



### Features

- High Thermal Efficiency
- Complete Power Control Circuits in a Single Package

### DESCRIPTION

These modules provide complete power control in a single package, utilizing high thermal efficiency to assure long life and reliable performance. Six standard models provide 2500 Vrms isolation from all terminals to ceramic base and are UL recognition pending.

### PART NUMBER IDENTIFICATION

EX.: CSDH160/16

Series Type	Half Controlled	Current	Circuit Type	Voltage
CSD-Case style	H	100 - 110 Amps 160 - 170 Amps	(see schematic diagram) Three Phase Bridge Half Controlled Rectifier Bridge	12 - 1200 14 - 1400 16 - 1600

### ELECTRICAL SPECIFICATION

100

160

Symbol	Test Conditions	Maximum Ratings		
$I_{dAV}$ $I_{FRMS}$ , $I_{TRMS}$	$T_C = 85^\circ\text{C}$ ; module per leg	110 58	170 89	A A
$I_{FSM}$ , $I_{TSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$ $t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine	1150 1230	1500 1600	A A
	$T_{VJ} = T_{VJM}$ $V_R = 0$ $t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine	1000 1070	1350 1450	A A
$I^2t$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$ $t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine	6600 6280	11200 10750	A <sup>2</sup> s A <sup>2</sup> s
	$T_{VJ} = T_{VJM}$ $V_R = 0$ $t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine	5000 4750	9100 8830	A <sup>2</sup> s A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 50$ A $f = 400$ Hz, $t_p = 200$ $\mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3$ A, non repetitive, $di_G/dt = 0.3$ A/ $\mu\text{s}$ , $I_T = 1/3 \cdot I_{dAV}$	150		A/ $\mu\text{s}$ A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)	1000		V/ $\mu\text{s}$
$V_{RGM}$		10		V
$P_{GM}$	$T_{VJ} = T_{VJM}$ $t_p = 30$ $\mu\text{s}$ $I_T = I_{TAVM}$ $t_p = 500$ $\mu\text{s}$ $t_p = 10$ ms	$\leq$ $\leq$ $\leq$	10 5 1	W W W
$P_{GAVM}$			0.5	W
$T_{VJ}$			-40...+125	$^\circ\text{C}$
$T_{VJM}$			125	$^\circ\text{C}$
$T_{stg}$ (typical)			-40...+125	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $t = 1$ min $I_{ISOL} \leq 1$ mA $t = 1$ s	2500 3000		V~ V~
$M_d$	Mounting torque (M6) Terminal connection torque (M6)	5 $\pm$ 15 % 5 $\pm$ 15 %		Nm Nm
Weight	typ.	265		g

For recommended applications and more information contact:

USA: Sales Support (888) 882-8689

C3 Semiconductors, LLC. 2320 Paseo de las Americas, Ste. 104, San Diego, CA 92154

Email: sales@c3semi.com WEB SITE: http://www.C3semi.com

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**ELECTRICAL SPECIFICATION**

100

160

Symbol	Test Conditions	Characteristic Values			
$I_R, I_D$	$V_R = V_{RRM}; V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	$\leq$	5	mA
		$T_{VJ} = 25^\circ\text{C}$	$\leq$	0.3	mA
$V_F, V_T$	$I_F, I_T = 200 \text{ A}, T_{VJ} = 25^\circ\text{C}$		$\leq$	1.75	V
$V_{T0}$	For power-loss calculations only			0.85	V
$r_T$	$(T_{VJ} = 125^\circ\text{C})$			6	m $\Omega$
$V_{GT}$	$V_D = 6 \text{ V};$	$T_{VJ} = 25^\circ\text{C}$	$\leq$	1.5	V
		$T_{VJ} = -40^\circ\text{C}$	$\leq$	1.6	V
$I_{GT}$	$V_D = 6 \text{ V};$	$T_{VJ} = 25^\circ\text{C}$	$\leq$	100	mA
		$T_{VJ} = -40^\circ\text{C}$	$\leq$	200	mA
$V_{GD}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$		$\leq$	0.2	V
$I_{GD}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$		$\leq$	5	mA
$I_L$	$I_G = 0.3 \text{ A}; t_G = 30 \mu\text{s}; di_G/dt = 0.3 \text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$	$\leq$	450	mA
$I_H$	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$		$\leq$	200	mA
$t_{gd}$	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}; I_G = 0.3 \text{ A}; di_G/dt = 0.3 \text{ A}/\mu\text{s}$		$\leq$	2	$\mu\text{s}$
$R_{thJC}$	per thyristor (diode); DC current per module			0.65	K/W
				0.108	K/W
$R_{thJH}$	per thyristor (diode); DC current per module			0.8	K/W
				0.133	K/W
$d_s$	Creeping distance on surface			10	mm
$d_A$	Creepage distance in air			9.4	mm
$a$	Max. allowable acceleration			50	m/s <sup>2</sup>

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# MECHANICAL DIMENSIONS AND CIRCUIT DIAGRAM

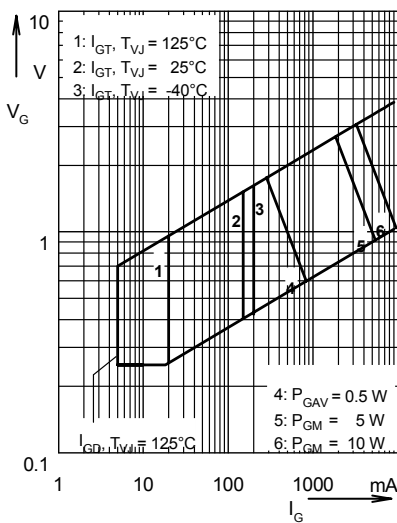


Fig. 1 Gate trigger characteristics

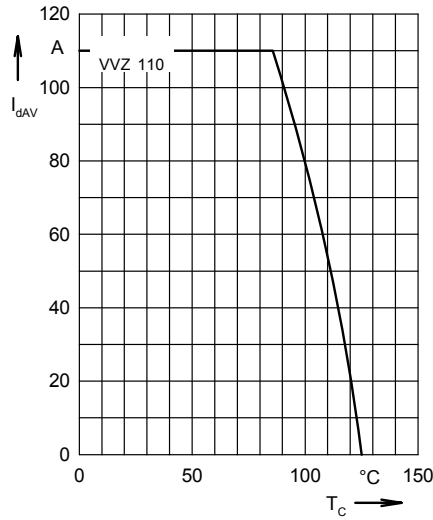


Fig. 2 DC output current at case temperature

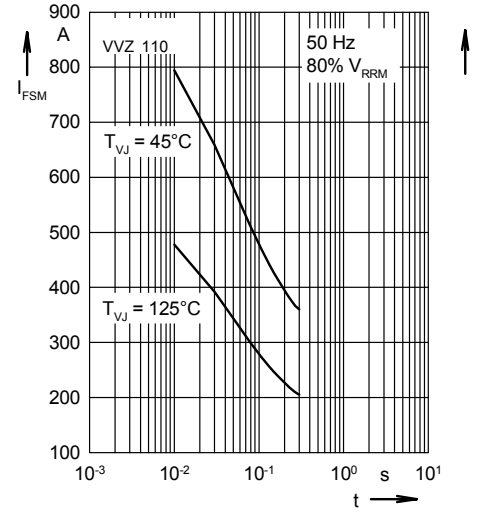
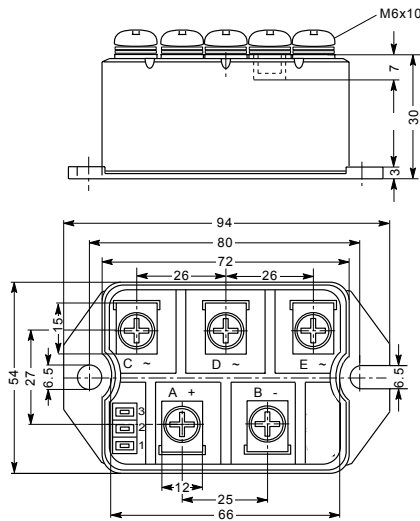


Fig. 3 Surge overload current  
 $I_{FSM}$ : Crest value,  $t$ : duration



Package Dimensions for 100 and 160 Amp Models

## SERIES CSDHCIRCUIT

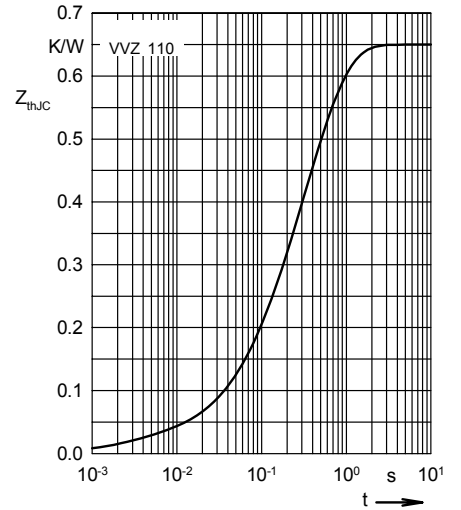
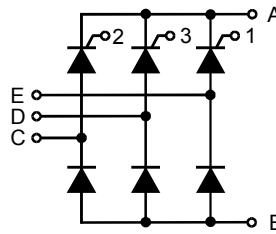


Fig. 4 Transient thermal impedance junction to case (per leg)

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