



**PRODUCT NAME : S4020L 20A 400V SCR**

**PRICE : Rs 35.00**

**SKU : RM1957**

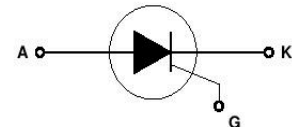
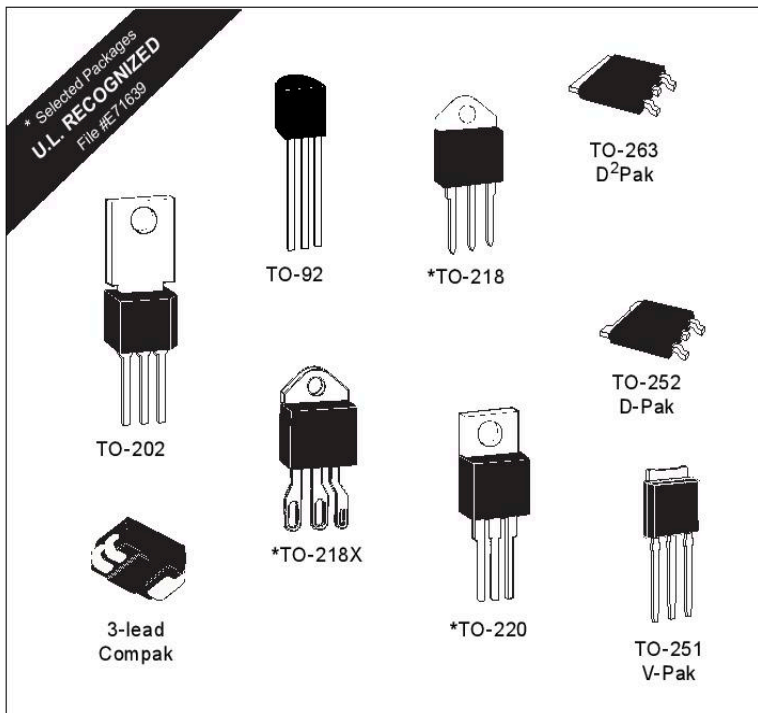


## **DESCRIPTION**

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## **Features**

- Gate Turn-On Voltage (Vgt): 1.5V
- Peak Off-State Voltage(Vdrm): 400V
- On-State Current (Itrms): 20.0A
- Gate Current (Igt): 30mA
- Typical Voltage Change over Time (dV/dT): 450V/μs



# SCRs

(1 A to 70 A) RoHS

## General Description

The Teccor line of thyristor SCR semi-conductors are half-wave, unidirectional, gate-controlled rectifiers which complement Teccor's line of sensitive SCRs. Teccor offers devices with ratings of 1 A to 70 A and 200 V to 1000 V, with gate sensitivities from 10 mA to 50 mA. If gate currents in the 12  $\mu$ A to 500  $\mu$ A ranges are required, see "Sensitive SCRs" section of this catalog.

Three packages are offered in electrically isolated construction where the case or tab is internally isolated to allow the use of low-cost assembly and convenient packaging techniques.

The Teccor line of SCRs features glass-passivated junctions to ensure long-term reliability and parameter stability. Teccor's glass offers a rugged, reliable barrier against junction contamination.








Variations of devices covered in this data sheet are available for custom design applications. Consult the factory for more information.

## Features

- RoHS Compliant
- Electrically-isolated package
- High voltage capability — 200 V to 1000 V
- High surge capability — up to 950 A
- Glass-passivated chip

## Compak SCR

- Surface mount package — 1 A series
- New small profile three-leaded Compak package
- Packaged in embossed carrier tape with 2,500 devices per reel
- Can replace SOT-223

TYPE	Part Number						I <sub>T</sub>		V <sub>DRM</sub> & V <sub>RRM</sub>	I <sub>GT</sub>		
	Isolated		Non-isolated				(1) (2) (15)			(4)		
								Amps		mAmps		
	TO-92	TO-220	TO-202	TO-220	TO-251 V-Pak	Compak	TO-252 D-Pak	I <sub>T(RMS)</sub>	I <sub>T(AV)</sub>	Volts	MIN	MAX
See "Package Dimensions" section for variations. (11)							MAX	MAX	MIN	MIN	MAX	
1 A	S201E				S2N1		1	0.64	200	1	10	
	S401E				S4N1		1	0.64	400	1	10	
	S601E				S6N1		1	0.64	600	1	10	
6 A		S2006L	S2006F1		S2006V		S2006D	6	3.8	200	1	15
		S4006L	S4006F1		S4006V		S4006D	6	3.8	400	1	15
		S6006L	S6006F1		S6006V		S6006D	6	3.8	600	1	15
		S8006L			S8006V		S8006D	6	3.8	800	1	15
		SK006L			SK006V		SK006D	6	3.8	1000	1	15
8 A		S2008L	S2008F1	S2008R	S2008V		S2008D	8	5.1	200	1	15
		S4008L	S4008F1	S4008R	S4008V		S4008D	8	5.1	400	1	15
		S6008L	S6008F1	S6008R	S6008V		S6008D	8	5.1	600	1	15
		S8008L		S8008R	S8008V		S8008D	8	5.1	800	1	15
		SK008L		SK008R	SK008V		SK008D	8	5.1	1000	1	15
10 A		S2010L	S2010F1	S2010R	S2010V		S2010D	10	6.4	200	1	15
		S4010L	S4010F1	S4010R	S4010V		S4010D	10	6.4	400	1	15
		S6010L	S6010F1	S6010R	S6010V		S6010D	10	6.4	600	1	15
		S8010L		S8010R	S8010V		S8010D	10	6.4	800	1	15
		SK010L		SK010R	SK010V		SK010D	10	6.4	1000	1	15
12 A				S2012R	S2012V		S2012D	12	7.6	200	1	20
				S4012R	S4012V		S4012D	12	7.6	400	1	20
				S6012R	S6012V		S6012D	12	7.6	600	1	20
				S8012R	S8012V		S8012D	12	7.6	800	1	20
				SK012R	SK012V		SK012D	12	7.6	1000	1	20

**Specific Test Conditions**

- di/dt** — Maximum rate-of-rise of on-state current; I<sub>GT</sub> = 150 mA with ≤ 0.1 μs rise time
- dv/dt** — Critical rate of applied forward voltage
- I<sup>2</sup>t** — RMS surge (non-repetitive) on-state current for period of 8.3 ms for fusing
- I<sub>DRM</sub> and I<sub>RRM</sub>** — Peak off-state forward and reverse current at V<sub>DRM</sub> and V<sub>RRM</sub>
- I<sub>gt</sub>** — dc gate trigger current; V<sub>D</sub> = 12 V dc; R<sub>L</sub> = 60 Ω for 1 to 16 A devices and 30 Ω for 20 to 70 A devices
- I<sub>GM</sub>** — Peak gate current
- I<sub>H</sub>** — dc holding current; gate open
- I<sub>T</sub>** — Maximum on-state current
- I<sub>TSM</sub>** — Peak one-cycle forward surge current
- P<sub>G(AV)</sub>** — Average gate power dissipation
- P<sub>GM</sub>** — Peak gate power dissipation
- t<sub>gt</sub>** — Gate controlled turn-on time; gate pulse = 100 mA; minimum width = 15 μs with rise time ≤ 0.1 μs
- t<sub>q</sub>** — Circuit commutated turn-off time

- V<sub>DRM</sub> and V<sub>RRM</sub>** — Repetitive peak off-state forward and reverse voltage
- V<sub>gt</sub>** — DC gate trigger voltage; V<sub>D</sub> = 12 V dc; R<sub>L</sub> = 60 Ω for 1 to 16 A devices and 30 Ω for 20 to 70 A devices
- V<sub>TM</sub>** — Peak on-state voltage at maximum rated RMS current

**General Notes**

- All measurements are made at 60 Hz with a resistive load at an ambient temperature of +25 °C unless otherwise specified.
- Operating temperature range (T<sub>J</sub>) is -65 °C to +125 °C for TO-92 devices and -40 °C to +125 °C for all other packages.
- Storage temperature range (T<sub>g</sub>) is -65 °C to +150 °C for TO-92 devices, -40 °C to +150 °C for TO-202 and TO-220 devices, and -40 °C to +125 °C for all others.
- Lead solder temperature is a maximum of 230 °C for 10 seconds maximum; ≥1/16" (1.59 mm) from case.
- The case temperature (T<sub>C</sub>) is measured as shown on dimensional outline drawings in the "Package Dimensions" section of this catalog.

I <sub>DRM</sub> & I <sub>RRM</sub>			V <sub>TM</sub>	V <sub>GT</sub>	I <sub>H</sub>	I <sub>GM</sub>	P <sub>GM</sub>	P <sub>G(AV)</sub>	I <sub>TSM</sub>	dv/dt		I <sup>2</sup> t	di/dt	t <sub>gt</sub>	t <sub>q</sub>	
(14)			(3)	(8) (17)	(5) (13)	(12)	(12)		(6) (10)						(7)	(9) (10)
mAmps			Volts	Volts					Amps	Volts/μSec						
T <sub>C</sub> = 25 °C	T <sub>C</sub> = 100 °C	T <sub>C</sub> = 125 °C	T <sub>C</sub> = 25 °C	T <sub>C</sub> = 25 °C	mAmps	Amps	Watts	Watts	60/50 Hz	T <sub>C</sub> = 100 °C	T <sub>C</sub> = 125 °C	Amps <sup>2</sup> Sec	Amps/μSec	μSec	μSec	
MAX			MAX	MAX	MAX					MIN	MIN			TYP	MAX	
0.01	0.2	0.5	1.6	1.5	30	1.5	15	0.3	30/25	40	20	3.7	50	2	35	
0.01	0.2	0.5	1.6	1.5	30	1.5	15	0.3	30/25	40	20	3.7	50	2	35	
0.01	0.2	0.5	1.6	1.5	30	1.5	15	0.3	30/25	40	20	3.7	50	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	250	200	41	100	2	35	
0.02	3		1.6	1.5	30	2	20	0.5	100/83	100		41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	250	200	41	100	2	35	
0.02	3		1.6	1.5	30	2	20	0.5	100/83	100		41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	250	200	41	100	2	35	
0.02	3		1.6	1.5	30	2	20	0.5	100/83	100		41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35	
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35	
0.01	0.5	1	1.6	1.5	40	2	20	0.5	120/100	350	250	60	100	2	35	
0.01	0.5	1	1.6	1.5	40	2	20	0.5	120/100	350	250	60	100	2	35	
0.01	0.5	1	1.6	1.5	40	2	20	0.5	120/100	300	225	60	100	2	35	
0.02	0.5	1	1.6	1.5	40	2	20	0.5	120/100	250	200	60	100	2	35	
0.02	3		1.6	1.5	40	2	20	0.5	120/100	100		60	100	2	35	

**Electrical Specification Notes**

- (1) See Figure E6.5 through Figure E6.16 for current rating at specified operating case temperature.
- (2) See Figure E6.1 and Figure E6.2 for free air current rating.
- (3) See Figure E6.19 and Figure E6.20 for instantaneous on-state current versus on-state voltage (typical).
- (4) See Figure E6.18 for I<sub>GT</sub> versus T<sub>C</sub>.
- (5) See Figure E6.17 for I<sub>H</sub> versus T<sub>C</sub>.
- (6) For more than one full cycle rating, see Figure E6.23.
- (7) See Figure E6.22 for t<sub>gt</sub> versus I<sub>GT</sub>.
- (8) See Figure E6.21 for V<sub>GT</sub> versus T<sub>C</sub>.
- (9) Test conditions are as follows:
  - I<sub>T</sub> = 1 A for 1 A devices and 2 A for all other devices
  - Pulse duration = 50 μs, dv/dt = 20 V/μs, di/dt = -10 A/μs for 1 A devices, and -30 A/μs for other devices
  - I<sub>GT</sub> = 200 mA at turn-on
- (10) See Figure E6.5 through Figure E6.10 for maximum allowable case temperatures at maximum rated current.
- (11) See package outlines for lead form configuration. When ordering special lead forming, add type number as suffix to part number.
- (12) Pulse width ≤ 10 μs
- (13) Initial on-state current = 200 mA dc for 1 A through 16 A devices; 400 mA dc for 20 A through 70 A devices.
- (14) T<sub>C</sub> = T<sub>J</sub> for test conditions in off state.
- (15) The R, K, or M package rating is intended for high surge condition use only and not recommended for ≥ 50 A rms continuous current use since narrow pin lead temperature can exceed PCB solder melting temperature. Teccor's J package or W package is recommended for ≥ 50 A rms continuous current requirements.
- (16) For various durations of an exponentially decaying current waveform, see Figure E6.3 and Figure E6.4. (t<sub>W</sub> is defined as 5 time constants.)
- (17) Minimum non-trigger V<sub>GT</sub> at 125 °C is 0.2 V.

