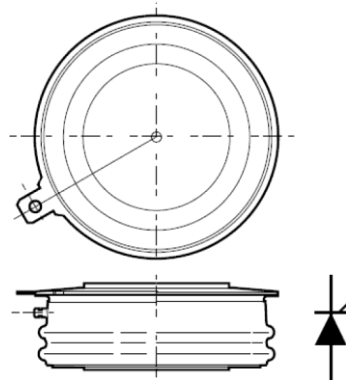


Phase Control Thyristor

multicomp^{PRO}

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

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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	°C
T_{stg}	Storage temperature range		-40	140	
F_m	Clamping force		4	6	kN

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Min.	Max.	Units
I_{RRM}/I_{DRM}	Peak reverse and off-state current	At V_{RRM}/V_{DRM} , $T_{case} = 125^{\circ}C$	-	30	mA
dV/dt	Max. linear rate of rise of off-state voltage	To 67% V_{DRM} , $T_j = 125^{\circ}C$, gate open	1000	-	V/ μ s
di/dt	Rate of rise of on-state current	From 67% V_{DRM} to 1000A Gate source 30V, 10 Ω , $t_r < 0.5\mu$ s, $T_j = 125^{\circ}C$	-	200	A/ μ s
				1000	
V_T	On-state voltage	$I_T = 1500A$, $T_{case} = 125^{\circ}C$		1.40	V
$V_T(TO)$	Threshold voltage	$T_{case} = 125^{\circ}C$		0.96	
r_r	On-state slope resistance	$T_{case} = 125^{\circ}C$		0.68	m Ω
t_{gd}	Delay time	$V_D = 67\% V_{DRM}$, gate source 30V, 10 Ω $t_r = 0.5\mu$ s, $T_j = 25^{\circ}C$		3	μ s
I_L	Latching current	$T_j = 25^{\circ}C$,		1	A
I_H	Holding current	$T_j = 25^{\circ}C$,		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

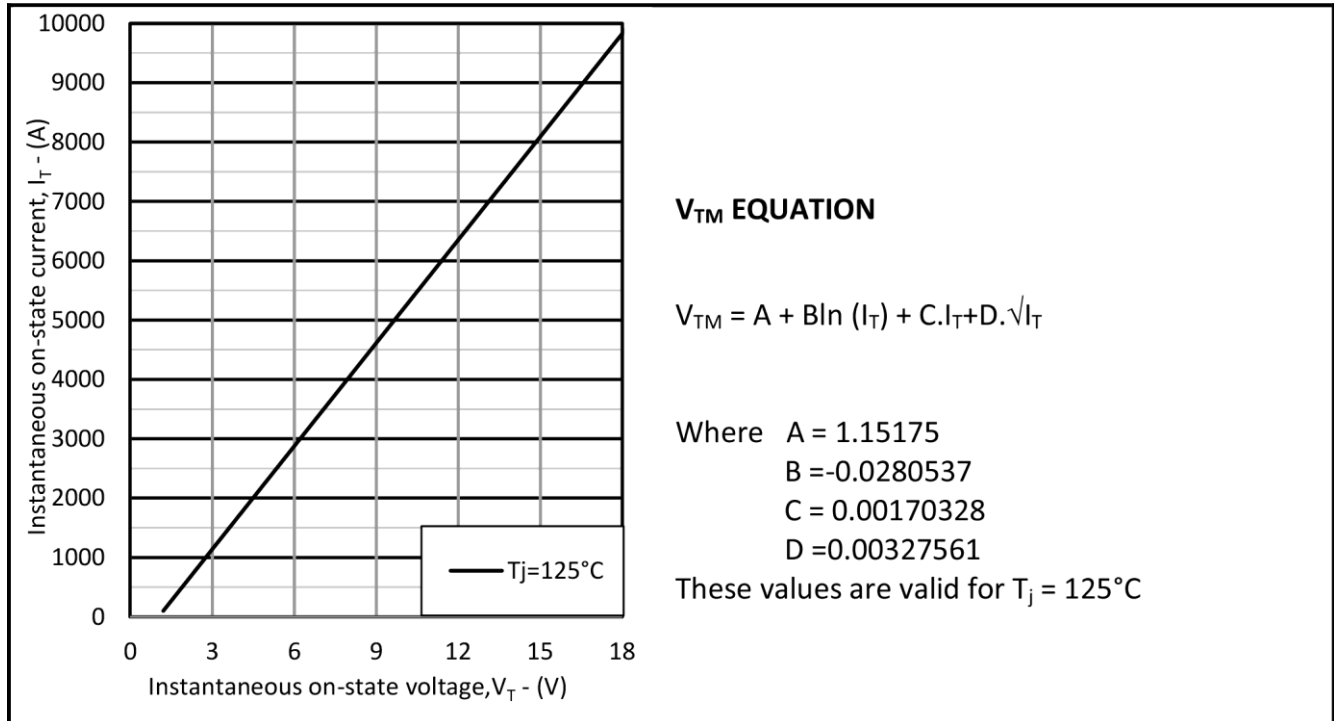


Fig.2 Maximum & minimum on-state characteristics

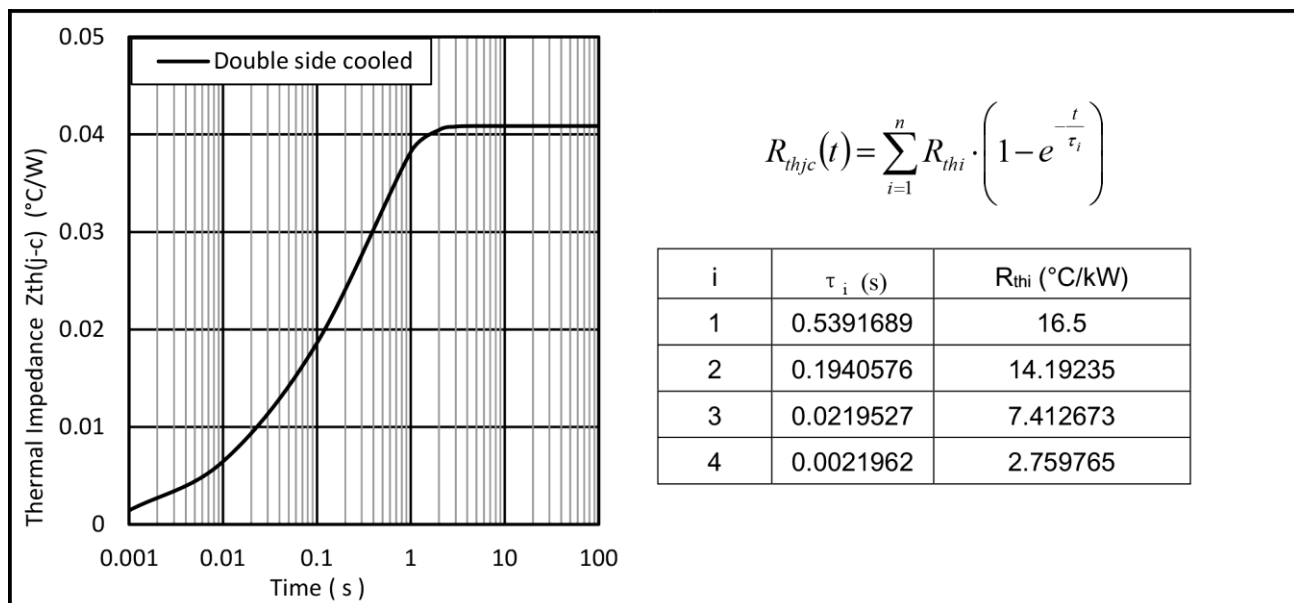


Fig.3 Maximum (limit) transient thermal impedance – junction to case (°C/W)

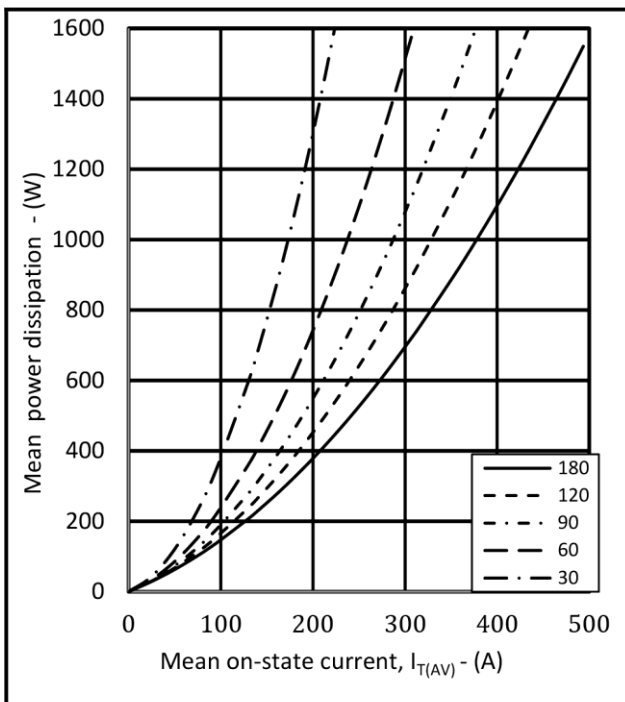


Fig.4 On-state power dissipation – sine wave

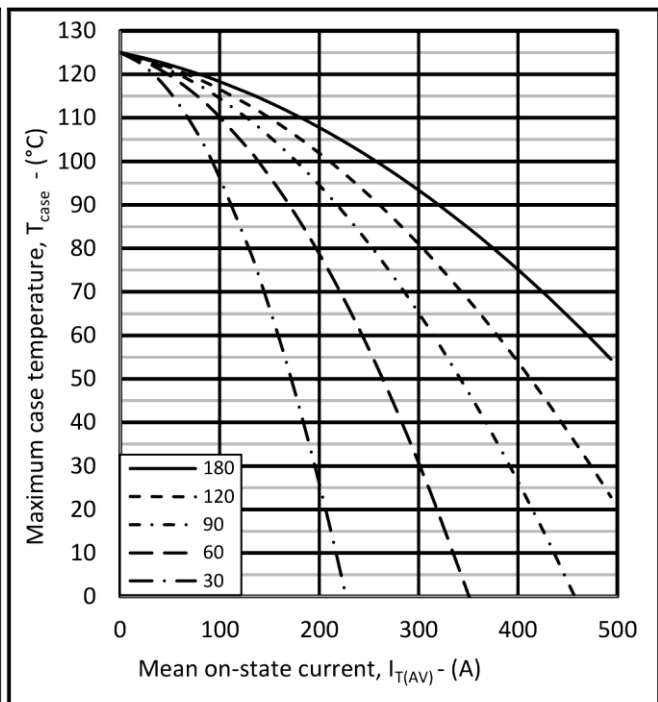


Fig.5 Maximum permissible case temperature, double side cooled – sine wave

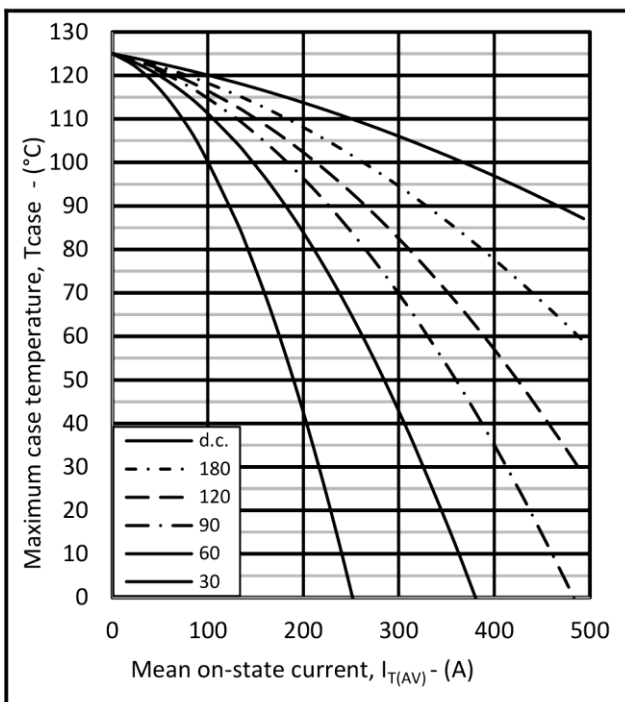


Fig.6 Maximum permissible case temperature, double side cooled – rectangular wave

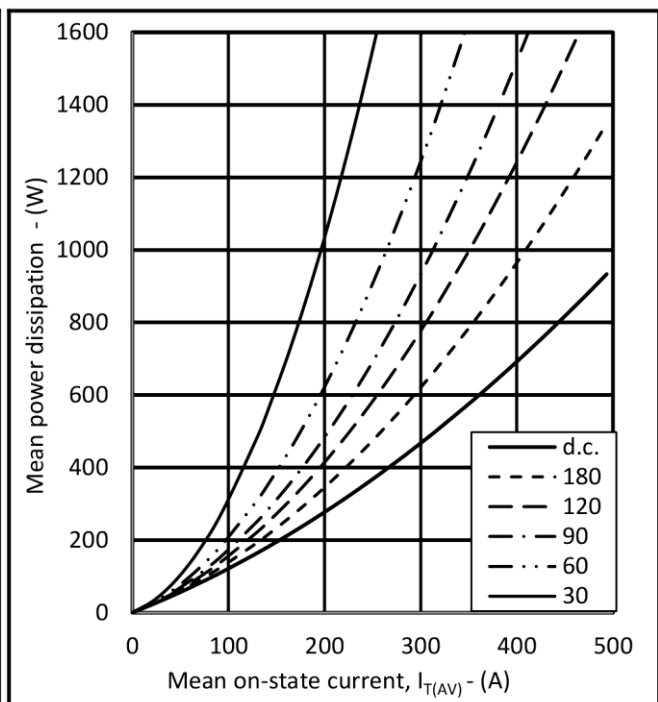


Fig.7 On-state power dissipation – rectangular wave

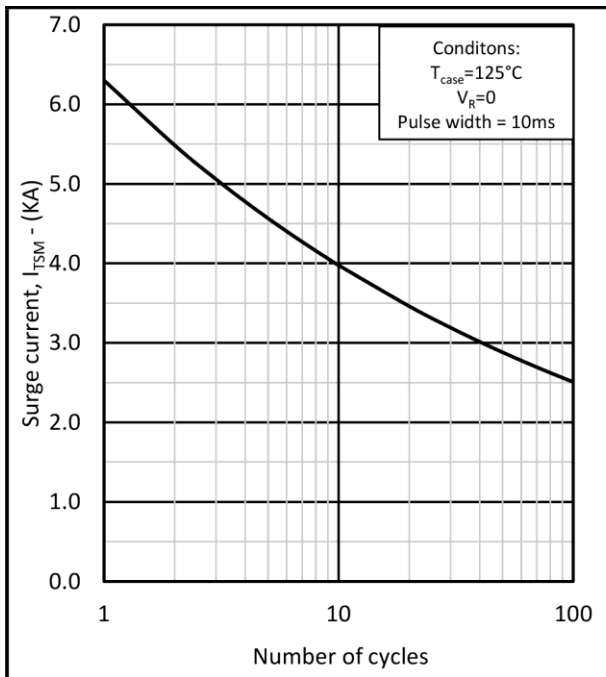


Fig.8 Multi-cycle surge current

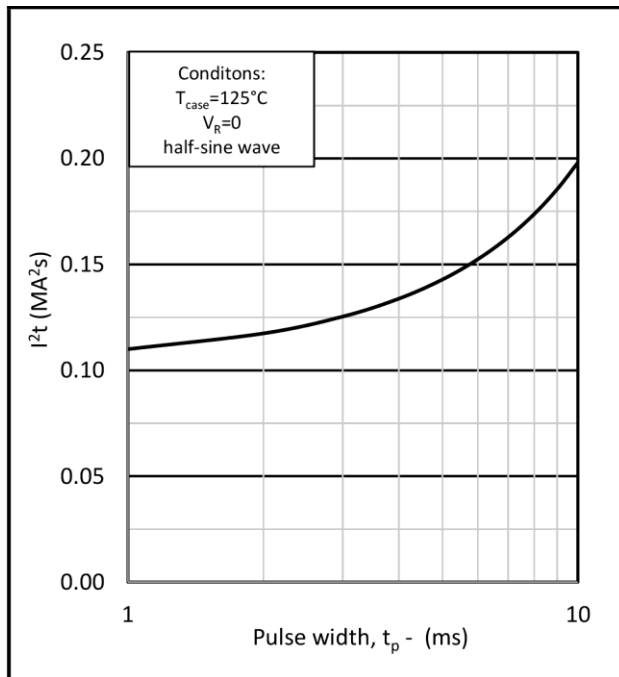


Fig.9 Single-cycle I^2t

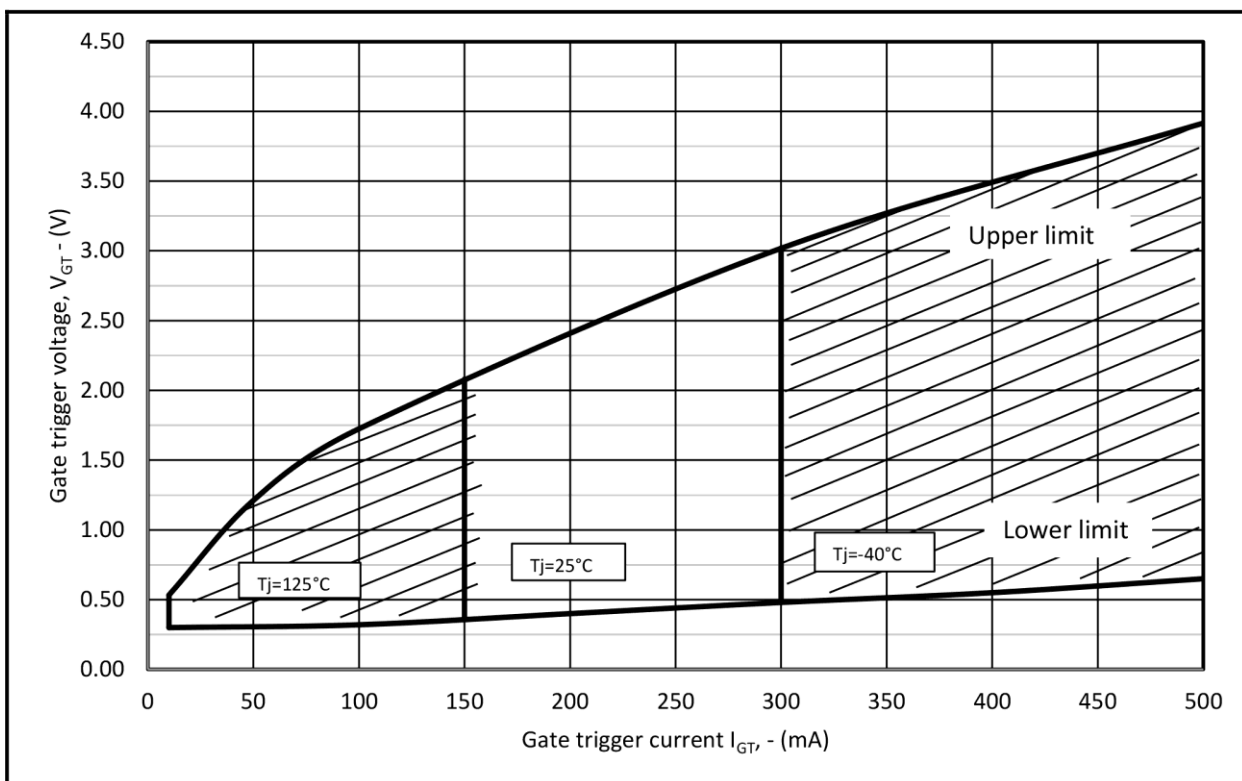


Fig.10 Gate characteristics

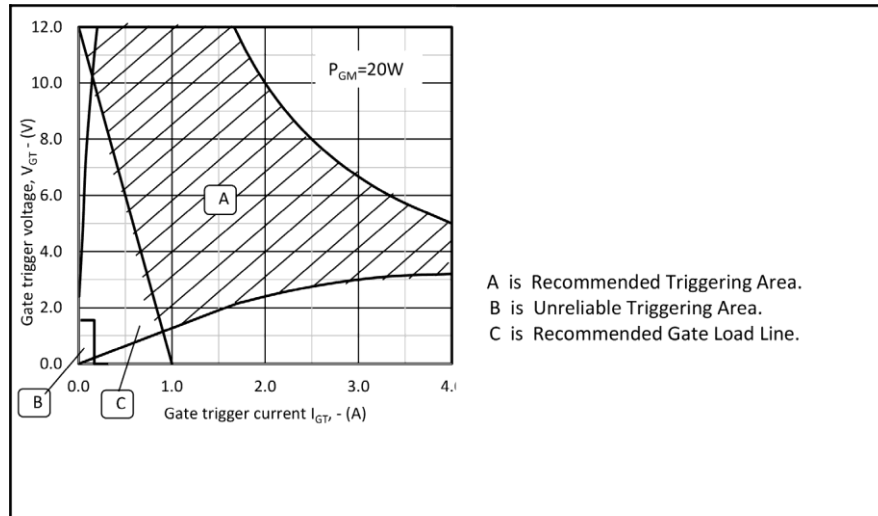
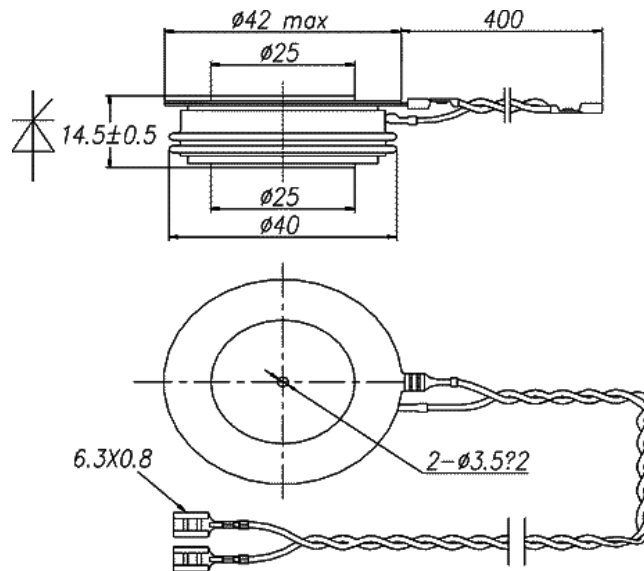


Fig.11 Gate characteristics



Package outline type code: E

Part Number Table

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

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