

DISC TYPE THYRISTOR

Features

- Metal case with ceramic insulator
- All diffused design, Center amplifying gate
- High surge current capabilities
- Guaranteed high dv/dt
- Guaranteed high di/dt
- Low thermal impedance
- High speed performance

600A**Typical Applications**

- DC Motor control, AC controllers
- Controlled DC power supplies

Major Ratings and Characteristics

Parameters	ST600C	Units
$I_{T(AV)}$	600	A
@ T_{hs}	65	°C
$I_{T(RMS)}$	942	A
@ T_{hs}	25	°C
I_{TSM}	@ 50Hz 9000	A
	@ 60Hz 9420	A
$I^2 t$	@ 50Hz 405	KA ² s
	@ 60Hz 370	KA ² s
V_{DRM} / V_{RRM}	1800	V
T_q	typical 150	μs
T_J	range - 40 to 125	°C

HUAJING**ST600C...SERIES****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	IDRM/IRRM max. @ $T_J = T_{Jmax}$. mA
ST600C	04	400	500	40
	08	800	900	
	12	1200	1300	
	18	1800	1900	

On-state Conduction

Parameter	ST600C	Units	Conditions
$I_{T(AV)}$ Maximum average on-state current @ Heatsink temperature	600	A	180° conduction, half sine wave
	65	°C	Double side cooled
$I_{(RMS)}$ Maximum RMS on-state current	942	A	DC@ 25°C heatsink temperature double side cooled
I_{TSM} Maximum peak, one-cycle non-repetitive surge current	9000	A	t = 10ms No voltage
	9420		t = 8.3ms reapplied
	7570		t = 10ms 100% V_{RRM}
	7920		t = 8.3ms reapplied
$I^2 t$ Maximum $I^2 t$ for fusing	405	$KA^2 s$	t = 10ms No voltage
	370		t = 8.3ms reapplied
	287		t = 10ms 100% V_{RRM}
	262		t = 8.3ms reapplied
$I^2 \sqrt{t}$ Maximum $I^2 \sqrt{t}$ for fusing	4050	$KA^2 \sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied
V_{TM} Max. peak on-state voltage	1.95	V	$I_{TM} = 1884A$, $T_J = T_{Jmax}$, $t_p = 10ms$ sine wave pulse
I_H Maximum holding current	600	mA	$T_J = 25^\circ C$, $I_T > 30A$
I_L Typical latching current	1000		$T_J = 25^\circ C$, $V_A = 12V$, $R_a = 6\Omega$, $I_G = 1A$

Switching

Parameter	ST600C	Units	Conditions
di/dt Maximum non repetitive rate of rise of turned-on current	1000	A/ μs	$T_J = T_{Jmax}$, $V_{DRM} = \text{rated } V_{DRM}$ $I_{TM} = 2 \times di/dt$
t_d Typical delay time	1.1	μs	$T_J = 25^\circ C$, $V_{DM} = \text{rated } V_{DRM}$, $I_{TM} = 50A$ DC, $t_p = 1\mu s$ Resistive load Gate pulse: 10V, 5 Ω source
T_q Max. turn-off time (*)	Min 100		Max 200

Blocking

Parameter	ST600C	Units	Conditions
dv/dt Maximum critical rate of rise of off-state voltage	500	V/μs	T _J = T _J max. linear to 80% V _{DRM} , higher value available on request
I _{DRM} Max. peak reverse and off-state leakage current	40	mA	T _J = T _J max, rated V _{DRM} /V _{RDM} applied

Triggering

Parameter	ST600C	Units	Conditions
P _{GM} Maximum peak gate power	10	W	T _J = T _J max, f = 50Hz, d% = 50
P _{G(AV)} Maximum average gate power	2		
I _{GM} Max. peak positive gate current	3	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	200	mA	T _J = 25°C, V _A = 12V, R _a = 6Ω
V _{GT} DC gate voltage required to trigger	3	V	
I _{GD} DC gate current not to trigger	10	mA	T _J = T _J max, rated V _{DRM} applied
V _{GD} DC gate voltage not to trigger	0.25	V	

Thermal and Mechanical Specification

Parameter	ST600C	Units	Conditions
T _J Max. operating temperature range	-40 to 125	°C	
T _{stg} Max. storage temperature range	-40 to 150		
R _{thJ-hs} Max. thermal resistance, junction to case	0.09 0.04	KW	DC operation single side cooled DC operation double side cooled
R _{thC-hs} Max. thermal resistance, case to heatsink	0.02 0.01		DC operation single side cooled DC operation double side cooled
T Mounting torque, ± 10%	10	KN	
wt Approximate weight	90	g	

Outline Table in MM

