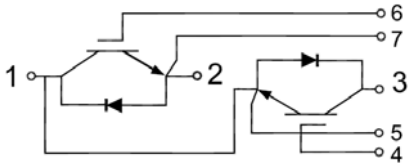
GSID200A170S3B1
IGBT Module

Features：

- Low Saturation Voltage: $V_{CE\ (sat)}$ = 1.60V @ I_C = 200A , T_C=25℃
- Low Switching Loss
- 100% RBSOA Tested（2×Ic）
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement

Applications：



- High Power Converters
- Motor Drives
- UPS Systems
- Wind Turbines

Maximum Rated Values of IGBT(T_C=25℃ unless otherwise specified)

V_{CES}	Collector-Emitter Blocking Voltage		1700	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C = 80℃	200	A
		T_C = 25℃	400	A
I_{CM}	Repetitive Peak Collector Current	T_J = 175℃	400	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C = 25℃ T_{Jmax}=175℃	1630	W

Electrical Characteristics of IGBT (T_C=25℃ unless otherwise specified)

Static characteristics

Symbol	Description	Conditions		Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	IC = 1mA, VCE = VGE		5.0	5.6	6.8	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 200A, V_{GE} = 15V	T_J = 25℃		1.60	1.90	V
			T_J = 125℃		1.90		V
			T_J = 150℃		2.00		V
I_{CES}	Collector-Emitter Leakage Current	V_{GE} = 0V, V_{CE} = V_{CES}, T_J = 25℃				1	mA
I_{GES}	Gate-Emitter Leakage Current	V_{GE} = ±20V, V_{CE} = 0V, T_J = 25℃				400	nA
C_{ies}	Input Capacitance	V_{CE} = 25V, V_{GE} = 0V , f =1MHz			26		nF
C_{oes}	Output Capacitance				0.58		nF
C_{res}	Reverse Transfer Capacitance				0.42		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 900V,I_C =200A, R_G = 10 Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		263		ns
			T_J = 125℃		260		
			T_J = 150℃		261		
t_r	Rise Time		T_J = 25℃		114		ns
			T_J = 125℃		120		
			T_J = 150℃		119		
$t_{d(off)}$	Turn-off Delay Time		T_J = 25℃		1081		ns
			T_J = 125℃		1200		
			T_J = 150℃		1198		
t_f	Fall Time		T_J = 25℃		451		ns
			T_J = 125℃		632		
			T_J = 150℃		636		
E_{on}	Turn-on Switching Loss		T_J = 25℃		40		mJ
			T_J = 125℃		51		
			T_J = 150℃		54		

E_{off}	Turn-off Switching Loss	V_{CC} = 900V,I_C =200A, R_G = 10 Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		40		mJ
			T_J = 125℃		44		
			T_J = 150℃		48		
Q_g	Total Gate Charge		T_J = 25℃		1810		nC
			T_J = 125℃		1831		
			T_J = 150℃		1839		
RBSOA	Reverse Bias Safe Operation Area	I_C=400A,V_{CC}=1630V,Vp=1700V, Rg = 10Ω, V_{GE}=+15V to 0V, T_J =150°C		Trapezoid			
SCSOA	Short Circuit Safe Operation Area	V_{CC} ≤ 900V, V_{GE} = 15V, T_J = 150℃		10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.092		℃/W

Maximum Rated Values of Diode (T_C=25℃ unless otherwise specified)

V_{RRM}	Repetitive Peak Reverse Voltage	1700	V
I_F	Diode Continuous Forward Current	100	A
I_{FM}	Diode Maximum Forward Current	200	A

Electrical Characteristics of Diode (T_C=25℃ unless otherwise specified)

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F = 200A , V_{GE} = 0V	T_J = 25℃		2.10		V
			T_J = 125℃		2.20		
I_{rr}	Peak Reverse Recovery Current	I_F＝200A, di/dt =896A/μs, V_{rr} = 900V, V_{GE} = -15V	T_J = 25℃		110		A
			T_J = 125℃		144		
Q_{rr}	Reverse Recovery Charge		T_J = 25℃		20.5		μC
			T_J = 125℃		38.1		
E_{rec}	Reverse Recovery Energy		T_J = 25℃		9.8		mJ
			T_J = 125℃		20.6		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case				0.111		℃/W

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage(All Terminals Shorted)	f = 50Hz, 1minute			2500	V
T_J	Maximum Junction Temperature				175	℃
T_{JOP}	Maximum Operating Junction Temperature Range		-40		+150	℃
T_{stg}	Storage Temperature		-40		+125	℃
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)			0.03		℃/W
T	Power Terminals Screw:M6		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			300		g

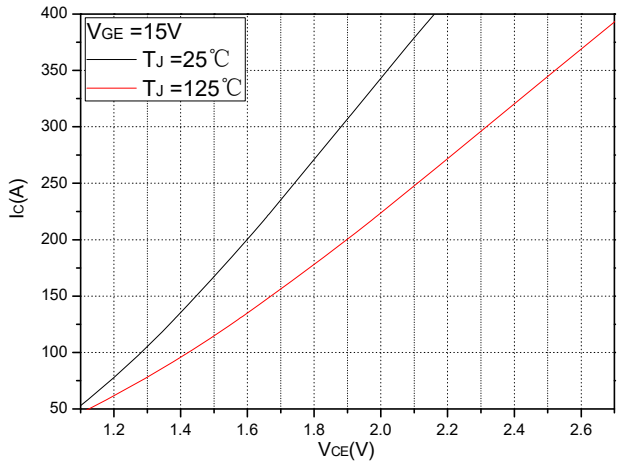


Fig.1 Typical Saturation Voltage Characteristics

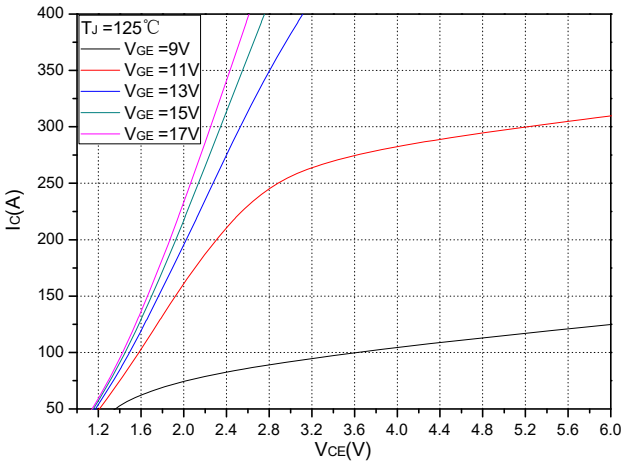


Fig.2 Typical Output Characteristics

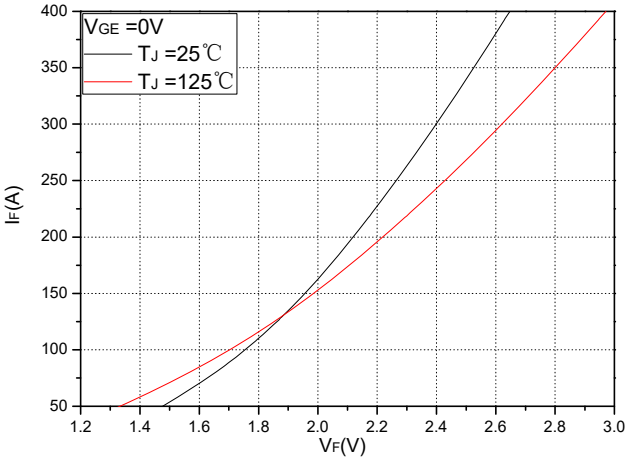


Fig.3 Forward Characteristics of FWD

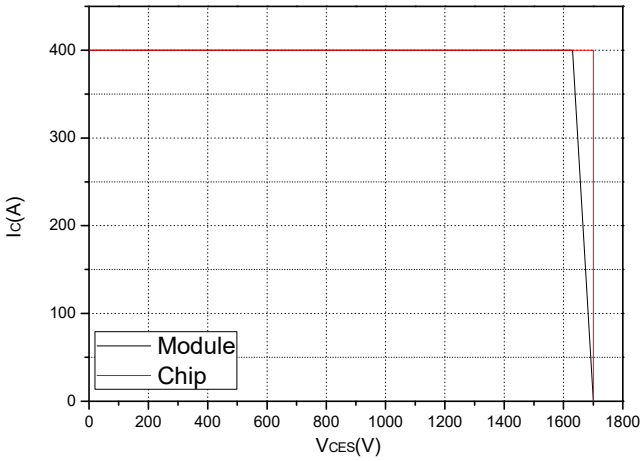


Fig.4 Reverse Bias Safe Operation Area (RBSOA)

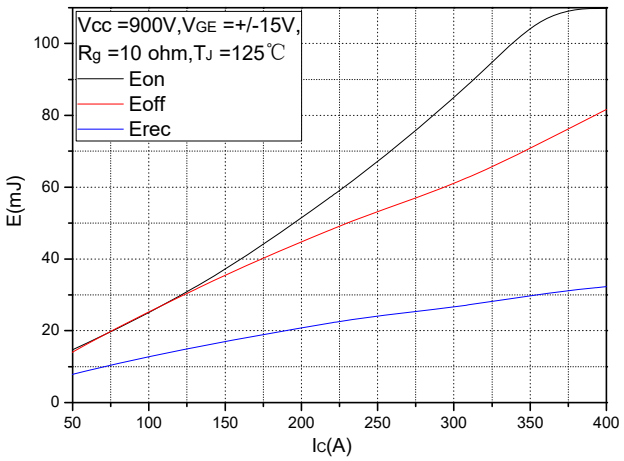


Fig.5 Typical Switching Loss vs. Collector Current

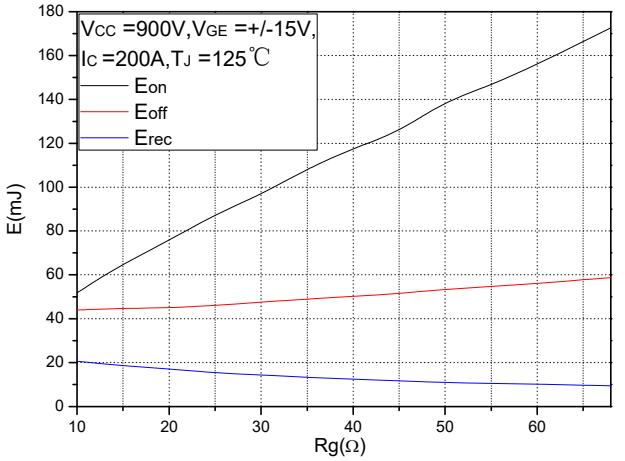


Fig.6 Typical Switching Losses vs. Gate Resistance

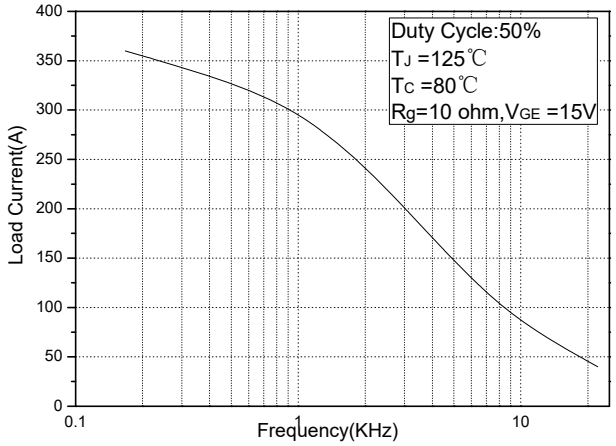


Fig.7 Typical Load Current vs. Frequency

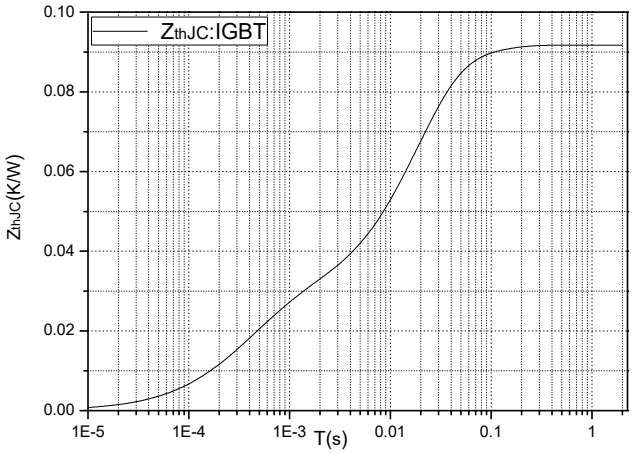


Fig.8 Transient thermal impedance (IGBT)

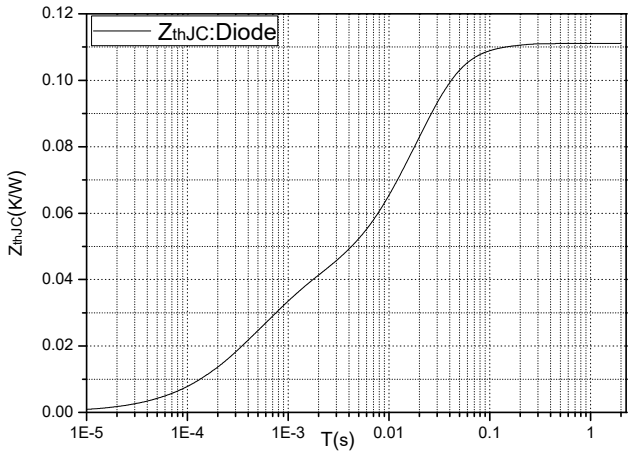
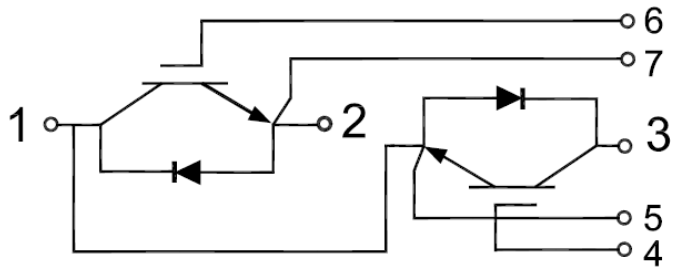
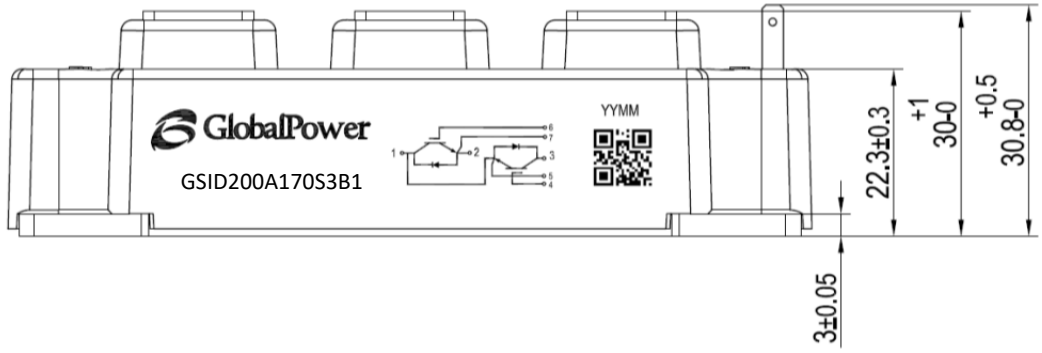


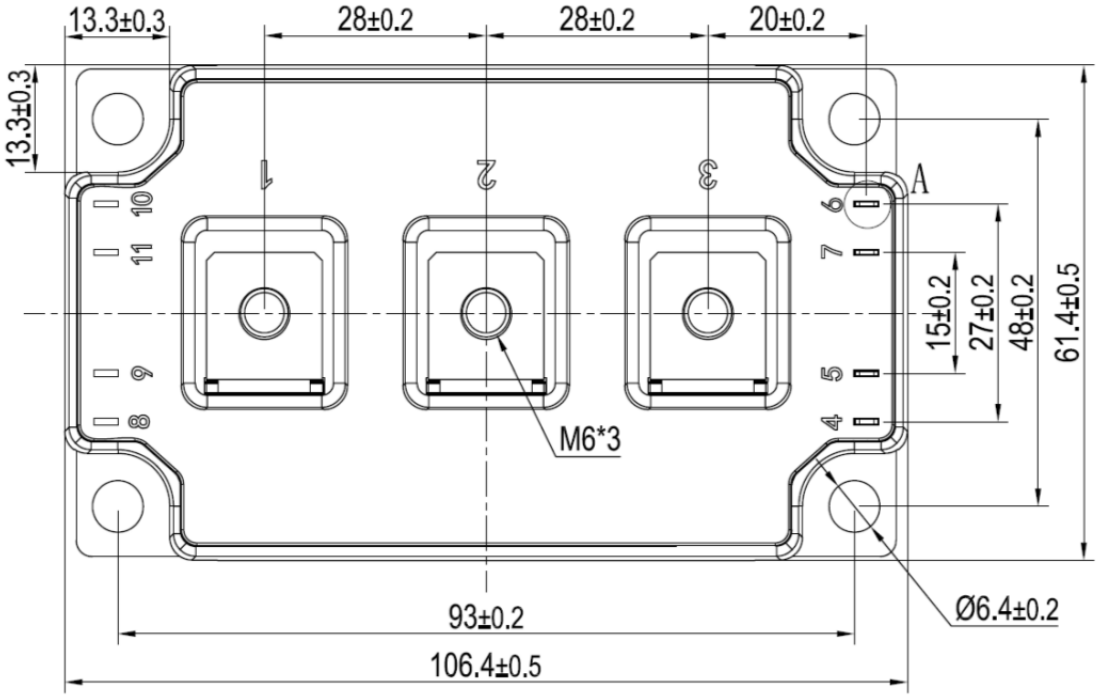
Fig.9 Transient thermal impedance (Diode)

Internal Circuit



Package Outline (Unit: mm):





Revision History

Date	Revision	Notes
10/23/2015	0.1	Initial release
01/03/2020	0.2	Applied company name change

Notes

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented March, 2013. RoHS Declarations for this product can be obtained from the Product Documentation sections of www.SemiQ.com.

REACh Compliance

REACh substances of high concern (SVHC) information is available for this product. Since the European Chemicals Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future,please contact our office at SemiQ Headquarters in Lake Forest, California to insure you get the most up-to-date REACh SVHC Declaration. REACh banned substance information (REACh Article 67) is also available upon request.

SemiQ Inc., reserves the right to make changes to the product specifications and data in this document without notice. SemiQ products are sold pursuant to SemiQ's terms and conditions of sale in place at the time of order acknowledgement.

This product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, cardiac defibrillators or similar emergency medical equipment, aircraft navigation or communication or control systems, or air traffic control.

SemiQ makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SemiQ assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using SemiQ products.

To obtain additional technical information or to place an order for this product, please contact us. The information in this datasheet is provided by SemiQ. SemiQ reserves the right to make changes, corrections, modifications, and improvements of datasheet without notice.