{DRM} max. @ T_J = T_J max. mA
10RIA120M	04	400	500	10
	08	800	900	
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	

On-state Conduction

Parameter		10RIA 120M	Units	Conditions		
$I_{T(AV)}$	Maximum average on-state current	10	A	180° conduction, half sine wave		
	@ Case temperature	85	°C			
$I_{T(RMS)}$	Maximum RMS on-state current	16	A			
I_{TSM},	Maximum peak, one-cycle non-repetitive surge current	310	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial T_J = T_J max.
		322		t = 8.3ms		
		260		t = 10ms	100% V_{RRM} reapplied	
		272		t = 8.3ms		
I^2t	Maximum I^2t for fusing	522	A^2s	t = 10ms	No voltage reapplied	
		477		t = 8.3ms		
		368		t = 10ms	100% V_{RRM} reapplied	
		336		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	5227	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied, T_J = T_J max.		
V_{TM}	Maximum on-state or forward	1.64	V	Ipk =63 A, T_J = 25°C		
I_H	Maximum holding current	130	mA	T_J = 25°C, anode supply 6V resistive load		
I_L	Typical latching current	200				

Switching

	Parameter	10RIA 120M	Units	Conditions
di/dt	Max. rate of rise of turned-on current	200	A/μs	Gate pulse 20V, 15Ω, tr ≤ 1μs, T_J = T_J max
td	ical delay time	0.9	μs	Gate current 1A, dig/dt = 1A/μs Vd = 0.67% V_{DRM}, T_J = 25°C
Tq	pical turn-off time	110	μs	I_{TM} =$I_{T(AV)}$, T_J = T_J max, t_p>200μs ， V_R = 100V, di/dt = -10A/μs, dv/dt = 20V/μs,

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Blocking

	Parameter	10RIA120M	Units	Conditions
dv/dt	Maximum critical rate of rise of off-state voltage	100	V/μs	T_J = T_J max linear to 100% rated V_{DRM}

Triggering

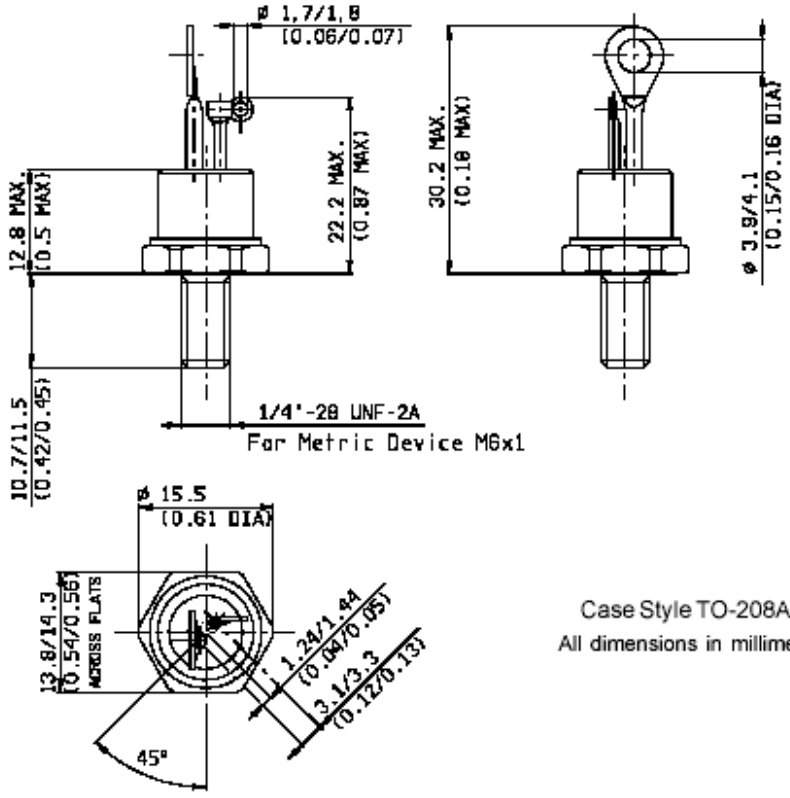
	Parameter	10RIA120M	Units	Conditions	
P_{GM}	Maximum peak gate power	8.0	W	T_J = T_J max	
$P_{G(AV)}$	Maximum average gate power	2.0			
I_{GM}	Max. peak positive gate current	1.5	A	T_J = T_J max	
$-V_{GM}$	Maximum peak negative gate voltage	10	V	T_J = T_J max	
I_{GT}	DC gate current required to trigger	90 60 35	mA	T_J =- 40°C T_J = 25°C T_J = 125°C	Max. required gate trigger current/ voltage are the lowest value which will trigger all units 6V anode-to-cathode applied
V_{GT}	DC gate voltage required to trigger	3.0 2.0 1.0	V	T_J =- 40°C T_J = 25°C T_J = 125°C	
I_{GD}	DC gate current not to trigger	2.0	mA	T_J = T_J max. V_{DRM}=rated value	
V_{GD}	DC gate voltage not to trigger	0.25	V	T_J = T_J max. V_{DRM}=rated value	Max. gate current/ voltage not to trigger is the max. value which will not trigger any unit with rated V anode-to-cathode applied

Thermal and Mechanical Specification

	Parameter	10RIA120M	Units	Conditions
T_J	Max. operating temperature range	-40 to 125	°C	
Tstg	Max. storage temperature range	-40 to 125		
R_{thJC}	Max. thermal resistance, junction to case	0.86	K/W	DC operation
R_{thCS}	Max. thermal resistance, c case to heatsink	0.35		Mounting surface, smooth, flat and greased
T	Mounting torque, ± 10%	2.8	Nm	
wt	Approximate weight	12	g	

10RIA120M

Outline Table



Case Style TO-208AA (TO-48)
All dimensions in millimeters (inches)

10RIA120M

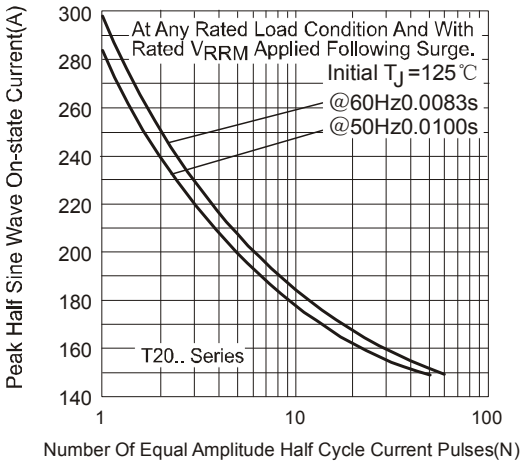


Fig.5-Maximum Non-Repetitive Surge Current

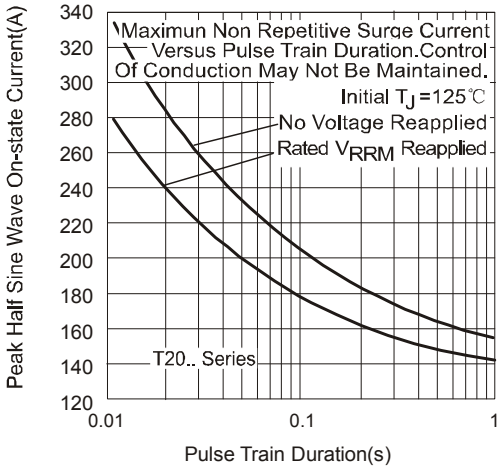


Fig.6-Maximum Non-Repetitive Surge Current

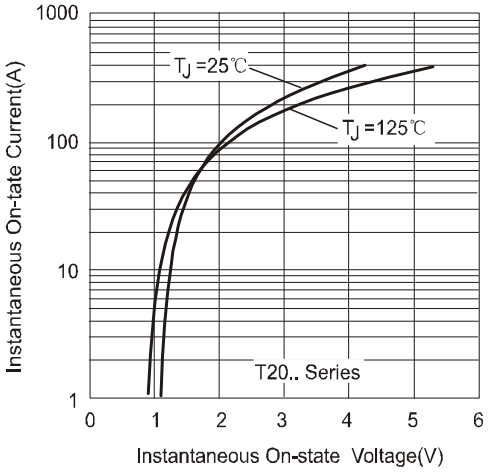


Fig.7-Forward Voltage Drop Characteristics

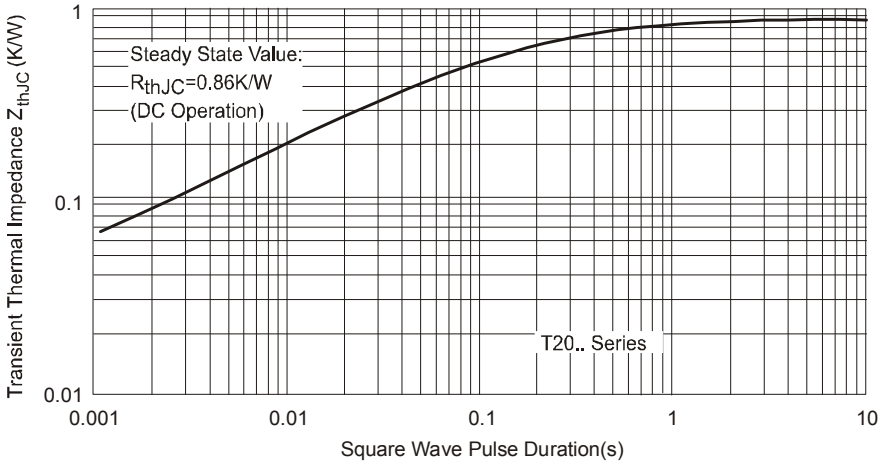


Fig.8-Thermal Impedance Z_{thJC} Characteristics

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