

## SEMPACK® 0 Twin Thyristor Modules for a.c. controllers

**SKKQ 31**  
**SKKQ 45**

$V_{RSM}$	$V_{RRM}$	$(dv/dt)_{cr}$	$I_{RMS}$ (maximum values for continuous operation)	
V	$V_{DRM}$	V/ $\mu$ s	$(T_{case} = 85\text{ }^{\circ}\text{C})$	
			$24\text{ A}^{1)}$ ; $30\text{ A}^{2)}$	$24\text{ A}^{1)}$ ; $45\text{ A}^{2)}$
700	600	500	–	<b>SKKQ 45/06</b>
900	800	500	<b>SKKQ 31/08</b>	<b>SKKQ 45/08</b>
1300	1200	500	<b>SKKQ 31/12</b>	<b>SKKQ 45/12</b>
1500	1400	500	<b>SKKQ 31/14</b>	<b>SKKQ 45/14</b>
1700	1600	500	<b>SKKQ 31/16</b>	<b>SKKQ 45/16</b>

Symbol	Conditions	SKKQ 31	SKKQ 45
$I_{RMS}$	W1C; sin. 180; $T_{case} = 85\text{ }^{\circ}\text{C}$	$30\text{ A}^{2)}$	$45\text{ A}^{2)}$
$I_{TRMS}$	sin. 180; $T_{case} = 85\text{ }^{\circ}\text{C}$	21 A	32 A
$I_{TSM}$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; 10 ms	320 A	470 A
$i^2t$	$T_{vj} = 125\text{ }^{\circ}\text{C}$ ; 10 ms	280 A	400 A
	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; 8,3 ... 10 ms	$510\text{ A}^2\text{s}$	$1100\text{ A}^2\text{s}$
	$T_{vj} = 125\text{ }^{\circ}\text{C}$ ; 8,3 ... 10 ms	$390\text{ A}^2\text{s}$	$800\text{ A}^2\text{s}$
$t_{gd}$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; $I_G = 1\text{ A}$ ; $di_G/dt = 1\text{ A}/\mu\text{s}$	1 $\mu\text{s}$	
$t_{gr}$	$V_D = 0,67 \cdot V_{DRM}$	1 $\mu\text{s}$	
$(di/dt)_{cr}$	$T_{vj} = 125\text{ }^{\circ}\text{C}$	100 A/ $\mu\text{s}$	
$t_q$	$T_{vj} = 125\text{ }^{\circ}\text{C}$	typ. 80 $\mu\text{s}$	
$I_H$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; typ./max.	100/200 mA	
$I_L$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; $R_G = 33\ \Omega$ ; typ./max.	250/400 mA	
$V_T$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; $I_T = 75\text{ A}$	max. 2,45 V	max. 1,8 V
$V_{T(TO)}$	$T_{vj} = 125\text{ }^{\circ}\text{C}$	1,1 V	0,9 V
$r_T$	$T_{vj} = 125\text{ }^{\circ}\text{C}$	20 m $\Omega$	12 m $\Omega$
$I_{DD}$ ; $I_{RD}$	$T_{vj} = 125\text{ }^{\circ}\text{C}$ ; $V_{DD} = V_{DRM}$ ; $V_{RD} = V_{RRM}$	max. 10 mA	max. 10 mA
$V_{GT}$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; d. c.	3 V	
$I_{GT}$	$T_{vj} = 25\text{ }^{\circ}\text{C}$ ; d. c.	150 mA	
$V_{GD}$	$T_{vj} = 125\text{ }^{\circ}\text{C}$ ; d. c.	0,25 V	
$I_{GD}$	$T_{vj} = 125\text{ }^{\circ}\text{C}$ ; d. c.	5 mA	
$R_{thjc}$	cont.	1,6/0,8 $^{\circ}\text{C}/\text{W}$	1,2/0,6 $^{\circ}\text{C}/\text{W}$
$R_{thch}$	} per thyristor/per module	1,7/0,9 $^{\circ}\text{C}/\text{W}$	1,3/0,6 $^{\circ}\text{C}/\text{W}$
$T_{vj}$		0,2/0,1 $^{\circ}\text{C}/\text{W}$	
$T_{stg}$		– 40 ... +125 $^{\circ}\text{C}$ – 40 ... +125 $^{\circ}\text{C}$	
$V_{isol}$	a. c. 50 Hz; r.m.s.; 1 s/1 min	3600 V~ /3000 V~	
$M_1$	Case to heatsink; SI units/US units	1,5 Nm/13 lb. in. $\pm 15\%$ <sup>3)</sup>	
$a$		5 · 9,81 m/s <sup>2</sup>	
$w$	approx.	50 g	
Case	→ page B 1 – 34	A 41	



**SKKQ**

### Features

- Heat transfer through aluminium oxide ceramic isolated metal baseplate
- Hard soldered joints for high reliability
- UL recognized, file no E 63 532

### Typical Applications

- AC motor starters
- Temperature control (e. g. for ovens, chemical processes)
- Professional light dimming (studios, theaters)

<sup>1)</sup> Using tin plated connectors with flexible leads of 6 mm<sup>2</sup> for the main terminals

<sup>2)</sup> Flexible leads of 6 mm<sup>2</sup> soldered to the main terminals

<sup>3)</sup> See the assembly instructions

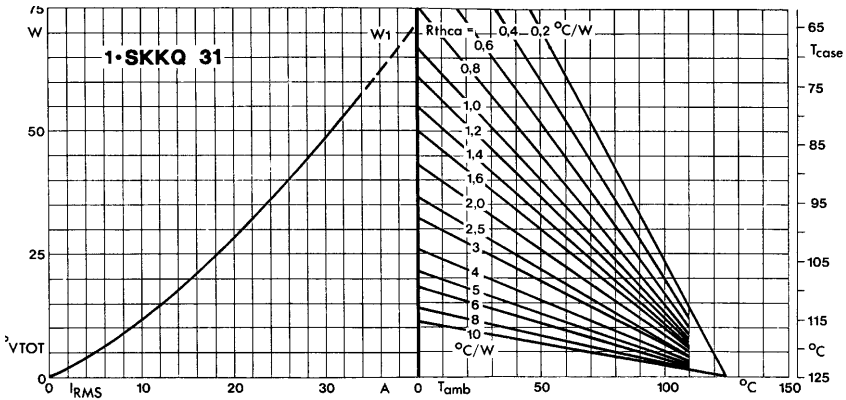


Fig. 2 a Power dissipation per module vs. rms current and case temperature

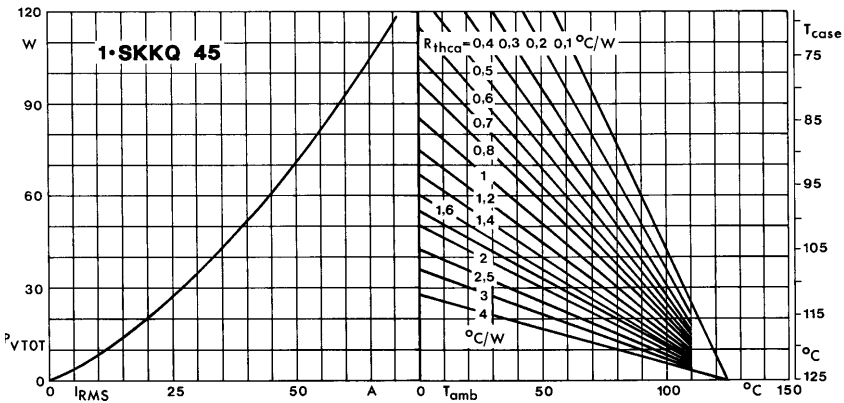


Fig. 2 b Power dissipation per module vs. rms current and case temperature

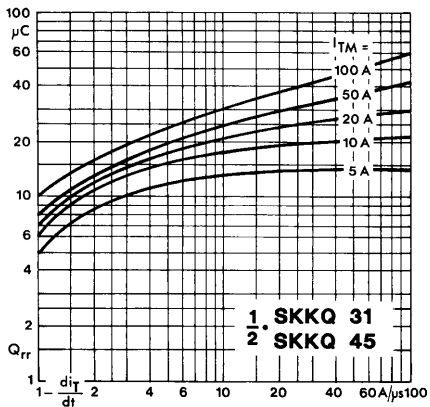


Fig. 5 Recovered charge vs. current decrease

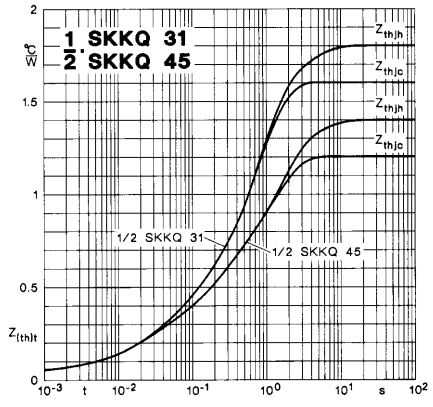


Fig. 6 Transient thermal impedance vs. time

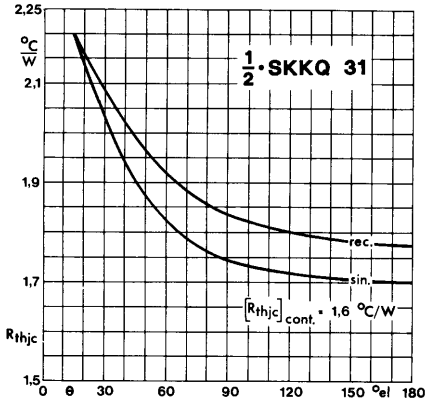


Fig. 7 a Thermal resistance vs. conduction angle

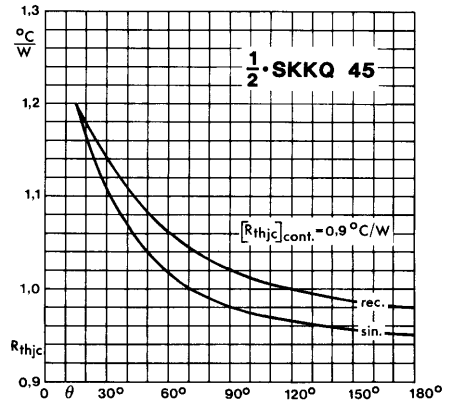


Fig. 7 b Thermal resistance vs. conduction angle

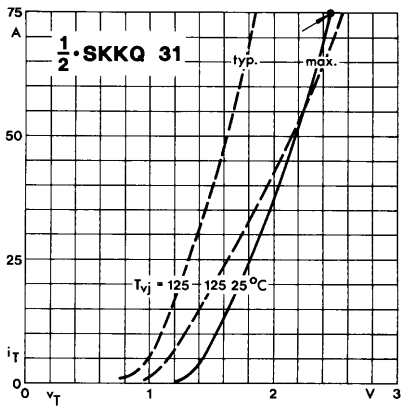


Fig. 8 a On-state characteristics

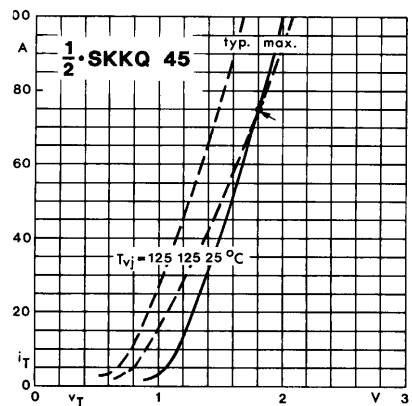


Fig. 8 b On-state characteristics

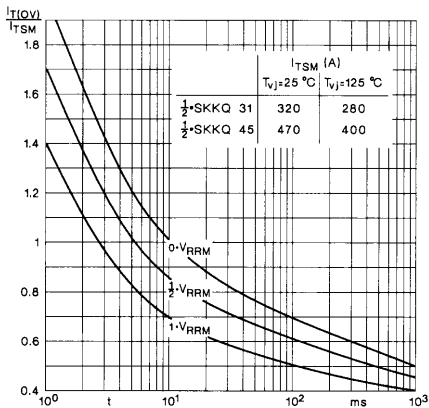


Fig. 9 Surge overload current vs. time

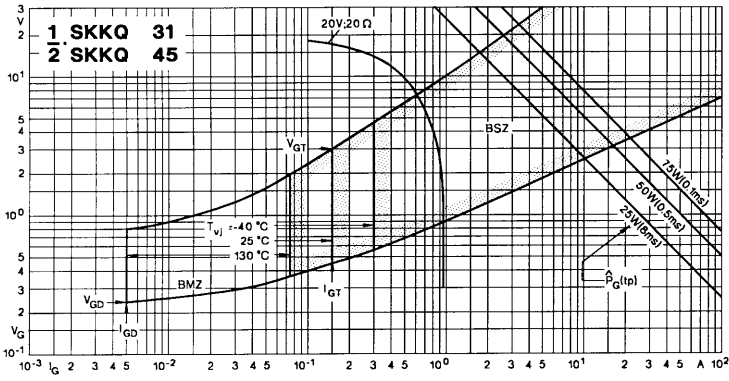


Fig. 10 Gate trigger characteristics

