25RIA.. SERIES

PHASE CONTROL THYRISTORS

Stud Version

Features

- Hermetic ceramic -metal seal
- high dv/dt
- tested according to IEC standards
- High surge capability
- Compression Bonded Encapsulation for heavy duty operations such as severe thermal cycling

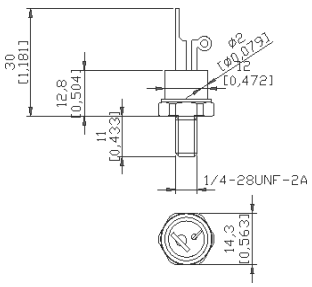
25A

Typical Applications

- DC motor controls
- Controlled DC power supplies
- AC controllers

Major Ratings and Characteristics

Parameters		25RIA..	Units
$I_{T(AV)}$		25	A
	@ T_C	85	°C
$I_{T(RMS)}$		40	A
I_{TSM}	@ 50Hz	350	A
	@ 60Hz	365	A
I^2t	@ 50Hz	760	A^2s
	@ 60Hz	710	A^2s
V_{DRM}/V_{RRM}		400 to 1600	V
Tq	typical	150	µs
T_J	range	- 40 to 125	°C



case style
TO-48

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
25RIA..	04	400	500	30
	08	800	900	
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	

On-state Conduction

Parameter		25RIA..	Units	Conditions		
$I_{T(AV)}$	Maximum average on-state current	25	A	180° conduction, half sine wave		
	@ Case temperature	85	°C			
$I_{(RMS)}$	Maximum RMS on-state current	160	A	180° conduction, half sine wave @ T_C = 80°C		
I_{TSM},	Maximum peak, one-cycle non-repetitive surge current	350	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial T = T max.
		365		t = 8.3ms		
		280		t = 10ms	100% V_{RRM} reapplied	
		290		t = 8.3ms		
I^2t	Maximum I^2t for fusing	760	A^2s	t = 10ms	No voltage reapplied	
		710		t = 8.3ms		
		490		t = 10ms	100% V_{RRM} reapplied	
		470		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	7600	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
V_{TM}	Maximum on-state or forward	1.8	V	pk =750A, T_J = 25°C, t p = 10ms sine pulse		
I_H	Maximum holding current	200	mA	T_J = 25°C, anode supply 12V resistive load		
I_L	Typical latching current	350				

Switching

	Parameter	25RIA..	Units	Conditions
di/dt	ax. non-repetitive rate of rise of turned-on current	200	A/µs	Gate drive 20V, 20Ω, $t_r \leq 1\mu s$ T_J = T_J max, anode voltage ≤ 80% V_{DRM}
td	ical delay time	1.0	µs	Gate current 1A, di_g/dt = 1A/µs V_d = 0.67% V_{DRM}, T_J = 25°C
Tq	pical turn-off time	150	µs	I_{TM} = 300A, T_J = T_J max, di/dt = 20A/µs, V_R = 50V dv/dt = 20V/µs, Gate 0V 100Ω, t_p = 500µs

Blocking

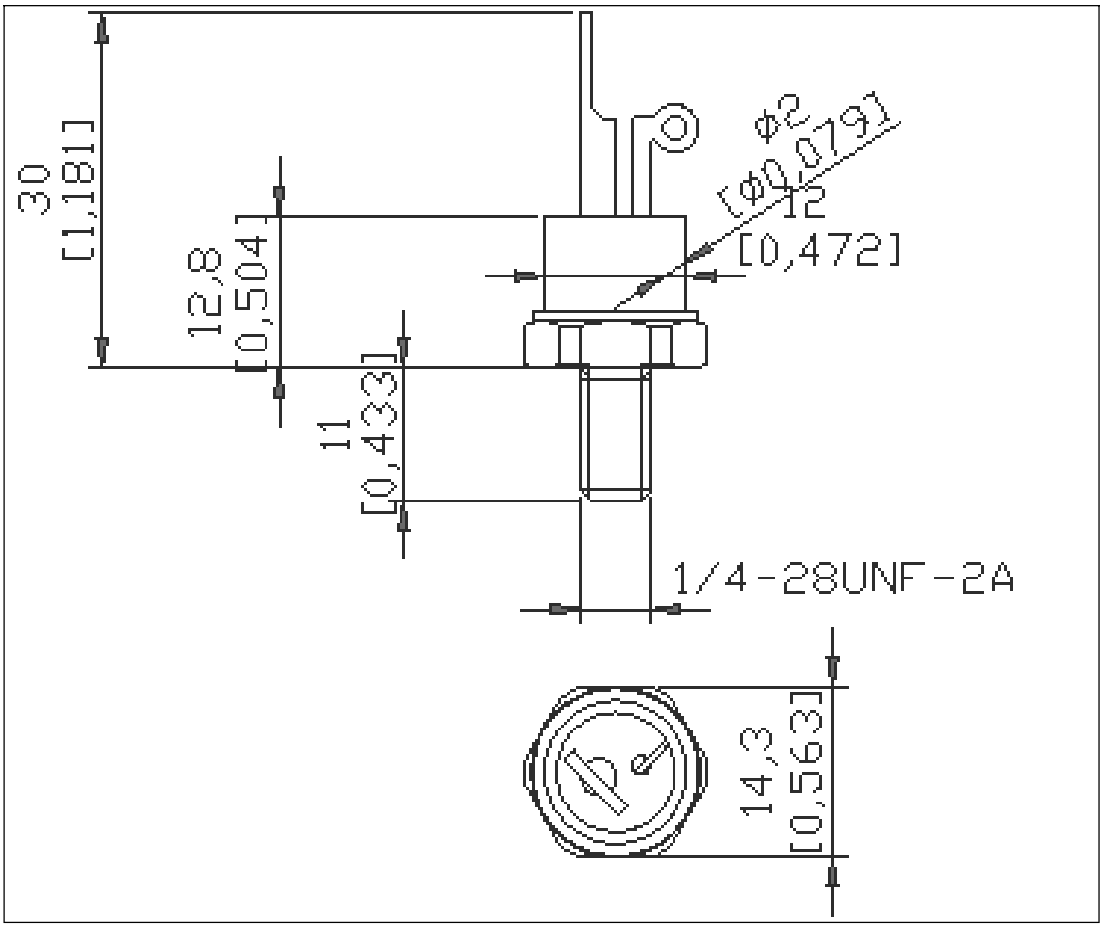
Parameter		25RIA.	Units	Conditions
dv/dt	Maximum critical rate of rise of off-state voltage	400	V/µs	T_J = T_J max linear to 80% rated V_{DRM}
I_{DRM} I_{RRM}	Max. peak reverse and off-state leakage current	15	mA	T_J = T_J max, rated V_{DRM}/V_{RRM} applied

Triggering

Parameter		25RIA..		Units	Conditions	
P_{GM}	Maximum peak gate power	13		W	T_J = T_J max, $t_p \leq$ 5ms	
$P_{G(AV)}$	Maximum average gate power	3.0			T_J = T_J max, f = 50Hz, d% = 50	
I_{GM}	Max. peak positive gate current	3.0		A	T_J = T_J max, $t_p \leq$ 5ms	
$+V_{GM}$	Maximum peak positive gate voltage	20		V	T_J = T_J max, $t_p \leq$ 5ms	
$-V_{GM}$	Maximum peak negative gate voltage	8				
I_{GT}	DC gate current required to trigger	TYP.	MAX.	mA		
		100	-		T_J = - 40°C	Max. required gate trigger/ current/ voltage are the lowest value which will trigger all units 12V anode-to-cathode applied
		50	100		T_J = 25°C	
		10	-		T_J = 125°C	
V_{GT}	DC gate voltage required to trigger	2.9	-	V	T_J = - 40°C	
		1.8	3.0		T_J = 25°C	
		0.5	-		T_J = 125°C	
I_{GD}	DC gate current not to trigger	8		mA	T_J = T_J max	Max. gate current/ voltage not to trigger is the max. value which will not trigger any unit with rated V anode-to-cathode applied
V_{GD}	DC gate voltage not to trigger	0.25		V		

Thermal and Mechanical Specification

Parameter		25RIA..	Units	Conditions
T_J	Max. operating temperature range	-40 to 125	°C	
Tstg	Max. storage temperature range	-40 to 150		
R_{thJC}	Max. thermal resistance, junction to case	0.80	K/W	DC operation
R_{thCS}	Max. thermal resistance, case to heatsink	0.40		Mounting surface, smooth, flat and greased
T	Mounting torque, ± 10%	3	Nm	Non lubricated threads
		25	(lbf-in)	Lubricated threads
wt	Approximate weight	15	g	



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