



RS160HF180T1WH

Thyristor Module

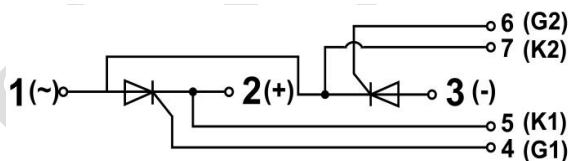
Features:

- Blocking Voltage:1800V
- Heat Transfer Through Aluminum Oxide DBC Ceramic
Isolated Copper Baseplate
- High Surge Capability
- Mesa Glass Passivation Technology and Multilayer Metallization
Technology



Applications:

- DC Motor Control and Drives
- Lighting and Temperature Control



Maximum Rated

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
V_{RSM}/V_{DSM}	Non-Repetitive Reverse / Forward Blocking Voltage	$T_{VJ}=25^{\circ}\text{C}$	1900			V
V_{RRM}/V_{DRM}	Repetitive Reverse / Forward Blocking Voltage	$T_{VJ}=25^{\circ}\text{C}$	1800			V
I_{TAV}	Average Forward Current	$T_C=85^{\circ}\text{C}$, 180° Sine	160			A
$I_{T(RMS)}$	RMS Forward Current	180° sine	250			A
I_{TSM}	Surge Current	$T_{VJ}=25^{\circ}\text{C}$, $t_p=10\text{ms}$	5400			A
I^2t	I^2t - value	$T_{VJ}=25^{\circ}\text{C}$, $t_p=10\text{ms}$	145800			A ² s
di/dt	$T_{VJ}=125^{\circ}\text{C}$				200	A/ μs
dv/dt	$T_{VJ}=125^{\circ}\text{C}$				1000	V/ μs



Electrical Characteristics

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V_{TM}	Forward Voltage Drop	$I_T=160A$	$T_{VJ}=25^{\circ}C$		1.10		V
			$T_{VJ}=125^{\circ}C$		1.10		V
		$I_T=300A$	$T_{VJ}=25^{\circ}C$			1.30	V
			$T_{VJ}=125^{\circ}C$			1.30	V
I_{RRM}/I_{DRM}	Reverse Current / Drain Current	$V_{R/D}=V_{RRM}$	$T_{VJ}=125^{\circ}C$			40	mA
P_{GM}	Maximum Peak Gate Power					120	W
$P_{G(AV)}$	Maximum Average Gate Power					8	W
V_{TO}	Threshold Voltage	$T_{VJ}=T_{VJmax}$				0.85	V
r_T	Slope Resistance	$T_{VJ}=T_{VJmax}$				1.8	m Ω
V_{GT}	Gate Trigger Voltage	$T_{VJ}=25^{\circ}C$, d.c.				2.0	V
I_{GT}	Gate Trigger Current	$T_{VJ}=25^{\circ}C$, d.c.				150	mA
V_{GD}	Gate Non-trigger Voltage	$T_{VJ}=125^{\circ}C$, d.c.				0.25	V
I_{GD}	Gate Non-trigger Current	$T_{VJ}=125^{\circ}C$, d.c.				10	mA
I_L	Latching Current	$I_G=1.2 I_{GT}$				300	mA
I_H	Holding Current	$I_T=1A$				250	mA
t_{gd}	Gate Controlled Delay Time	$I_G=1A$, $di_G/dt=1A/\mu s$, $T_{VJ}=25^{\circ}C$				1	μs
t_q	Turn-off Time	$T_{VJ}=125^{\circ}C$		50		150	μs

Thermal Characteristics

Symbol	Description	Min.	Typ.	Max.	Units
$R_{th(j-c)}$	Thyristor Thermal Resistance: Junction-to-Case (per Thyristor)			0.15	$^{\circ}C/W$
$R_{th(c-s)}$	Case-to-Sink Thermally (Conductive Grease Applied)			0.07	$^{\circ}C/W$



Module

Symbol	Description	Min.	Typ.	Max.	Units
V _{ISOL}	Isolation Voltage (All Terminals Shorted)	AC 50Hz, RMS, 1minute, I _{ISOL} ≤ 1mA		3000	V
Internal Isolation		Al ₂ O ₃			
T _{VJ}	Maximum Junction Temperature			125	°C
T _{VJOP}	Operating Junction Temperature Range	-40		125	°C
T _{stg}	Storage Temperature	-40		125	°C
CTI	Comparative Tracking Index	200			
M	Power Terminals Screw:M5	3.0		5.0	N·m
M	Mounting Screw:M6	4.0		6.0	N·m
G	Weight		155		g

Ordering Information Table

Device code	RS	160	HF	180	T1W	H
	①	②	③	④	⑤	⑥

- ① - SCR Module
- ② - Rated Current (160=160A)
- ③ - Circuit Configuration (Half Bridge)
- ④ - Rated Voltage (180=1800V)
- ⑤ - Package Type
- ⑥ - Test Level (Pass the Important Reliability Test-Industrial Grade)

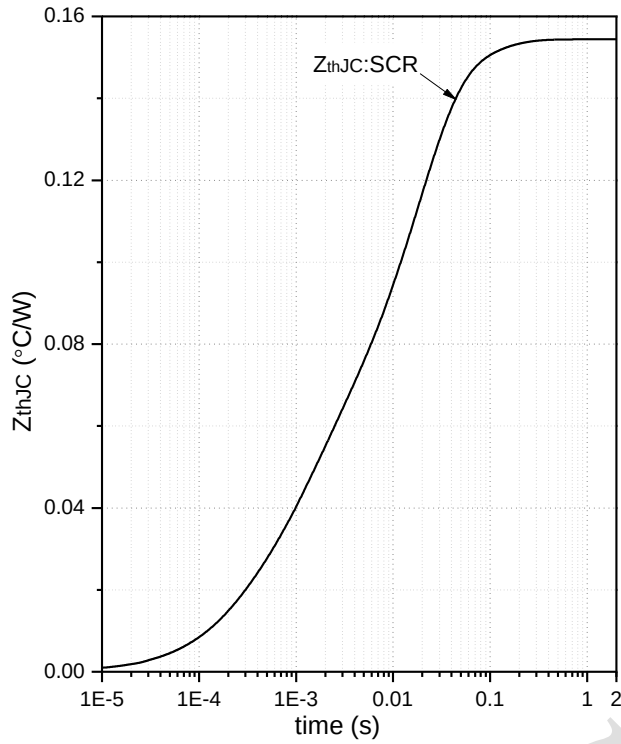


Fig.1 Transient Thermal Impedance

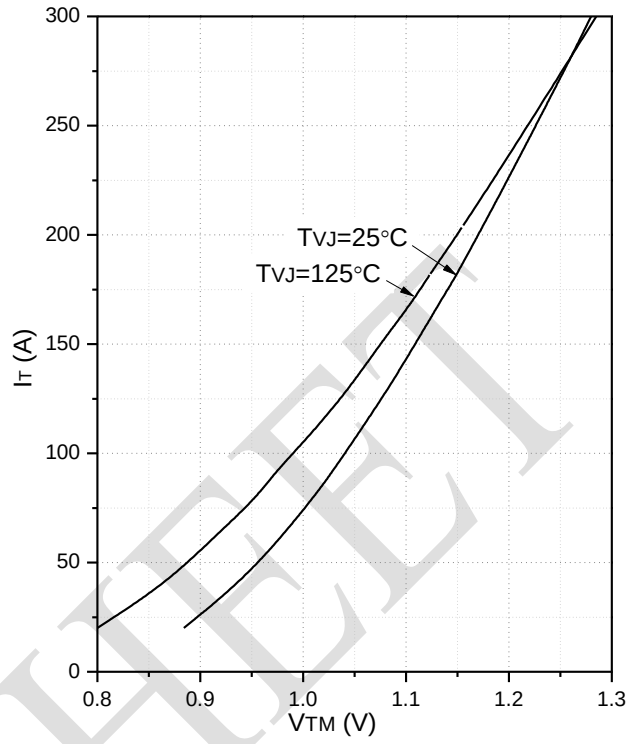


Fig.2 Forward Characteristics

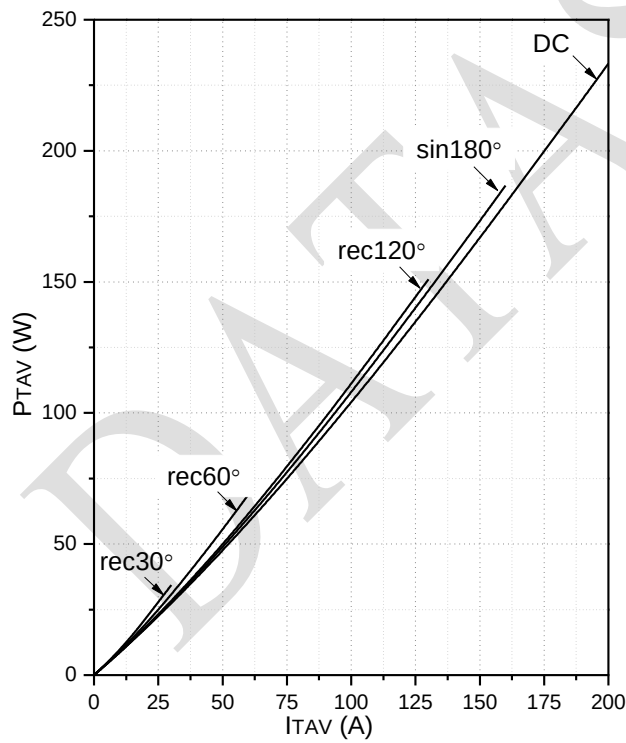


Fig.3 Power Dissipation

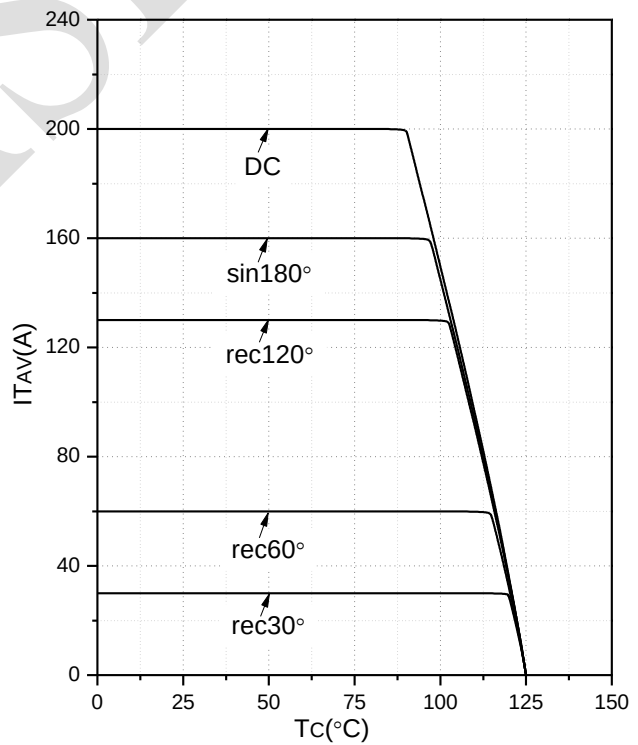


Fig.4 Forward Current Derating Curve



Date	Revision	Notes
11/17/2020	01	Initial Release
04/26/2021	A	Final Version
11/02/2022	B	Update Circuit Diagram

Announcement

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The released datasheet would be issued with “REV.” + “alphabet characters”.