

# Thyristor Modules

## AMKT 323-16E



Symbols and parameters			Values	Units
$I_{TAV}$	Average on-state current	sin. 180; $T_C = 85 (100)^\circ\text{C}$	320 (241)	A
$I_{TSM}$	Surge on-state current	$T_j = 25^\circ\text{C}; 10 \text{ ms}$	9500	A
		$T_j = 130^\circ\text{C}; 10 \text{ ms}$	8200	A
$I^2t$	$I^2t$ value, rating for fusing	$T_j = 25^\circ\text{C}; 10 \text{ ms}$	451250	$\text{A}^2\text{s}$
		$T_j = 130^\circ\text{C}; 10 \text{ ms}$	336200	$\text{A}^2\text{s}$
$V_{RSM}$	Non-repetitive peak reverse voltage		1700	V
$V_{RRM}; V_{DRM}$	Repetitive peak reverse voltage; Repetitive peak off-state voltage		1600	V
$(di/dt)_{cr}$	Critical rate of rise of on-state current	$T_j = 130^\circ\text{C}$	130	$\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	Critical rate of rise of off-state voltage	$T_j = 130^\circ\text{C}$	1000	$\text{V}/\mu\text{s}$
$T_j$	Virtual junction temperature		-40 ... +130	$^\circ\text{C}$
$T_{stg}$	Storage temperature range		-40 ... +125	$^\circ\text{C}$
$V_{ISOL}$	Insulation test voltage (r.m.s.)	a.c. 50 Hz; r.m.s.; 1s / 1min.	3600 / 3000	V
$V_T$	On-state voltage	$T_j = 25^\circ\text{C}; I_T = 750 \text{ A}$	max. 1.45	V
$V_{T(TO)}$	On-state threshold voltage	$T_j = 130^\circ\text{C}$	max. 0.81	V
$r_T$	On-state slope resistance	$T_j = 130^\circ\text{C}$	max. 0.85	$\text{m}\Omega$
$I_{DD}; I_{RD}$	Forward off-state current; Direct reverse current	$T_j = 130^\circ\text{C}, V_{RD} = V_{RRM}; V_{DD} = V_{DRM}$	max. 100	mA
$t_{gd}$	Gate controlled turn-on delay time	$T_j = 25^\circ\text{C}; I_G = 1 \text{ A}; di_G/dt = 1 \text{ A}/\mu\text{s}$	1	$\mu\text{s}$
$t_{gr}$	Gate controlled rise time	$V_D = 0,67 * V_{DRM}$	2	$\mu\text{s}$
$t_q$	Turn-off time	$T_j = 130^\circ\text{C}; \text{typ.}$	150	$\mu\text{s}$
$I_H$	Holding current	$T_j = 25^\circ\text{C}; \text{typ.} / \text{max}$	150 / 500	mA
$I_L$	Latching current	$T_j = 25^\circ\text{C}; R_G = 33\Omega; \text{typ.} / \text{max}$	300 / 2000	mA
$V_{GT}$	Gate trigger voltage	$T_j = 25^\circ\text{C}; \text{d.c.}$	min. 2	V
$I_{GT}$	Gate trigger current	$T_j = 25^\circ\text{C}; \text{d.c.}$	min. 150	mA
$V_{GD}$	Gate non-trigger voltage	$T_j = 130^\circ\text{C}; \text{d.c.}$	max. 0.25	V
$I_{GD}$	Gate non-trigger current	$T_j = 130^\circ\text{C}; \text{d.c.}$	max. 10	mA
$R_{th(j-c)}$	Thermal resistance, junction to case	cont. DC; per chip / per module	0.091 / 0.0455	$\text{K}/\text{W}$
		sin.180; per chip / per module	0.095 / 0.048	$\text{K}/\text{W}$
		rec.120; per chip / per module	0.11 / 0.055	$\text{K}/\text{W}$
$R_{th(c-s)}$	Thermal resistance, junction to heatsink	per chip / per module	0.08 / 0.04	$\text{K}/\text{W}$
$M_s$	Mounting torque on heatsink	min / max	4.25 / 5.75	Nm
$M_t$	Mounting torque for terminals	min / max	7.65 / 10.35	Nm
$a$	Maximum allowable acceleration		$5 * 9.81$	$\text{m}/\text{s}^2$
$W$	Weight	approx.	410	g

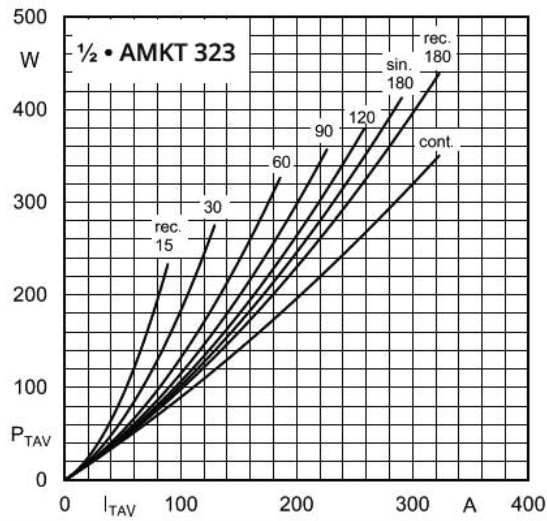


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

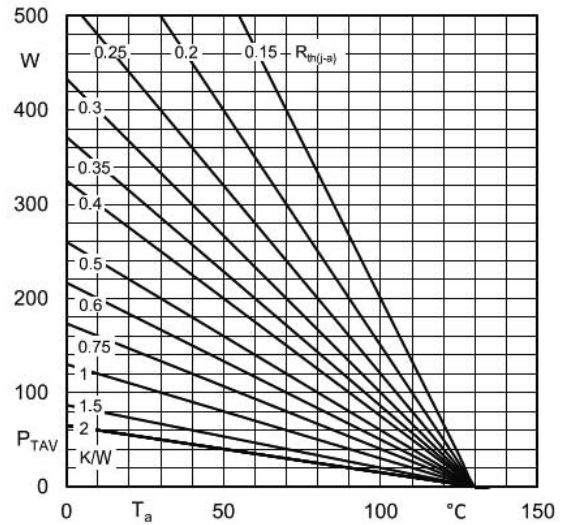


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

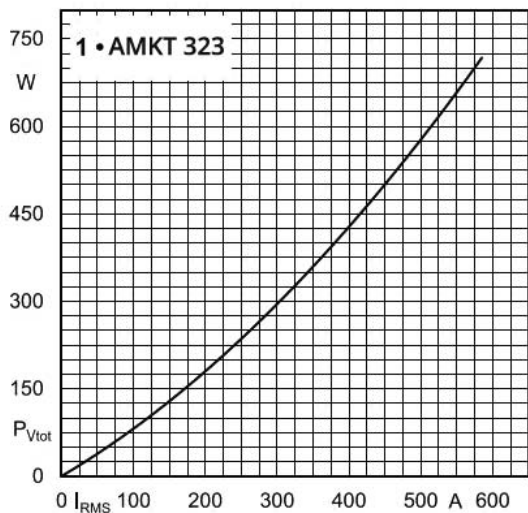


Fig. 2L: Power dissipation of one module vs. rms current

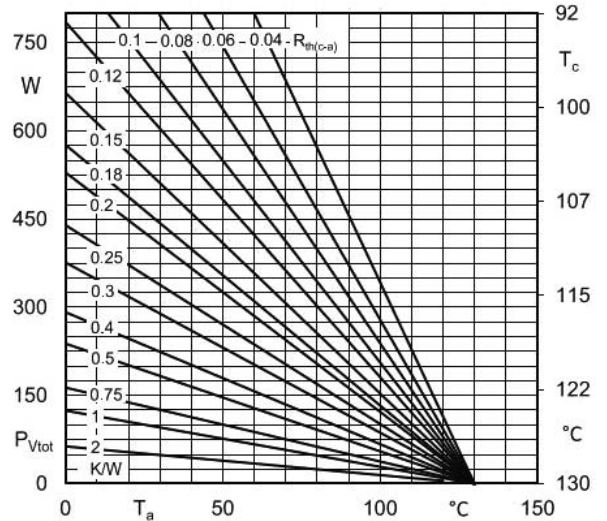


Fig. 2R: Power dissipation of one module vs. case temperature

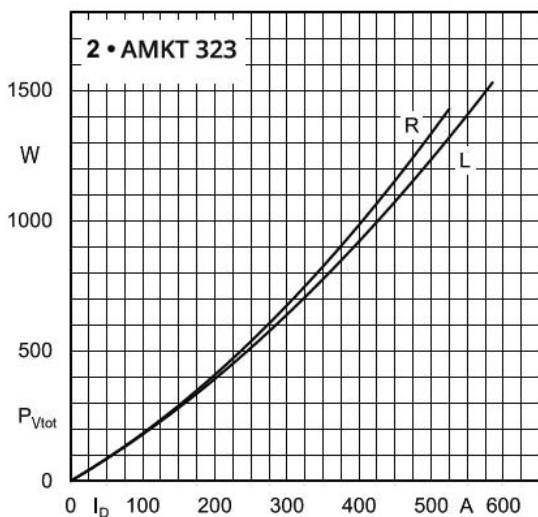


Fig. 3L: Power dissipation of two modules vs. direct current

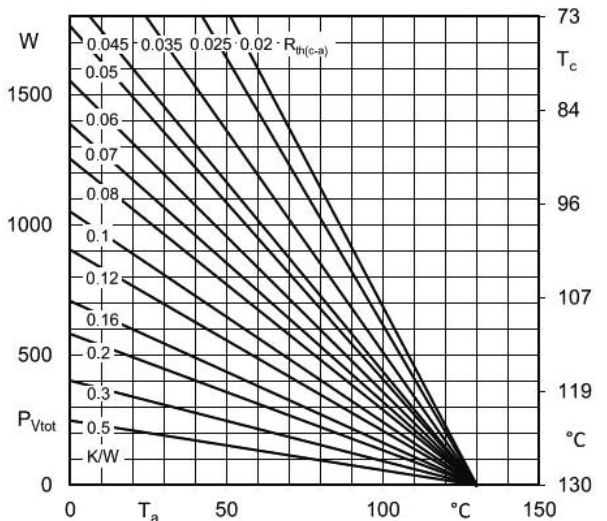


Fig. 3R: Power dissipation of two modules vs. case temperature

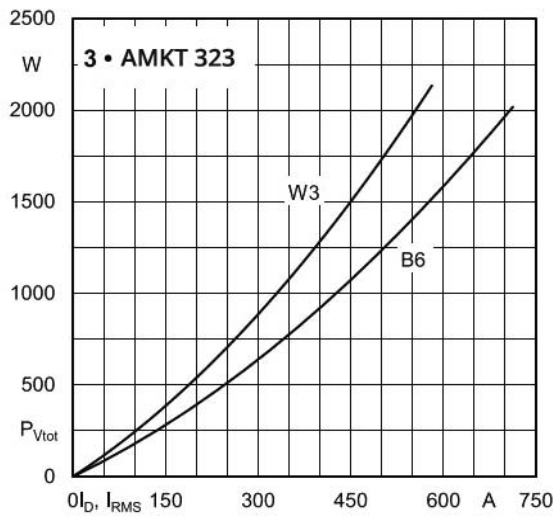


Fig. 4L: Power dissipation of three modules vs. direct and rms current

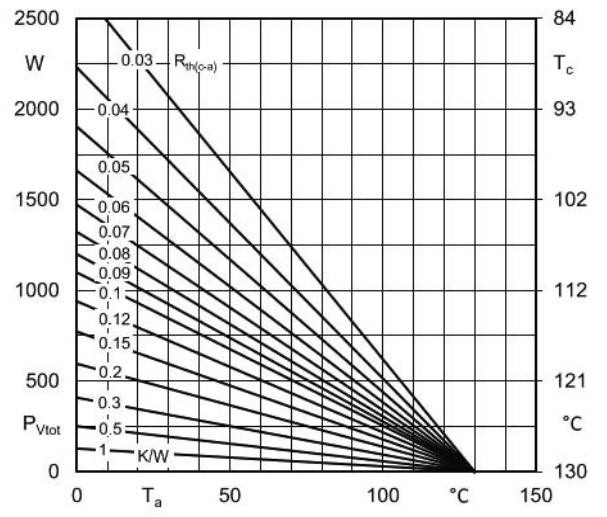


Fig. 4R: Power dissipation of three modules vs. case temperature

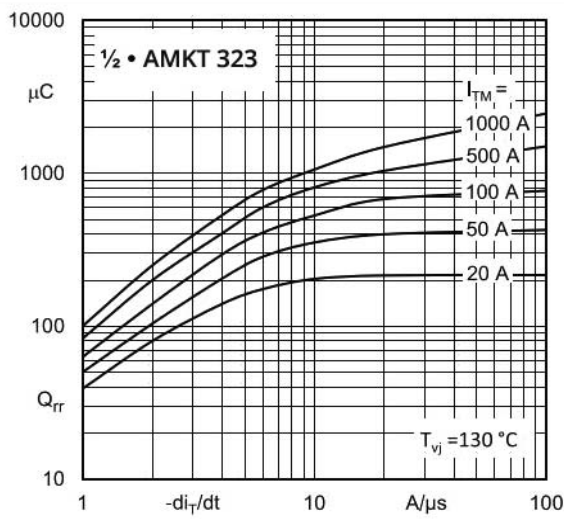


Fig. 5: Recovered charge vs. current decrease

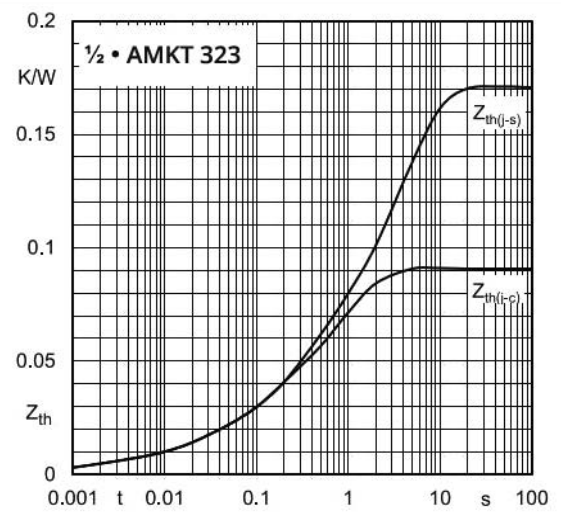


Fig. 6: Transient thermal impedance vs. time

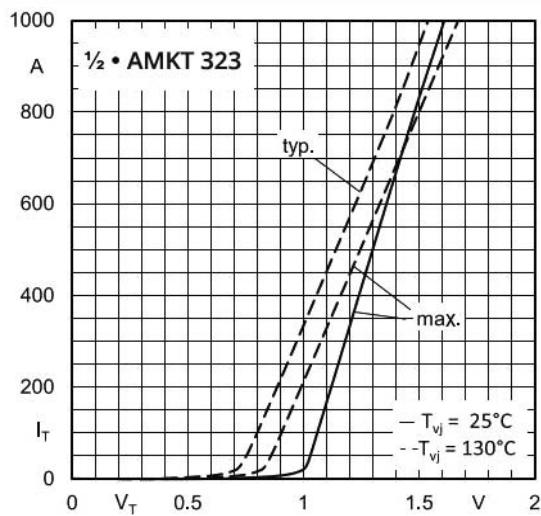


Fig. 7: On-state characteristics

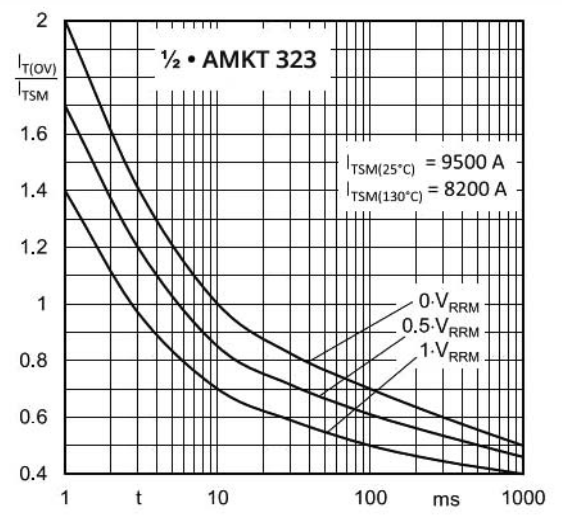


Fig. 8: Surge overload current vs. time

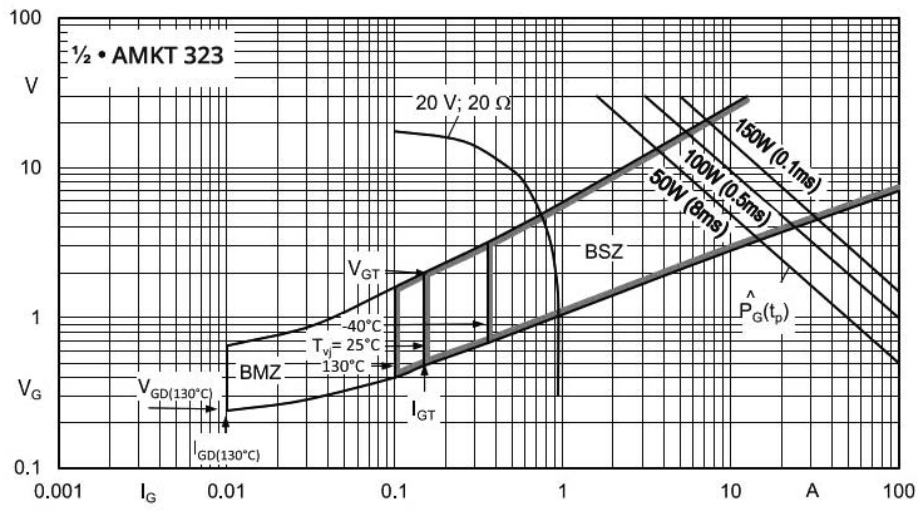
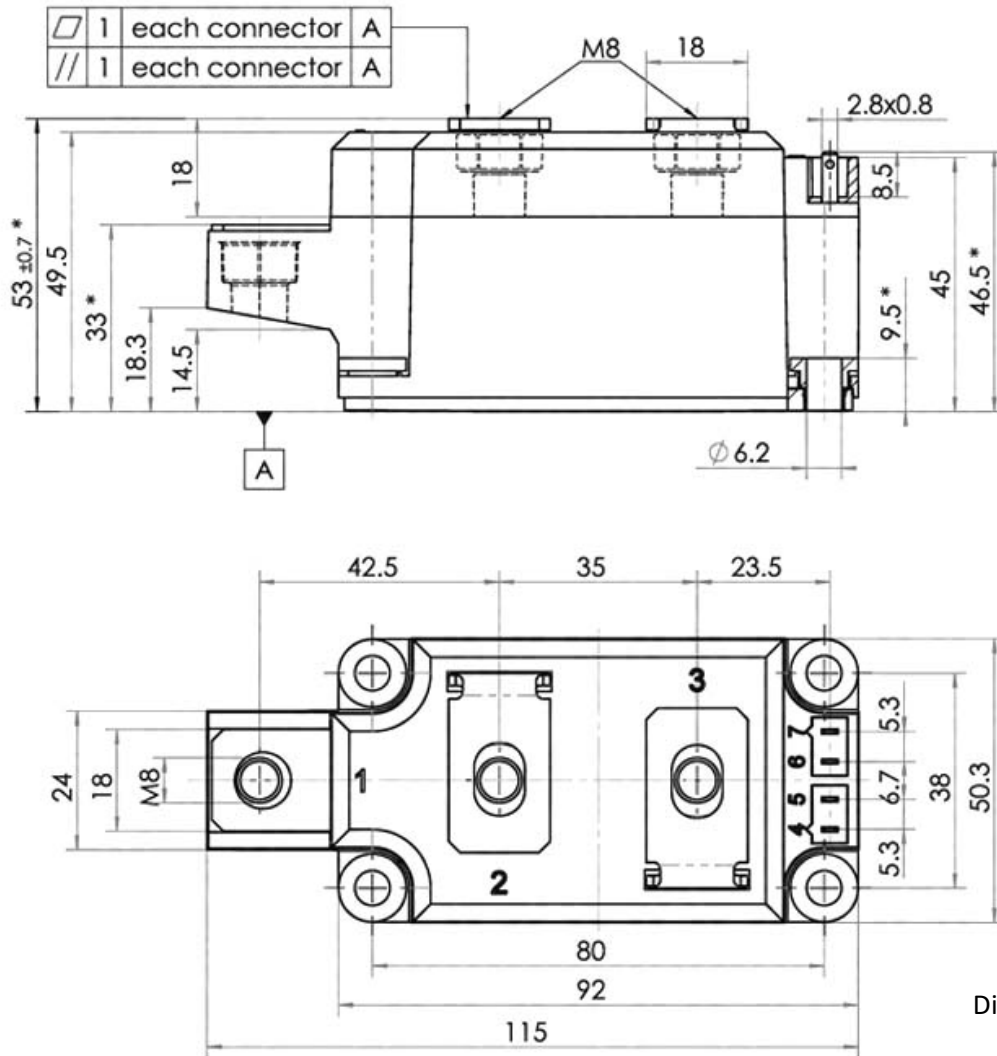


Fig. 9: Gate trigger characteristics

### DIMENSIONS



Dimensions in mm

### TOPOLOGY OF INTERNAL CONNECTION

