SMTA5-700

SEMPO ®

Phase Control Thyristor

Type	V_{RSM}	V_{RRM}, V_{DRM}
SMTA5-700-50	5100	5000
SMTA5-700-52	5300	5200
SMTA5-700-55	5600	5500
SMTA5-700-60	6100	6000
SMTA5-700-65	6600	6500

Symbol	Parameter	Test Conditions	Value	Unit
I_{TAVM}	average on-state current	$T_C=100^oC$	700	A
I_{TRMS}	maximum RMS on-state current	$T_{VJ}=T_{VJM}$	1650	A
I_{TSM}	surge-current	$T_C=25^oC$; $t_P=10ms$	10	kA
		$T_{VJ}=T_{VJM}$; $t_P=10ms$	11	
i^2t	i^2t-value	$T_C=25^oC$; $t_P=10ms$	500	$kA^2 \cdot s$
		$T_{VJ}=T_{VJM}$; $t_P=10ms$	605	
$(di/dt)_{cr}$	critical rate of rise of on-state current	$T_{VJ}=T_{VJM}$; $V_D=0.67 \cdot V_{DRM}$; f=50 Hz; $i_{GM}=3A$; $di_G/dt=6A/\mu s$	250	$A/\mu s$
$(dv/dt)_{cr}$	critical rate of rise of off-state volvage	$T_{VJ}=T_{VJM}$; $V_D=0.67 \cdot V_{DRM}$; gate open	1000	$V/\mu s$
I_{RRM}/I_{DRM}	off-state Leakage current	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$; $V_D=V_{DRM}$	200	mA
V_{RRM}	reverse repeat Peak value voltage	$T_{VJ}=T_{VJM}$; 180^oC sine wave, 50 Hz; gate open	5000-6500	V
V_{DRM}	off state repeat Peak value voltage		5000-6500	V
V_{RSM}	non-repetitive peak reverse voltage	$T_{VJ}=T_{VJM}$	5100-6600	V
V_{TM}	on-state voltage	$T_{VJ}=T_{VJM}$; $I_{TM}=1000A$	2.19	V
r_T	slope resistance	$T_{VJ}=T_{VJM}$	0.97	m
V_{GT}	gate trigger voltage	$T_{VJ}=25^oC$; $V_D=12V$	2.5	V
I_{GT}	gate trigger current	$T_{VJ}=25^oC$; $V_D=12V$	250	mA
V_{GD}	gate non-trigger voltage	$T_{VJ}=T_{VJM}$; $V_D=0.67 \cdot V_{DRM}$	0.4	V
I_{GD}	gate non-trigger current	$T_{VJ}=T_{VJM}$; $V_D=0.67 \cdot V_{DRM}$	10	mA
I_H	holding current	$T_{VJ}=25^oC$; $V_D=12V$; gate open	350	mA
I_L	latching current	$T_{VJ}=25^oC$; $V_D=12V$; $t_G=20\mu s$; $i_{GM}=3A$; $di_G/dt=6A/\mu s$	400	mA

t_{gd}	delay time	$T_{VJ}=25^{\circ}C$; $V_D=0.5 \cdot V_{DRM}$; $i_{GM}=3A$; $di_G/dt=6A/\mu s$	2	µs
t_q	turn-off time	$T_{VJ}=T_{VJM}$; $I_T=I_{TAVM}$; $t_P=200\mu s$; $di_R/dt=10A/\mu s$; $V_D=0.67 \cdot V_{DRM}$; $V_R=100V$; $dV_D/dt=20V/\mu s$	350	µs
Q_r	recovered charge	$T_{VJ}=T_{VJM}$; $I_T=I_{TAVM}$; $di_R/dt=10A/\mu s$; $V_R=0.5 \cdot V_{RRM}$; $V_{RM}=0.8 \cdot V_{RRM}$	7.5	mAs
V_{TO}	threshold voltage	$T_{VJ}=T_{VJM}$	1.22	V
T_{VJ}	working junction temperature		-40...+125	$^{\circ}C$
T_{VJM}	maximum working junction temperature		125	$^{\circ}C$
T_{stg}	storage temperature		-40...+125	$^{\circ}C$
R_{thJC}	thermal resistance; junction to case	DC, two-sided cooling	0.022	K/W
R_{thCH}	thermal resistance; case to heatsink	two-sided cooling	0.007	K/W
F	clamping force		22	kN
W	weight		610	g
a	maximum allowable acceleration		50	m/s^2
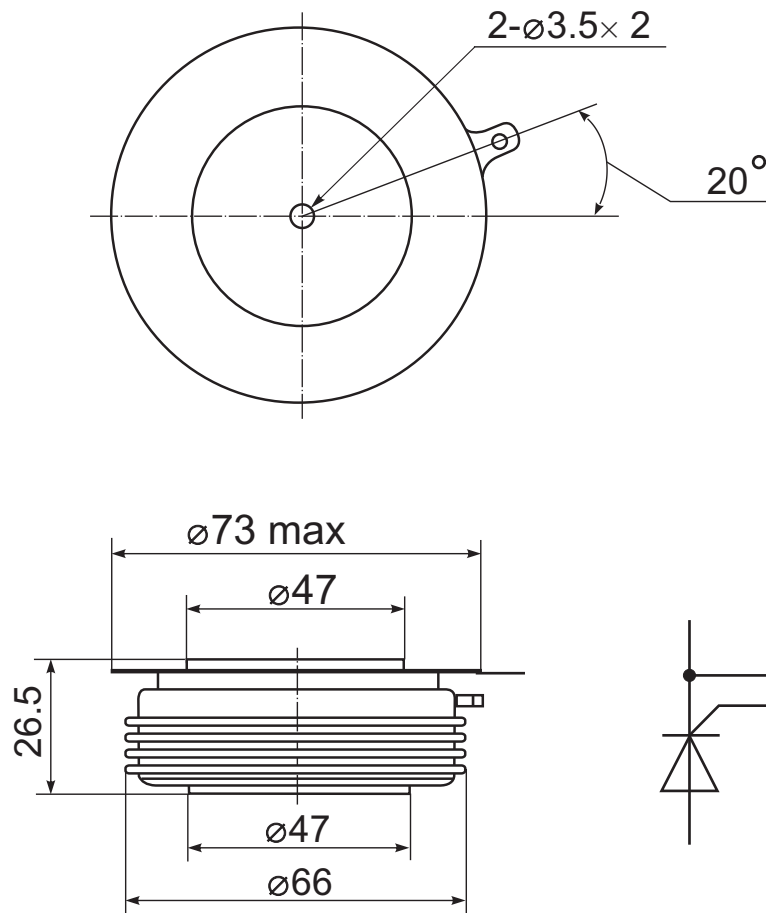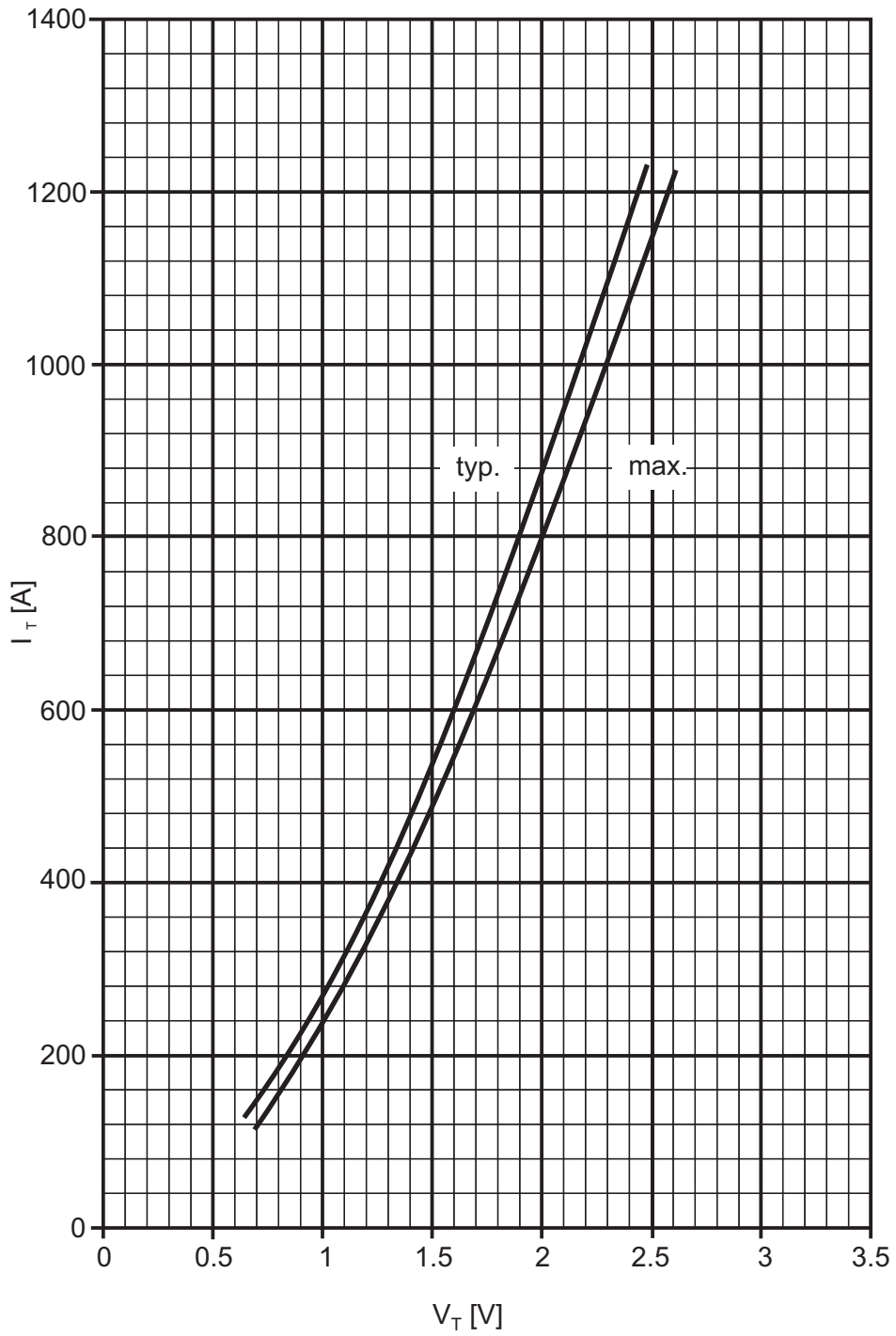
Limiting on-state characteristic $i_T = f(V_T)$
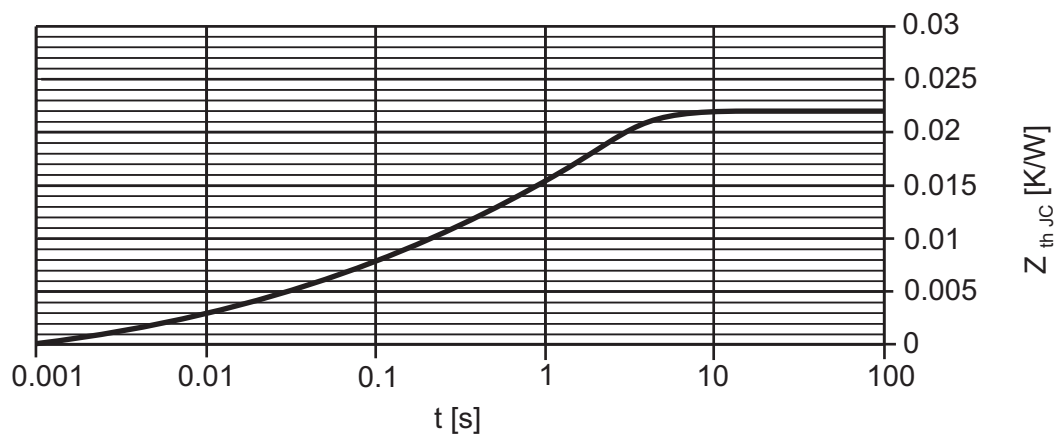
$T_{Vj} = T_{Vj\,max}$
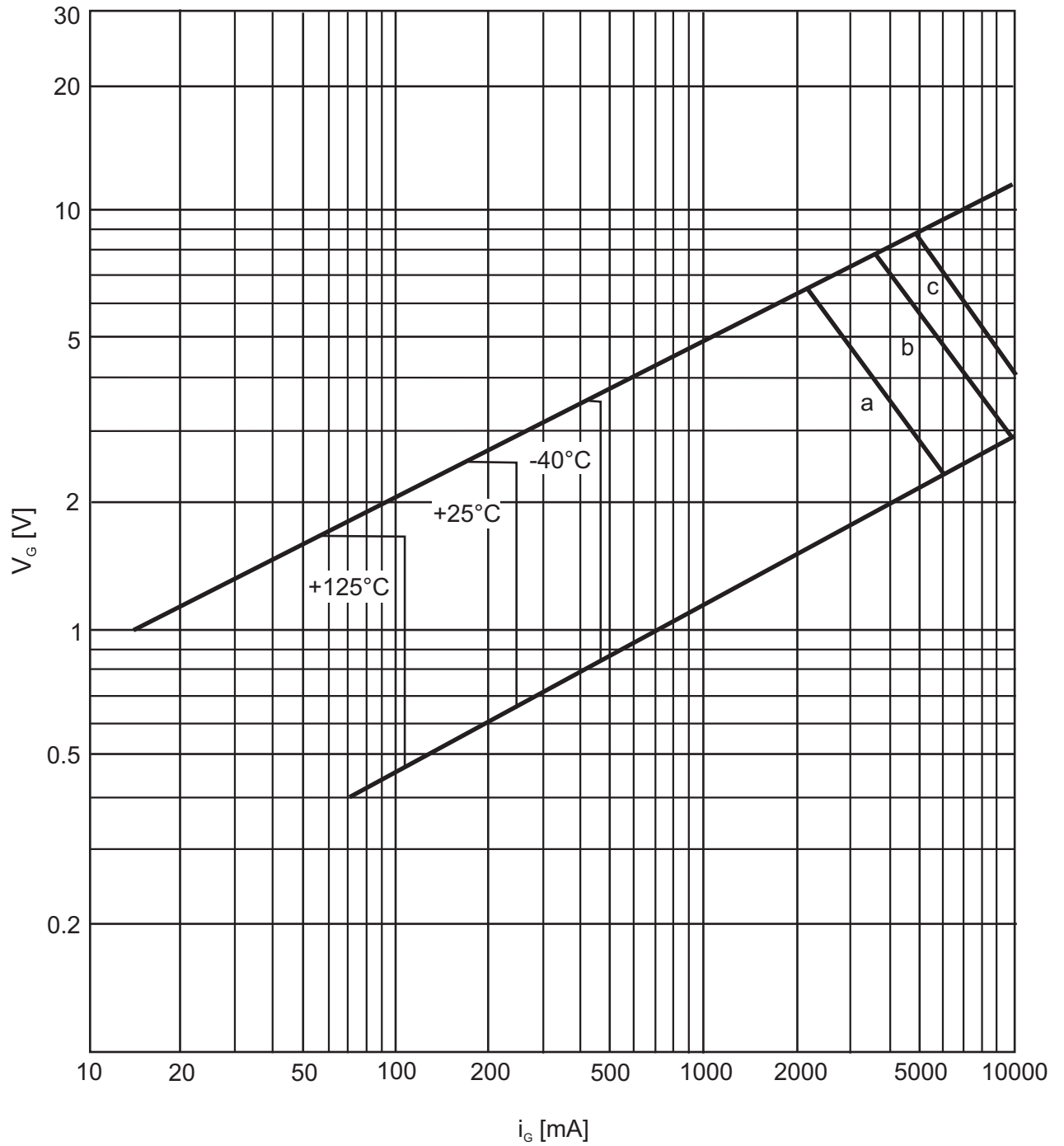
Gate characteristic V_G=f(i_G) with triggering area for V_D = 6V

Maximum rated peak gate power dissipation P_{GM} = f (t_g):

a - 20 W (10ms)
b - 40 W (1ms)
c - 60 W (0.5ms)

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Transient thermal impedance $Z_{thJC} = f(t)$
DC, two-sided cooling

Features:
- Hermetic metal case with ceramic insulator
- Capsule packages for double sided cooling
- International standard case
- Amplifying gates

Typical Applications:
- DC motor control
- AC motor soft starter
- Controlled rectifiers
- AC controllers

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