
HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

Features:

- . All Diffused Structure
- . Center Amplifying Gate Configuration
- . Guaranteed Maximum Turn-Off Time
- . High dV/dt Capability
- . Pressure Assembled Device

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
2800	2800	2900

V_{RRM} = Repetitive peak reverse voltage

V_{DRM} = Repetitive peak off state voltage

V_{RSM} = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state	I_{RRM} / I_{DRM}	30 mA 300mA (3)
Critical rate of voltage rise	dV/dt (4)	1000 V/ μ sec

Notes:

All ratings are specified for $T_j=25^\circ\text{C}$ unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+125^\circ\text{C}$.

(2) 10 msec. max. pulse width

(3) Maximum value for $T_j = 125^\circ\text{C}$.

(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM} . Gate open. $T_j = 125^\circ\text{C}$.

(5) Non-repetitive value.

(6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-2-6. The value defined would be in addition to that obtained from a snubber circuit, comprising a $0.2\ \mu\text{F}$ capacitor and 20 ohms resistance in parallel with the thyristor under test.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Max. Average value of on-state current	$I_{T(AV)}$		2760		A	Sinewave, 180° conduction $T_c=60^\circ\text{C}$
RMS value of on-state current	I_{TRMS}		4330		A	Nominal value $T_c=60^\circ\text{C}$
Peak one cycle surge (non repetitive) current	I_{TSM}		43		kA	10.0 msec (50Hz), sinusoidal waveshape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		9.25×10^3		kA^2s	
Latching current	I_L		1000		mA	$V_D = 24\text{ V}$; $R_L = 12\ \text{ohms}$
Holding current	I_H		200		mA	$V_D = 24\text{ V}$; $I = 2.5\text{ A}$
Peak on-state voltage	V_{TM}		1.49		V	$I_{TM} = 3000\text{ A}$; $T_j=125^\circ\text{C}$
Critical rate of rise of on-state current (5, 6)	di/dt		150		A/ μs	Switching from $V_{DRM} \leq 1500\text{ V}$, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		1000		A/ μs	Switching from $V_{DRM} \leq 1500\text{ V}$
	r_t		0.17		m Ω	$T_j = 125^\circ\text{C}$
	V_t (to)		0.98		V	$T_j = 125^\circ\text{C}$
	Rgk	-	-		Ω	$T_c = 25^\circ\text{C}$

ELECTRICAL CHARACTERISTICS AND RATINGS (cont'd)
Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		-		W	$t_p = 40 \mu s$
Average gate power dissipation	$P_{G(AV)}$		-		W	
Peak gate current	I_{GM}		-		A	
Gate current required to trigger all units	I_{GT}		- 350 -		mA mA mA	$V_D = 20V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ $V_D = 20V; R_L = 3 \text{ ohms}; T_j = +25^\circ C$ $V_D = 20V; R_L = 3 \text{ ohms}; T_j = +125^\circ C$
Gate voltage required to trigger all units	V_{GT}		- 3.0 -		V V V	$V_D = 20V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ $V_D = 20V; R_L = 3 \text{ ohms}; T_j = 0-125^\circ C$ $V_D = \text{Rated } V_{DRM}; R_L = 1000 \text{ ohms}; T_j = +125^\circ C$
Peak negative voltage	V_{GRM}		-		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		-	-	μs	$I_{TM} = 50 \text{ A}; V_D = \text{Rated } V_{DRM}$ Gate pulse: $V_G = 20 \text{ V}; R_G = 20 \text{ ohms}; t_r = 0.1 \mu s; t_p = 20 \mu s$
Turn-off time (with $V_R = -50 \text{ V}$)	t_q		600	-	μs	$I_{TM} = 2000 \text{ A}; di/dt = 1 \text{ A}/\mu s$; $V_R \geq 100 \text{ V}; \text{Re-applied } dV/dt = 20 \text{ V}/\mu s$ linear to 67% V_{DRM} ; $V_G = 0$; $T_j = 125^\circ C$; Duty cycle $\geq 0.01\%$
Reverse recovery charge	Q_{rr}		4500		μC	$I_{TM} = 2000 \text{ A}; di/dt = 1.0 \text{ A}/\mu s$; $V_R \geq 200 \text{ V}$

* For guaranteed max. value, contact factory.

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

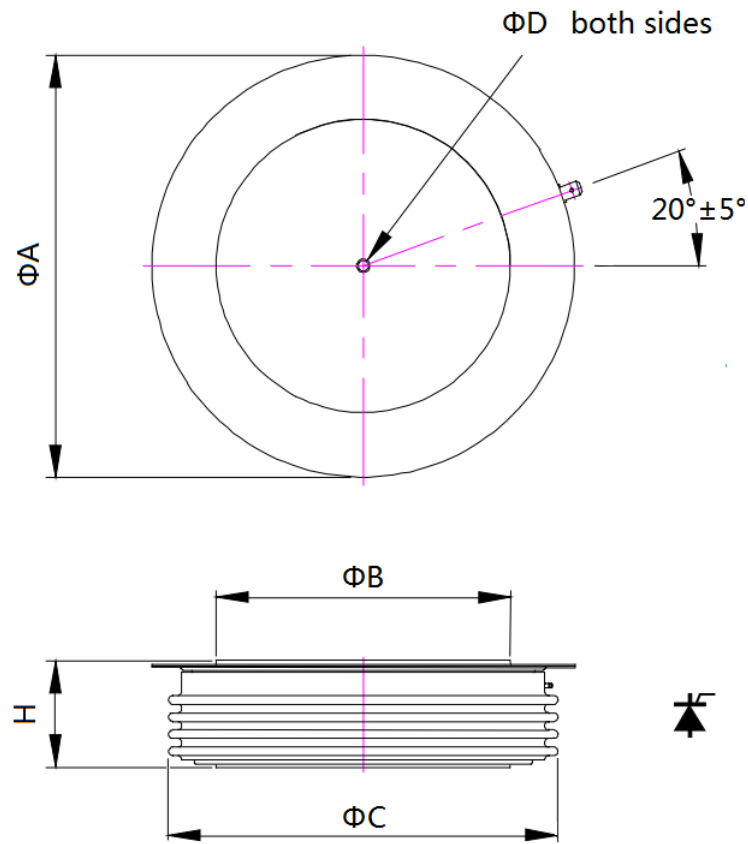
Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ C$	
Storage temperature	T_{stg}	-40	+140		$^\circ C$	
Thermal resistance - junction to case	$R_{\theta(j-c)}$		0.010		$^\circ C / W$	Double sided cooled Single sided cooled
Thermal resistance - case to sink	$R_{\theta(c-s)}$		0.003		$^\circ C / W$	Double sided cooled * Single sided cooled *
Thermal resistance - junction to heatsink	$R_{\theta(j-s)}$		- -		$^\circ C / kW$	Double sided cooled * Single sided cooled *
Mounting force	P	50	62	-	kN	
Weight	W	-	-	-	g	

* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in page 3 of this Technical Data

DCR2760V28

CASE OUTLINE AND DIMENSIONS.



Sym	A	B	C	D	H
mm	109	73	98	3.5×3	26±1