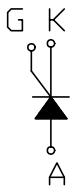
S.C.O.M.E.S. S.R.L.
SOCIETA'COSTRUZIONE MATERIALI
ELETTRONICI E STRUMENTAZIONE

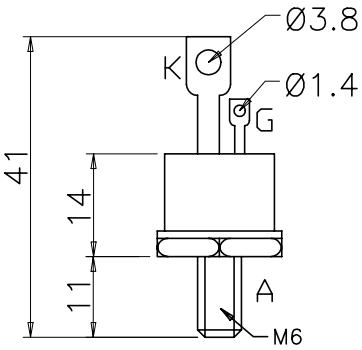
50RIA

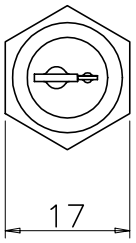
HIGH POWER THYRISTOR
50A (AV)
Hockey Puk version

Features

- High current rating
- For general purpose application
- Superior surge capabilities
- Standard package
- Metric thread version available

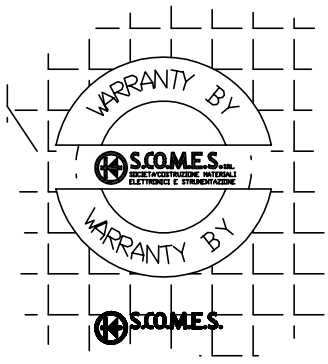






Ratings and Characteristics

Parameters		50RIA	Units
$I_{T(AV)}$		50	A
	@ $T_{C\ MAX}$	94	A
$I_{T(RMS)}$		80	A
I_{TSM}	@ 50Hz	1200	A
	@ 60Hz	1255	A
I^2t	@ 50Hz	7200	A^2s
	@ 60Hz	6560	A^2s
I_{GT}		100	mA
V_{RRM}		50 to 1200	V
t_q	typical	110	µs
T_j		-40 to 125	°C



Voltage Ratings

Type number	Voltage Code	V_{RRM} / V_{DRM} max.repetitive peak reverse or off-state voltage V (2)	V_{RSM} maximum non-repetitive peak reverse voltage V (1)	I_{DM} I_{RM} max. @ 125 °C mA
50RIA	40	400	500	15
	80	800	900	
	120	1200	1300	

ELECTRICAL SPECIFICATIONS

On-state Conduction

Parameter	50RIA	Units	Conditions
$I_{T(AV)}$ Max. average on-state current	50	A	180° sinusoidal conduction
$I_{T(RMS)}$ Max. RMS on-state current	80	A	
I_{TSM} Max. peak,one-cycle non-repetitive surge current	1200	A	50Hz half cycle sine wave or 6ms rectangular pulse; Following any rated load condition, and with rated V_{RRM} applied following surge SCR turnec fully on.
	1255		60Hz half cycle sine wave or 5ms rectangular pulse
	1430		50Hz half cycle sine wave or 6ms rectangular pulse; Following any rated load condition, and with V_{RRM} following surge=0
	1490		60Hz half cycle sine wave or 5ms rectangular pulse
I^2t Maximum I^2t for fusing	7200	A^2s	t=10ms; Rated V_{RRM} applied following surge initial T_J =125°C
	6560		t=8.3ms
	10180		t=10ms; V_{RRM} following surge=0,initial T=125°C
	9300		t=8.3ms
$I^2\sqrt{t}$ Maximum$I^2\sqrt{t}$ for dev.fusing (3)	101.800	$A^2\sqrt{s}$	t=0.1to10ms V_{RRM} following surge=0,initial T=125°C
V_{TM} Max peak on-state voltage	1.6	V	T_J=25°C, $I_{T(AV)}$ =50A(157A peak)
I_H Max holding current	1.14	mA	T_J=25°C, anos supply=22V, initial I_T=2A
I_L Max latching current	400	mA	Anode supply=6V, resistive load

Blocking

Parameter	50RIA	Units	Conditions
dv/dt Min.critical rate of rise of of state voltage	200	V/µs	T_J=125°C.exponential to 100% rated V_{DRM} Zero gate bias voltage gate open circuited
	500	V/µs	T_J=125°C.exponential to 100% rated V_{DRM} Zero gate bias voltage gate open circuited

Switching

Parameter	50RIA	Units	Conditions
di/dt Max.non repetitive rate of rise of turned-on current		A/µs	T_C=25°C V_{DM}=rated V_{DRM} ,I_{TM}=10a dc resistive circuit, Gate pulse:10V,15ohm,tp=6µs,tr=0.1µs max.
V_{RRM} =50 to 600V	200		
V_{RRM} =50 to 600V	100		
t_d Typical delay time	1.0	µs	T_C=25°C V_{DM}=rated V_{DRM} ,I_{TM}=10a dc resistive circuit, Gate pulse:10V,15ohm source,tp=20µs
t_q Typical turn-off time	110		I_{TM}= 50A, T ≅ 125°C,di/dt=-10A/µs,V_R=50V dv/dt = 20V/µs,Gate 0V 100Ω

Triggering

Parameter		50RIA	Units	Conditions
P_{GM}	Maximum peak gate power	10.0	W	tp ≤ 5ms
$P_{G(AV)}$	Maximum average gate power	2.5	W	
I_{GM}	Max. peak positive gate current	2.5	A	
$+V_{GM}$	Maximum peak positive gate voltage	20	V	
$-V_{GM}$	Maximum peak negative gate voltage	10	V	
I_{GT}	DC gate current required to trigger	250 100 50	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 current required to trigger	3.5 2.5	V	T_J = -40°C T_J = 25°C
I_{GD}	DC gate current not to trigger	5.0	mA	T_J = 125°C Max. gate current/voltage not to trigger is the max. value which will not trigger any unit with rated V_{DRM} anode-to-cathode applied
V_{GD}	DC gate voltage not to trigger	0.2	V	

Thermal and Mechanical Specification

Parameter			SCT180	Units	Conditions
T_J	Max.operating temperature range		-40 to 125	°C	
T_{stg}	Max.storage temperature range		-40 to 125		
R_{th-C}	Max.thermal resistance, junction to case		0.35	deg.C/W	DC
R_{thCS}	Max.thermal resistance, case to sink		0.25	deg.C/W	Mounting surface smooth,flat and greased
T	Mounting torque	min.	2.8 (25)	N/m	Non lubricated threads
		max.	3.4 (30)	(lbf/in)	
wt	Approximate weight	min.	28	gr.	

(1) For voltage pulses with tp ≤ 5ms

(2) Units may be broken over non repetitively in the off state direction without damage,if di/dt does not execed 20A/μs

(3) I^2t for time $tx = I^2\sqrt{t} \cdot \sqrt{tx}$