

T879N SERIES

DISC TYPE THYRISTOR

Features

- Center amplifying gate
- Metal case with ceramic insulator
- tested according to IEC standards

879A

Typical Applications

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

Major Ratings and Characteristics

Parameters	T879N	Units
$I_{T(AV)}$	879	A
@ T_{hs}	55	°C
$I_{T(RMS)}$	1440	A
@ T_{hs}	25	°C
I_{TSM}	@ 50Hz 7850	A
	@ 60Hz 8220	A
$I^2 t$	@ 50Hz 308	KA ² s
	@ 60Hz 281	KA ² s
V_{DRM} / V_{RRM}	1800	V
T_q	typical 150	μs
T_J	range - 40 to 125	°C

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ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ $T_J = 125^\circ\text{C}$ mA
T879N	10	1000	1100	20
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	
	18	1800	1900	
	20	2000	2100	

On-state Conduction

Parameter	T879N	Units	Conditions		
$I_{T(AV)}$ Maximum average on-state current @ Heatsink temperature	879	A	180° conduction, half sine wave		
	55	°C	Double side(single side)cooled		
$I_{(RMS)}$ Maximum RMS on-state current	1440	A	DC@ 25°C heatsink temperature double side cooled		
I_{TSM} Maximum peak, one-cycle non-repetitive surge current	7850	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T = T max.
	8220		t = 8.3ms	reapplied	
	6600		t = 10ms	100% V_{RRM}	
	6900		t = 8.3ms	reapplied	
$I^2 t$ Maximum $I^2 t$ for fusing	308	KA ² s	t = 10ms	No voltage	
	281		t = 8.3ms	reapplied	
	218		t = 10ms	100% V_{RRM}	
	200		t = 8.3ms	reapplied	
$I^2 \sqrt{t}$ Maximum $I^2 \sqrt{t}$ for fusing	3080	KA ² √s	t = 0.1 to 10ms, no voltage reapplied		
V_{TM} Maximum on-state or forward	1.36	V	$I_{pk} = 105A$, $T_J = 125^\circ\text{C}$, $t_p = 10\text{ms}$ sine pulse		
I_H Maximum holding current	600	mA	$T_J = 25^\circ\text{C}$, anode supply 12V resistive load		
I_L Typical latching current	1000				

Switching

Parameter	T879N	Units	Conditions
di/dt Maximum non repetitive rate of rise of turned-on current	1000	A/μs	Gate drive 20V, 20Ω, $t_r \leq 1\mu\text{s}$ $T_J = T_J \text{ max}$, anode voltage $\leq 80\% V_{DRM}$
t_d Typical delay time	1.0	μs	Gate current 1A, $dig/dt = 1A/\mu\text{s}$ $V_d = 0.67\% V_{DRM}$, $T_J = 25^\circ\text{C}$
T_q Typical turn-off time	150	A/μs	$I_{TM} = 300A$, $T_J = T_J \text{ max}$, $di/dt = 20A/\mu\text{s}$, $V_R = 50V$ $dv/dt = 20V/\mu\text{s}$, Gate 0V 100Ω, $t_p = 500\mu\text{s}$

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Blocking

Parameter	T879N	Units	Conditions
dv/dt Maximum critical rate of rise of off-state voltage	500	V/ μ s	T _J = T _J max linear to 80% rated V _{DRM}
I _{DRM} Max. peak reverse and off-state leakage current	30	mA	T _J = T _J max, rated V _{DRM} /V _{RRM} applied

Triggering

Parameter	T879N	Units	Conditions
P _{GM} Maximum peak gate power	10	W	T _J = T _J max, t _p ≤ 5ms
P _{G(AV)} Maximum average gate power	2.0		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 ≤ 5ms
+V _{GM} Maximum peak positive gate voltage	20	V	T _J = T _J max, t _p ≤ 5ms
-V _{GM} Maximum peak negative gate voltage	5.0		
I _{GT} DC gate current required to trigger	TYP.	MAX.	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 12V anode-to-cathode applied
	180	-	
	90	150	
V _{GT} DC gate voltage required to trigger	2.9	-	T _J = -40°C T _J = 25°C T _J = 125°C
	1.8	30	
	1.2	-	
I _{GD} DC gate current not to trigger	10	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	0.30	V	

Thermal and Mechanical Specification

Parameter	T879N	Units	Conditions
T _J Max. operating temperature range	-40 to 125	°C	
T _{stg} Max. storage temperature range	-40 to 150		
R _{thJC} Max. thermal resistance, junction to case	0.17 0.08	K/W	DC operation
R _{thCS} Max. thermal resistance, case to heatsink	0.033 0.017		Mounting surface, smooth, flat and greased
T Mounting torque, ± 10%	4900 (500)		
wt Approximate weight	260	g	

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Outline Table

