

SKUT 115/16T V2



SEMIPONT® 5

Three phase antiparallel thyristor module

SKUT 115/16T V2

Features

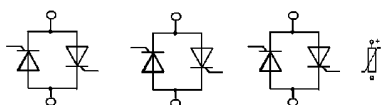
- Compact design
- Two screws mounting
- Heat transfer and isolation through direct copper board (Low R_{th})
- Low resistance in steady-state and high reliability
- High surge currents
- Glass passivated thyristor chips
- UL recognized, file no. E 63 532
- Integrated temperature sensor

Typical Applications*

- Soft starter
- Light control (e.g. studios, theaters)
- Temperature control (e.g. oven, chemical processes)

Remarks

- $I_{RMS}=105A$, for W3C application, $\sin.180^\circ$ and $T_S=85^\circ C$



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Absolute Maximum Ratings

Symbol	Conditions	Values	Unit	
Chip				
$I_{T(AV)}$	sinus 180°	$T_s = 25^\circ C$	127	A
		$T_s = 85^\circ C$	71	A
I_{TSM}	10 ms	$T_j = 25^\circ C$	1500	A
		$T_j = 130^\circ C$	1250	A
i^2t	10 ms	$T_j = 25^\circ C$	11250	A^2s
		$T_j = 130^\circ C$	7813	A^2s
V_{RSM}		1700	V	
V_{RRM}		1600	V	
V_{DRM}		1600	V	
$(di/dt)_{cr}$	$T_j = 130^\circ C$	50	$A/\mu s$	
$(dv/dt)_{cr}$	$T_j = 130^\circ C$	500	$V/\mu s$	
T_j		-40 ... 125	$^\circ C$	
Module				
T_{stg}		-40 ... 125	$^\circ C$	
V_{isol}	ac; 50Hz; r.m.s	1 min	3000	V
		1 s	3600	V

Characteristics

Symbol	Conditions	min.	typ.	max.	Unit
Chip					
V_T	$T_j = 25^\circ C, I_T = 150 A$			1.6	V
$V_{T(TO)}$	$T_j = 130^\circ C$			0.9	V
r_T	$T_j = 130^\circ C$			5	$m\Omega$
$I_{DD}; I_{RD}$	$T_j = 130^\circ C, V_{RD}=V_{RRM}$			20	mA
t_{gd}	$T_j = 25^\circ C, I_G = 1 A, di_G/dt = 1 A/\mu s$		1		μs
t_{gr}	$V_D = 0.67 * V_{DRM}$		2		μs
t_q	$T_j = 130^\circ C$		150		μs
I_H	$T_j = 25^\circ C$			200	mA
I_L	$T_j = 25^\circ C, R_G = 33 \Omega$			600	mA
V_{GT}	$T_j = 25^\circ C, d.c.$	3			V
I_{GT}	$T_j = 25^\circ C, d.c.$	150			mA
V_{GD}	$T_j = 130^\circ C, d.c.$			0.25	V
I_{GD}	$T_j = 115^\circ C, d.c.$	6			mA
$R_{th(j-s)}$	continuous DC	per thyristor			K/W
$R_{th(j-s)}$		per module			K/W
$R_{th(j-s)}$	sin. 180°	per thyristor			K/W
$R_{th(j-s)}$		per module		0.32	K/W
$R_{th(j-s)}$	rec. 120°	per thyristor			K/W
$R_{th(j-s)}$		per module			K/W
Module					
$R_{th(c-s)}$					K/W
M_s	to heatsink	2.25		2.5	Nm
M_t					Nm
a					m/s^2
w			75		g
Temperature Sensor					
R_{100}	$T_r = 100^\circ C$, tolerance = 3 %		1670		Ω
$B_{100/125}$	$R(T)=1000\Omega[1+A(T-25^\circ C)+B(T-25^\circ C)^2]$], $A = 7.635 * 10^{-3} \text{ }^\circ C^{-1}$, $B = 1.731 * 10^{-5} \text{ }^\circ C^{-2}$		$3550 \pm 2\%$		K

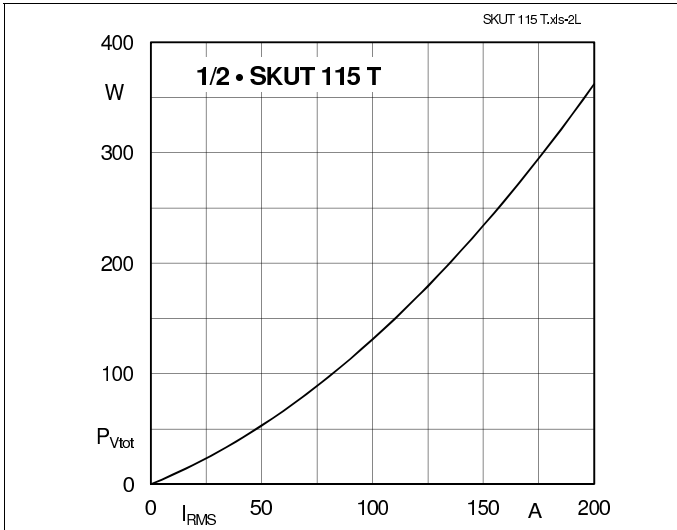


Fig. 2: Power dissipation per thyristor vs r.m.s. current

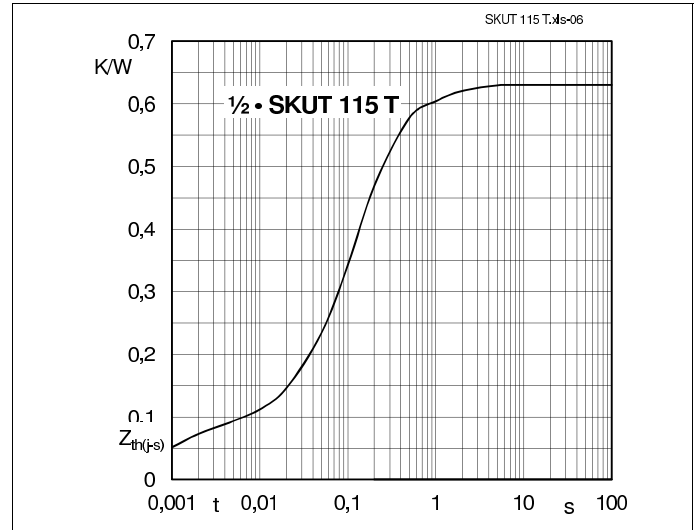


Fig. 6: Transient thermal impedance $Z_{th}(j-s)$

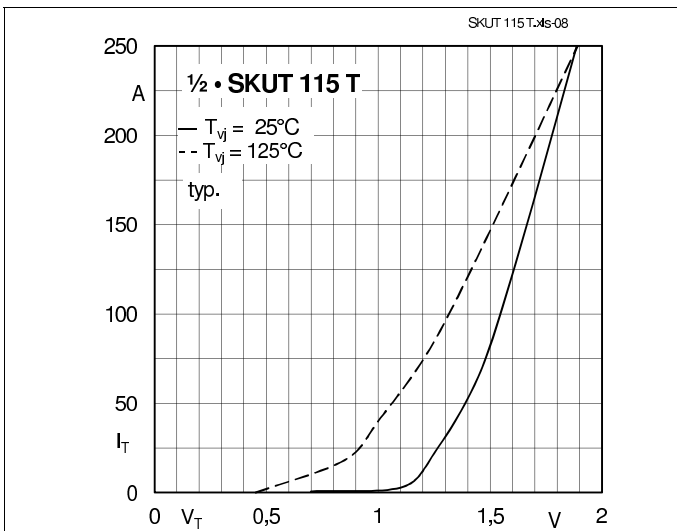


Fig. 8: On state characteristics

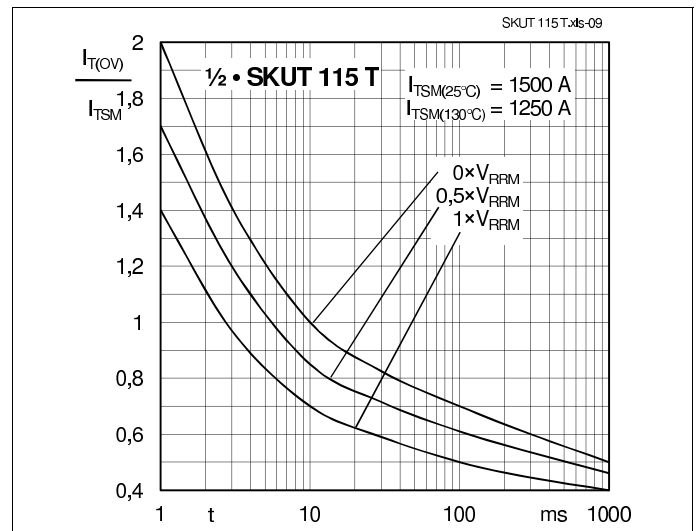


Fig. 9: Surge overload current vs. time

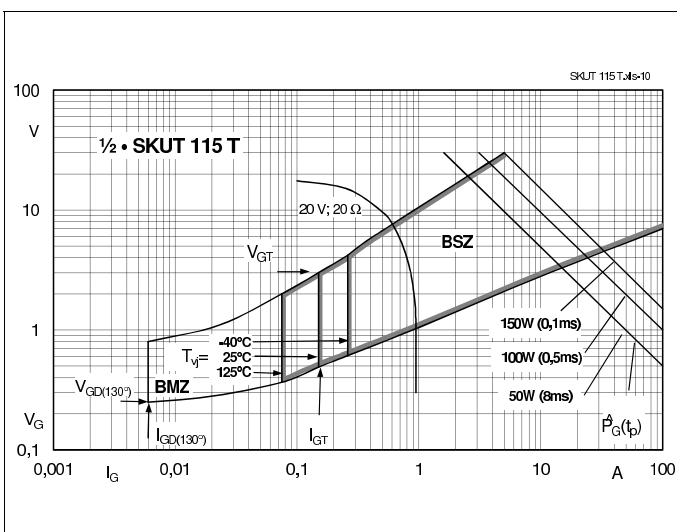


Fig. 10: Gate trigger characteristic

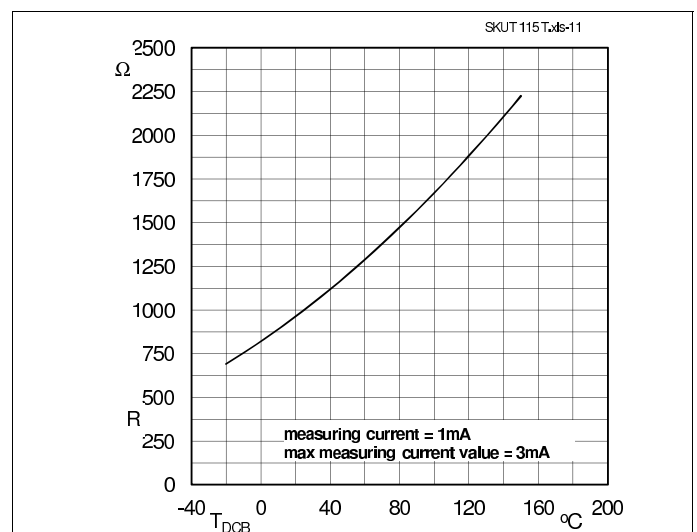
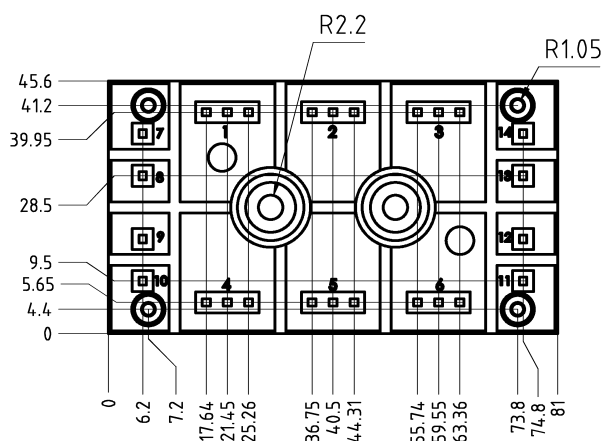
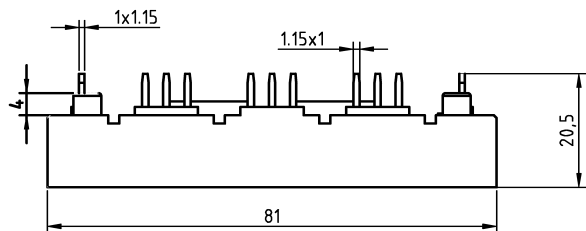
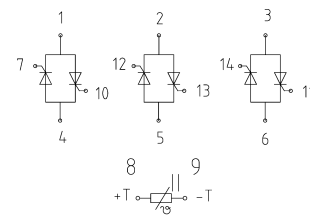


Fig. 11: Temperature sensor characteristic

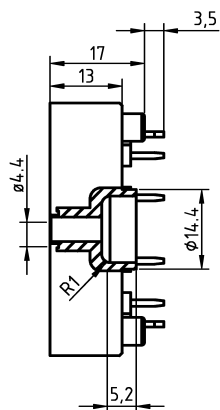
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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our staff.