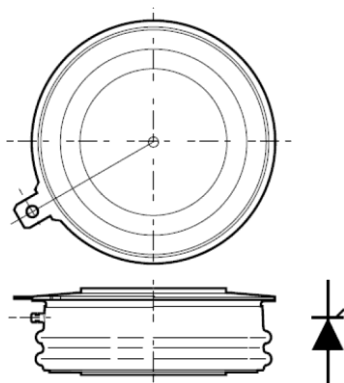


RoHS
Compliant



Outline type code: F

Features

- Double Side Cooling
- High Surge Capability

Applications

- High Power Drives
- High Voltage Power Supplies
- Static Switches

Key Parameters						
Part Number	Repetitive Peak Voltages V_{DRM} and V_{RRM} V	$I_T(AV)$	I_{TSM}	dV/dt^*	dI/dt	Conditions
MPPCT470E340	1400	470	6300 A	1000 V/ μ s	200 A/ μ s	$T_{vj} = -40^{\circ}C$ to $125^{\circ}C$, $I_{DRM} = I_{RRM} = 30mA$, $V_{DRM}, V_{RRM} t_p = 10ms$, $V_{DSM} \& V_{RSM} = V_{DRM} \& V_{RRM} +100V$ respectively

* Higher dV/dt selections available

Current Ratings

$T_{case} = 60^{\circ}C$ unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
$I_T(AV)$	Mean on-state current	Half wave resistive load	470	A
$I_T(RMS)$	RMS value	-	740	
I_T	Continuous (direct) on-state current	-	660	

Surge Ratings

Symbol	Parameter	Test Conditions	Max.	Units
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine, $T_{case} = 125^{\circ}C$ $V_R = 0$	6.3	kA
I^2t	I^2t for fusing		0.198	MA ² s

Thermal and Mechanical Ratings

Symbol	Parameter	Test Conditions		Min.	Max.	Units
R _{th(j-c)}	Thermal resistance – junction to case	Double side cooled	DC	-	0.08	°C/W
R _{th(c-h)}	Thermal resistance – case to heatsink				0.02	
T _{vj}	Virtual junction temperature	Blocking V _{DRM} / V _{RRM}				125
T _{stg}	Storage temperature range			-40	140	
F _m	Clamping force			4	6	kN

Dynamic Characteristics

Symbol	Parameter	Test Conditions		Min.	Max.	Units
IRRM>IDRM	Peak reverse and off-state current	At VRRM/VDRM, Tcase = 125°C		-	30	mA
dV/dt	Max. linear rate of rise of off-state voltage	To 67% VDRM, Tj = 125°C, gate open		1000	-	V/μs
di/dt	Rate of rise of on-state current	From 67% VDRM to 1000A Gate source 30V, 10Ω, tr < 0.5μs, Tj = 125°C	Repetitive 50Hz	-	200	A/μs
			Non-repetitive		1000	
VT	On-state voltage	IT = 1500A, Tcase = 125°C			1.40	V
VT(to)	Threshold voltage	Tcase = 125°C			0.96	
rT	On-state slope resistance	Tcase = 125°C			0.68	mΩ
tgd	Delay time	VD = 67% VDRM, gate source 30V, 10Ω tr = 0.5μs, Tj = 25°C			3	μs
IL	Latching current	Tj = 25°C,			1	A
IH	Holding current	Tj = 25°C,			200	mA

Gate Trigger Characteristics and Ratings

Symbol	Parameter	Test Conditions	Max.	Units
V_{GT}	Gate trigger voltage	$V_{DRM} = 5V$, $T_{case} = 25^{\circ}C$	3	V
V_{GD}	Gate non-trigger voltage	At 40% V_{DRM} , $T_{case} = 125^{\circ}C$	0.3	
I_{GT}	Gate trigger current	$V_{DRM} = 5V$, $T_{case} = 25^{\circ}C$	300	mA
I_{GD}	Gate non-trigger current	At 40% V_{DRM} , $T_{case} = 125^{\circ}C$	20	

Performance Curves

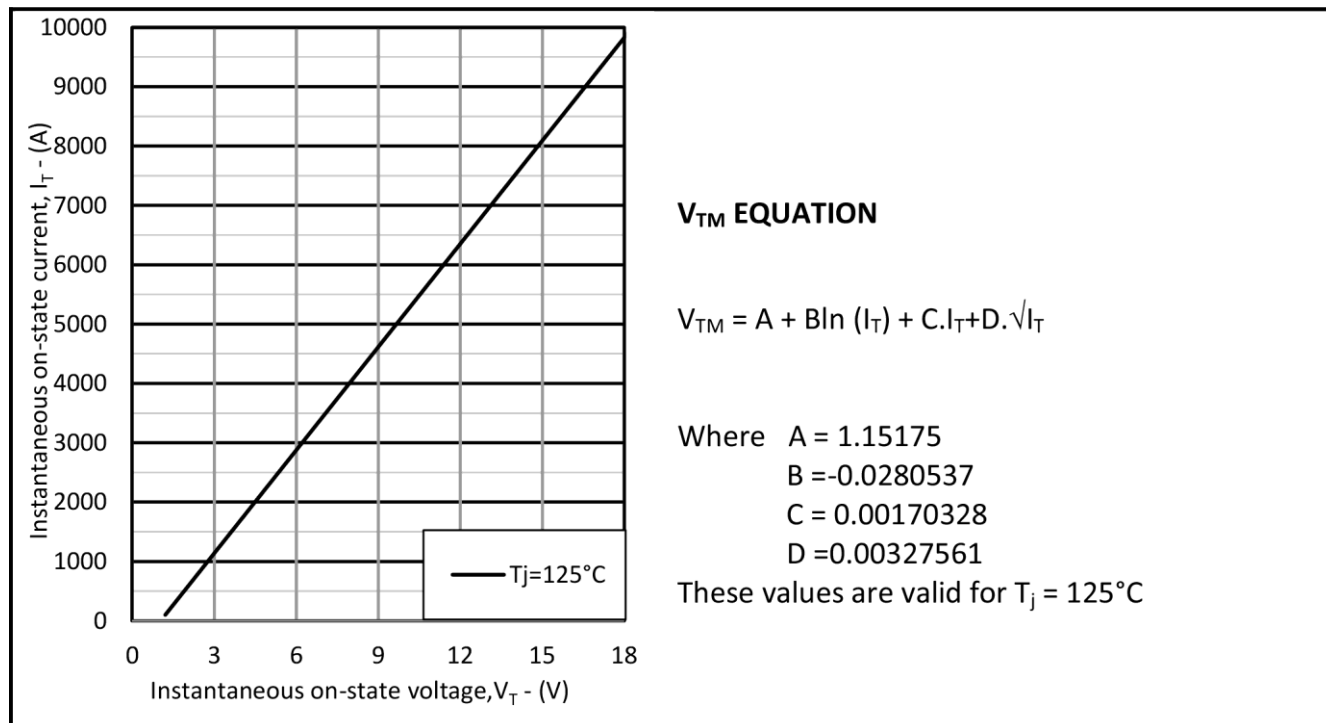


Fig.2 Maximum & minimum on-state characteristics

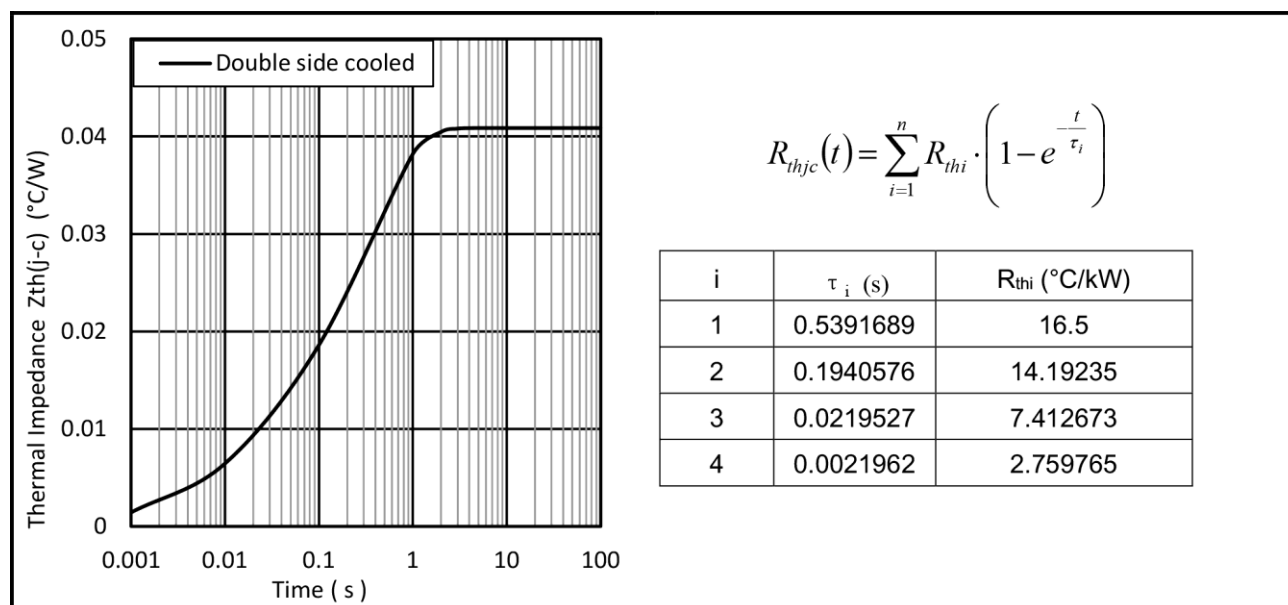


Fig.3 Maximum (limit) transient thermal impedance – junction to case (°C/W)

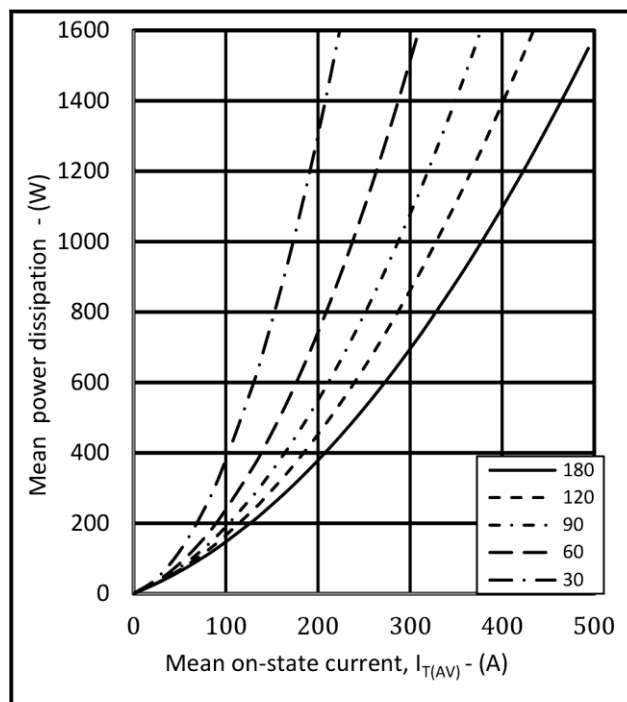


Fig.4 On-state power dissipation – sine wave

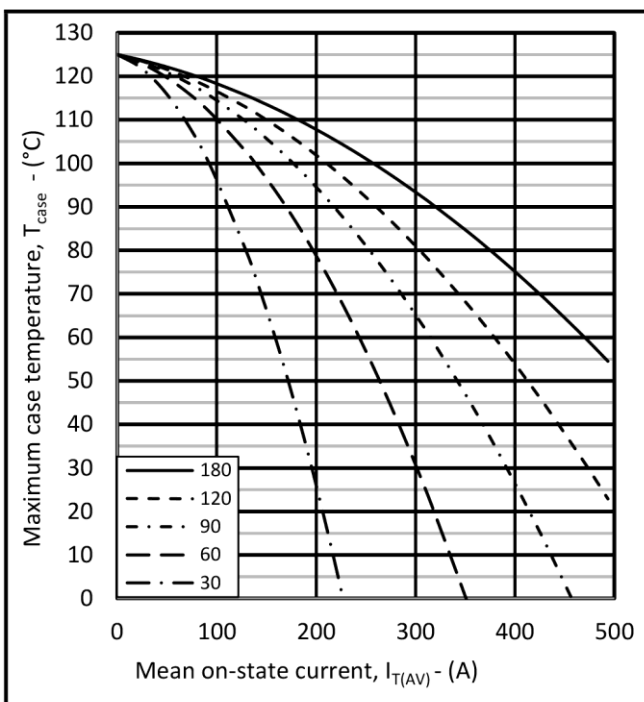


Fig.5 Maximum permissible case temperature, double side cooled – sine wave

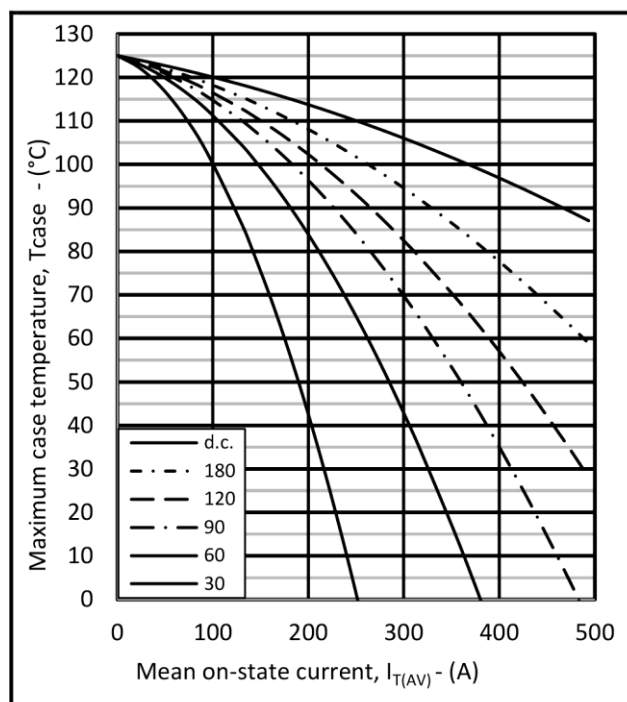


Fig.6 Maximum permissible case temperature, double side cooled – rectangular wave

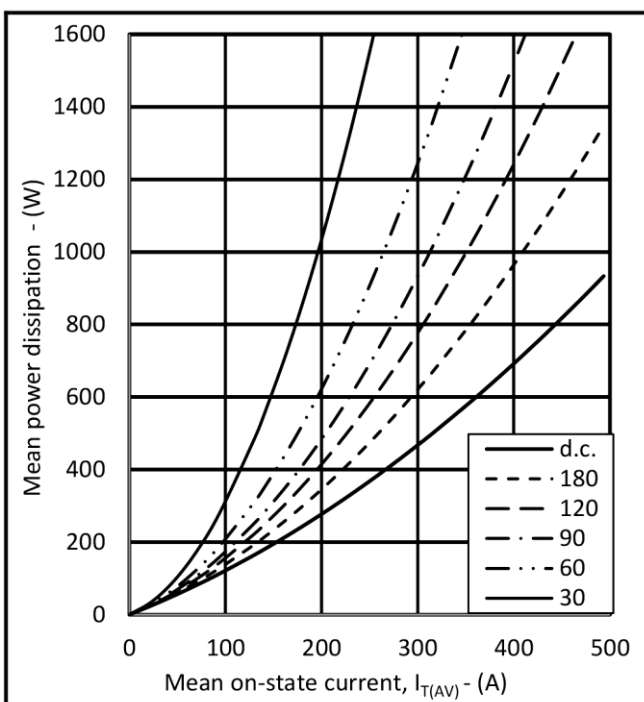


Fig.7 On-state power dissipation – rectangular wave

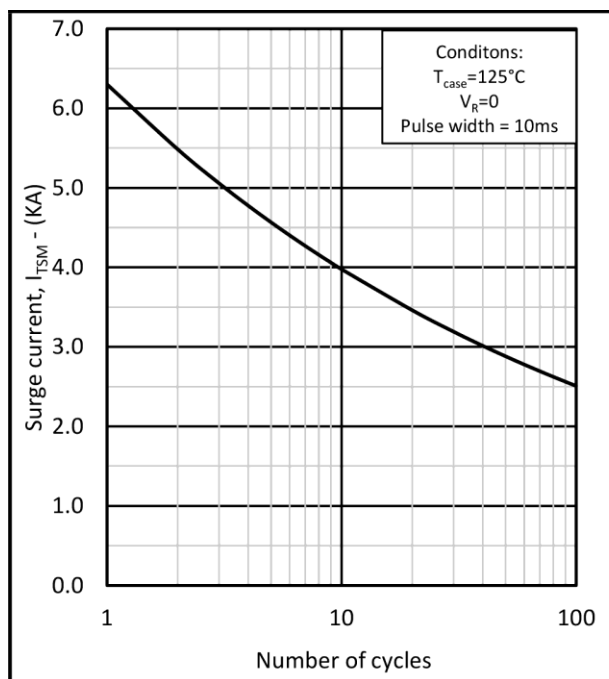


Fig.8 Multi-cycle surge current

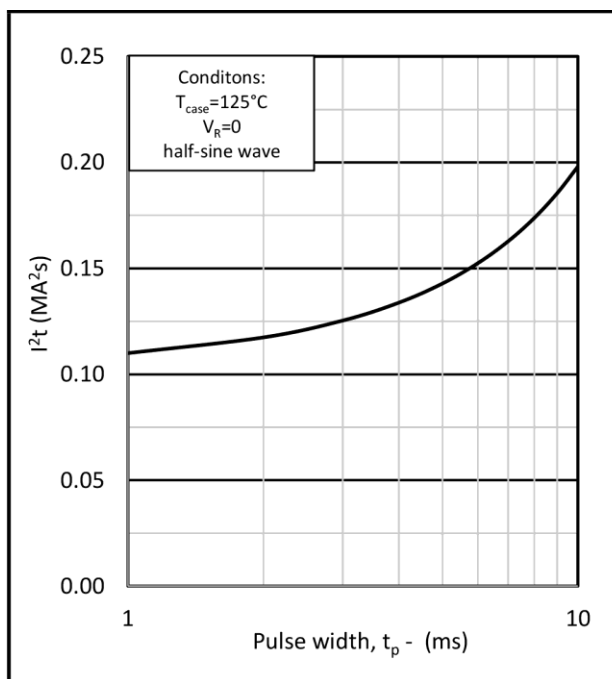


Fig.9 Single-cycle I^2t

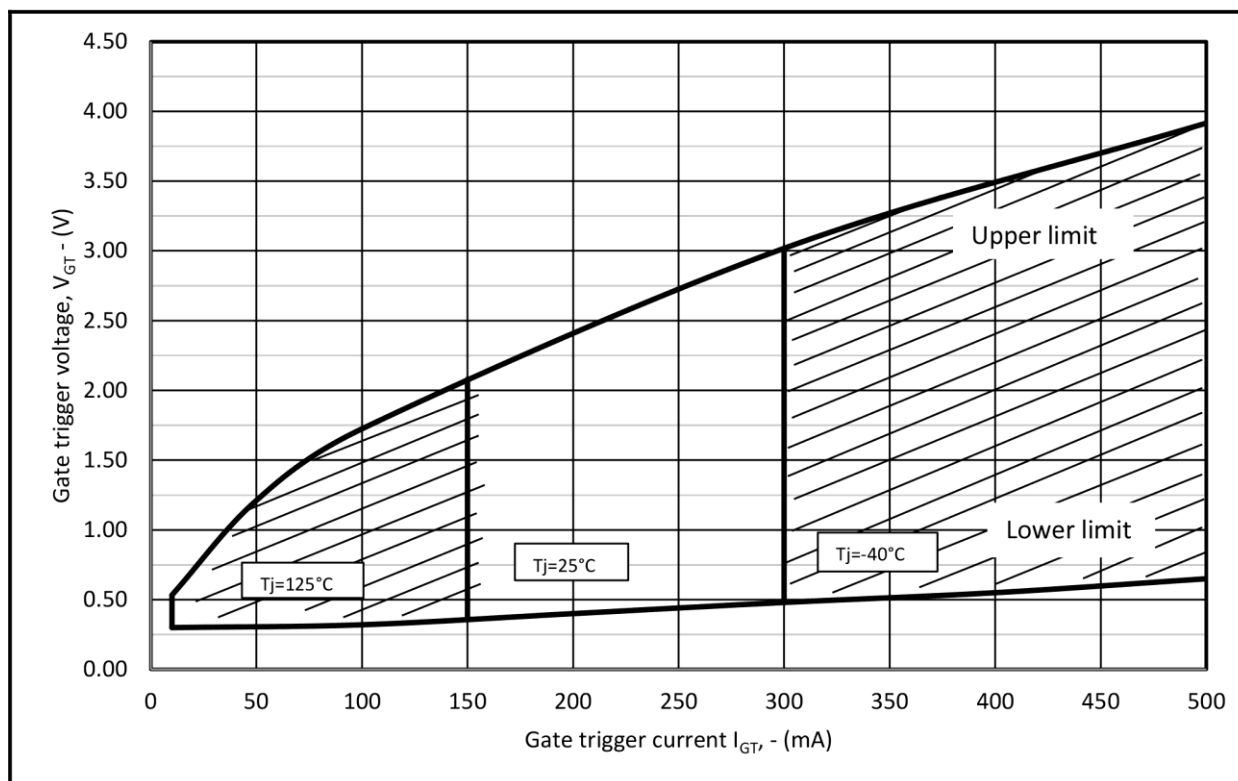
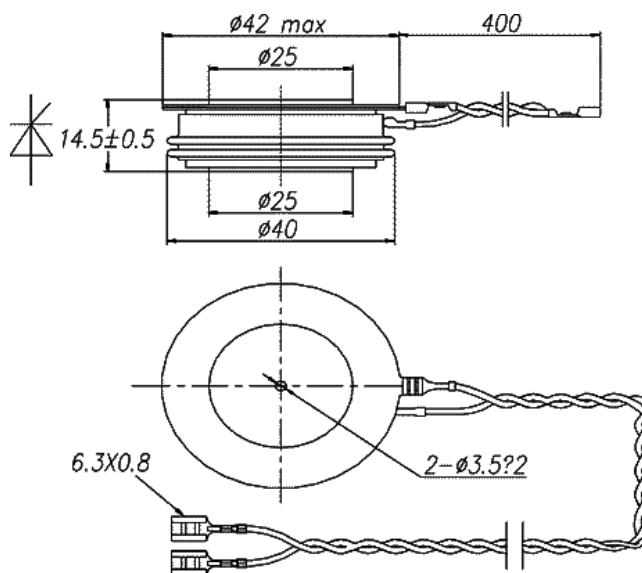
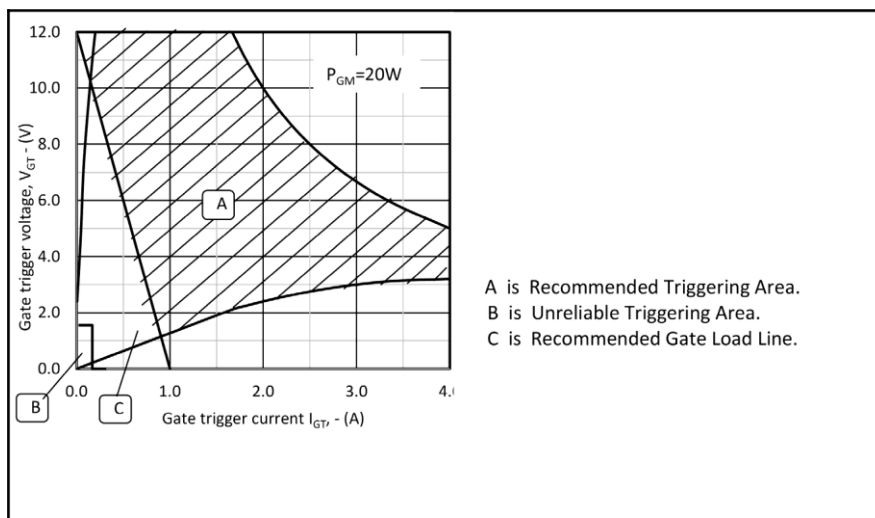


Fig.10 Gate characteristics



Part Number Table

Description	Part Number
Phase Control Thyristor Module, 1400V, 470A, E Case Code	MPPCT470E340

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