



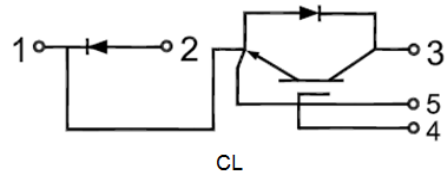
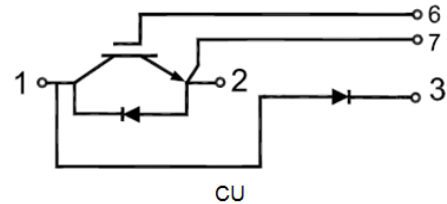
GT75CU120T1VH

GT75CL120T1VH

IGBT Module

Features:

- Field Stop Trench Gate IGBT
- Short Circuit Rated > 10μs
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested (2xIc)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications:

- Welding Machine、Cutting Machine
- Plating Power Supply、Induction Heating
- SMPS、UPS

IGBT, Brake-Chopper Maximum Rated Values of IGBT

V _{CES}	Collector-Emitter Blocking Voltage	T _C = 25°C	1200	V
V _{GES}	Gate-Emitter Voltage		±20	V
I _C	Continuous Collector Current	T _C = 100°C	75	A
		T _C = 25°C	150	A
I _{CM}	Repetitive Peak Collector Current	t _p =1ms	150	A
t _{SC}	Short Circuit Withstand Time		>10	μs
P _D	Maximum Power Dissipation per IGBT	T _C = 25°C T _{Jmax} =175°C	540	W



Electrical Characteristics of IGBT

Static Characteristics

Symbol	Description	Conditions	Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	$I_C=2.6mA, V_{CE}=V_{GE}, T_J=25^\circ C$	5.0	5.5	6.6	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=75A, V_{GE}=15V$	$T_J=25^\circ C$	1.60	1.90	V
			$T_J=125^\circ C$	1.80		V
I_{CES}	Collector-Emitter Leakage Current	$V_{GE}=0V, V_{CE}=V_{CES}, T_J=25^\circ C$			1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=\pm 20V, V_{CE}=0V, T_J=25^\circ C$			400	nA
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz, T_J=25^\circ C$		5.62		nF
C_{oes}	Output Capacitance			0.49		nF
C_{res}	Reverse Transfer Capacitance			0.38		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V, I_C=75A, R_{Gon}=2\Omega, V_{GE}=\pm 15V, \text{Inductive Load}$	$T_J=25^\circ C$		158		ns
			$T_J=125^\circ C$		163		
t_r	Rise Time	$V_{CC}=600V, I_C=75A, R_{Gon}=2\Omega, V_{GE}=\pm 15V, \text{Inductive Load}$	$T_J=25^\circ C$		49		ns
			$T_J=125^\circ C$		53		
$t_{d(off)}$	Turn-off Delay Time	$V_{CC}=600V, I_C=75A, R_{Goff}=2\Omega, V_{GE}=\pm 15V, \text{Inductive Load}$	$T_J=25^\circ C$		193		ns
			$T_J=125^\circ C$		211		
t_f	Fall Time	$V_{CC}=600V, I_C=75A, R_{Goff}=2\Omega, V_{GE}=\pm 15V, \text{Inductive Load}$	$T_J=25^\circ C$		203		ns
			$T_J=125^\circ C$		370		
E_{on}	Turn-on Switching Loss	$V_{CC}=600V, I_C=75A, R_{Gon}=2\Omega, V_{GE}=\pm 15V, di/dt=1203A/\mu s(T_J=125^\circ C), \text{Inductive Load}$	$T_J=25^\circ C$		3.22		mJ
			$T_J=125^\circ C$		4.35		
E_{off}	Turn-off Switching Loss	$V_{CC}=600V, I_C=75A, R_{Goff}=2\Omega, V_{GE}=\pm 15V, du/dt=4109A/\mu s(T_J=125^\circ C), \text{Inductive Load}$	$T_J=25^\circ C$		3.40		mJ
			$T_J=125^\circ C$		5.91		
Q_g	Total Gate Charge	$V_{GE}=+15V \dots -15V$	$T_J=25^\circ C$		374		nC
R_{gint}	Internal Gate Resistor		$T_J=25^\circ C$		10		Ω
RBSOA	$I_C=150A, V_{CC}=1050V, V_p=1200V, R_G=2\Omega, V_{GE}=+15V \text{ to } 0V, T_J=150^\circ C$			Trapezoid			
SC Data	$V_{CC}=800V, t_p=10\mu s, V_{ge}=\pm 15V, R_{Gon}=10\Omega, R_{Goff}=10\Omega, T_J=25^\circ C$			469			A
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.277		$^\circ C/W$



Diode, Reverse Maximum Rated Values of Diode

V_{RRM}	Repetitive Peak Reverse Voltage	$T_J=25^\circ\text{C}$	1200	V
I_F	Diode Continuous Forward Current		50	A
I_{FM}	Peak FWD Current Repetitive	$t_p=1\text{ms}$	100	A

Electrical Characteristics of Diode

Symbol	Description	Conditions	Min	Typ	Max	Unit	
V_{FM}	Forward Voltage	$I_F=50\text{A}$	$T_J=25^\circ\text{C}$	1.60		V	
			$T_J=125^\circ\text{C}$	1.60			
t_{rr}	Reverse Recovery Time	$I_F=50\text{A},$ $-di_F/dt = 1190\text{A}/\mu\text{s}(T_J=125^\circ\text{C}),$ $V_R=600\text{V},$ $V_{GE}=-15\text{V}$	$T_J=25^\circ\text{C}$	318		ns	
			$T_J=125^\circ\text{C}$	539			
I_{rr}	Peak Reverse Recovery Current		$T_J=25^\circ\text{C}$	57		A	
			$T_J=125^\circ\text{C}$	60			
Q_{rr}	Reverse Recovery Charge		$T_J=25^\circ\text{C}$	7.95		μC	
			$T_J=125^\circ\text{C}$	12.78			
E_{rec}	Reverse Recovery Energy		$T_J=25^\circ\text{C}$	3.15		mJ	
			$T_J=125^\circ\text{C}$	5.21			
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case					0.51	$^\circ\text{C}/\text{W}$

Diode-Chopper Maximum Rated Values of Diode

V_{RRM}	Repetitive Peak Reverse Voltage	$T_J=25^\circ\text{C}$	1200	V
I_F	Diode Continuous Forward Current		75	A
I_{FM}	Diode Maximum Forward Current	$t_p=1\text{ms}$	150	A



Electrical Characteristics of Diode

Symbol	Description	Conditions	Min	Typ	Max	Unit
V _{FM}	Forward Voltage	I _F =75A	T _J =25°C	2.10		V
			T _J =125°C	2.20		
t _{rr}	Reverse Recovery Time	I _F =75A, -di _F /dt =1738A/μs(T _J =125°C), V _R =600V, V _{GE} =-15V	T _J =25°C	204		ns
			T _J =125°C	388		
I _{rr}	Peak Reverse Recovery Current	I _F =75A, -di _F /dt =1738A/μs(T _J =125°C), V _R =600V, V _{GE} =-15V	T _J =25°C	47		A
			T _J =125°C	64		
Q _{rr}	Reverse Recovery Charge	I _F =75A, -di _F /dt =1738A/μs(T _J =125°C), V _R =600V, V _{GE} =-15V	T _J =25°C	4.56		μC
			T _J =125°C	9.42		
E _{rec}	Reverse Recovery Energy	I _F =75A, -di _F /dt =1738A/μs(T _J =125°C), V _R =600V, V _{GE} =-15V	T _J =25°C	1.67		mJ
			T _J =125°C	3.60		
R _{θJC}	Diode Thermal Resistance: Junction-To-Case				0.425	°C/W

Module

Symbol	Description	Min	Typ	Max	Unit
V _{iso}	Isolation Voltage (All Terminals Shorted)	RMS, f = 50Hz, 1minute		2500	V
T _J	Maximum Junction Temperature			175	°C
T _{JOP}	Maximum Operating Junction Temperature Range	-40		+150	°C
T _{stg}	Storage Temperature	-40		+125	°C
CTI	Comparative Tracking Index	200			V
R _{ecs}	Case-To-Sink Thermally (Conductive Grease Applied)			0.07	°C/W
T	Power Terminals Screw:M5	3.0		5.0	N·m
T	Mounting Screw:M6	4.0		6.0	N·m
G	Weight		165		g



Ordering Information Table

Device code	G	T	75	CU	120	T1V	H
	①	②	③	④	⑤	⑥	⑦

- ① - IGBT Module
- ② - Field Stop Trench Gate IGBT
- ③ - Rated Current (75=75A)
- ④ - Circuit Configuration: Chopper, CU (Diode on High Side)/CL (Diode on Low Side)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)

DATA SHEET

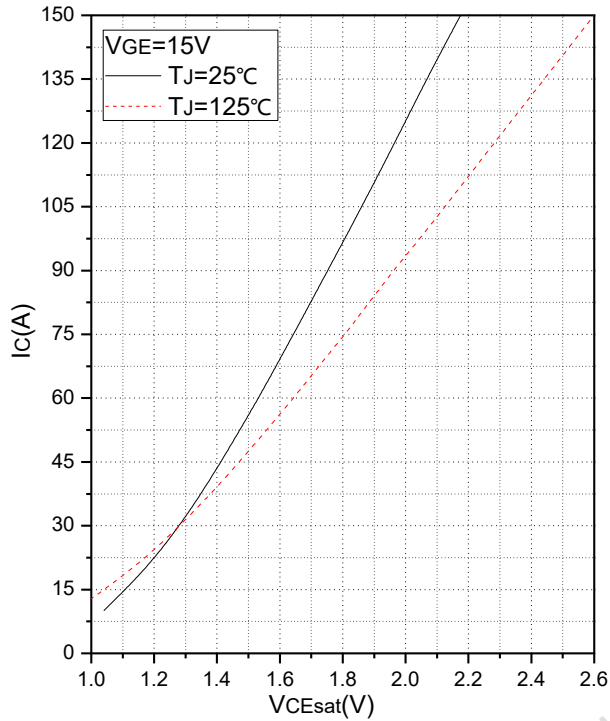


Fig.1 Typical Saturation Voltage Characteristics

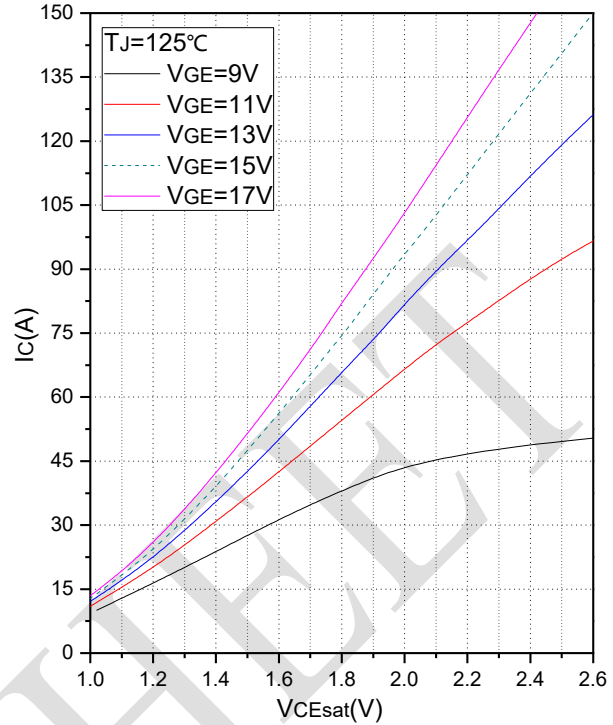


Fig.2 Typical Output Characteristics

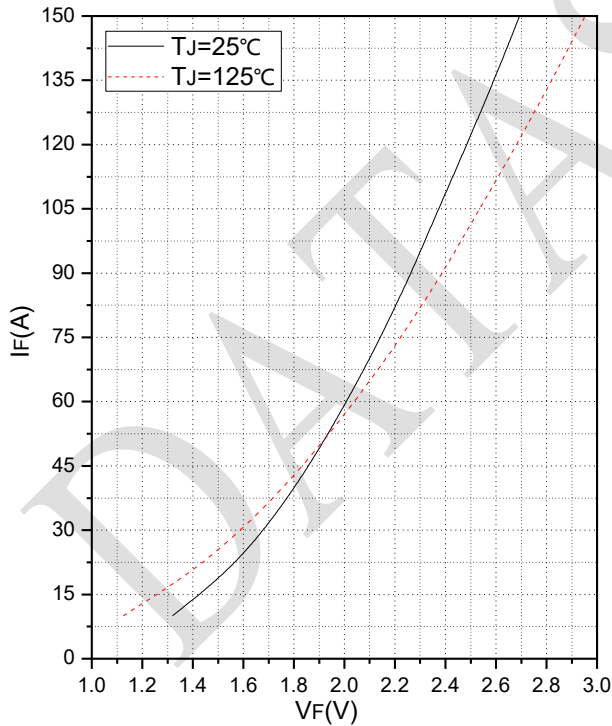


Fig.3 Forward Characteristics of Diode-Chopper

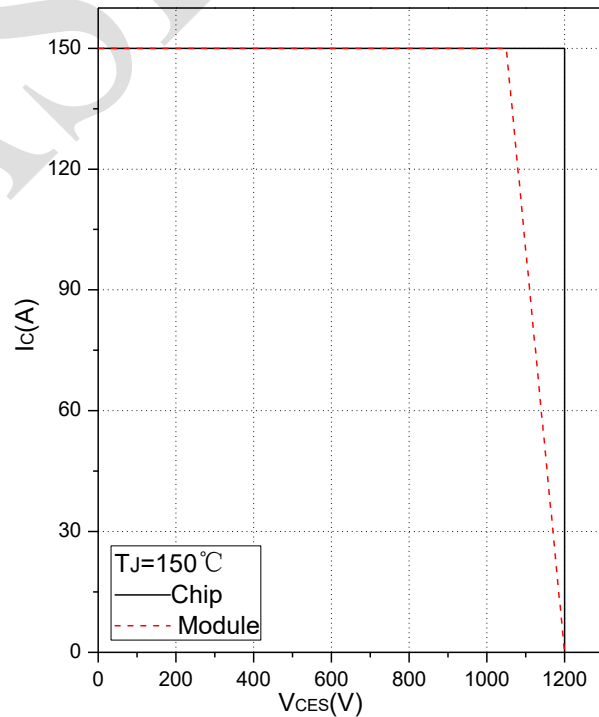


Fig.4 Reverse Bias Safe Operation Area (RBSOA)

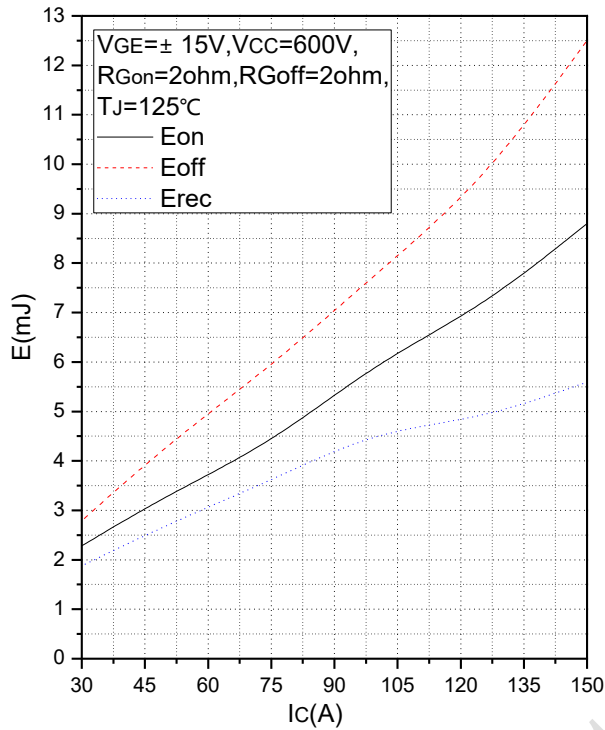


Fig.5 Typical Switching Loss vs. Collector Current

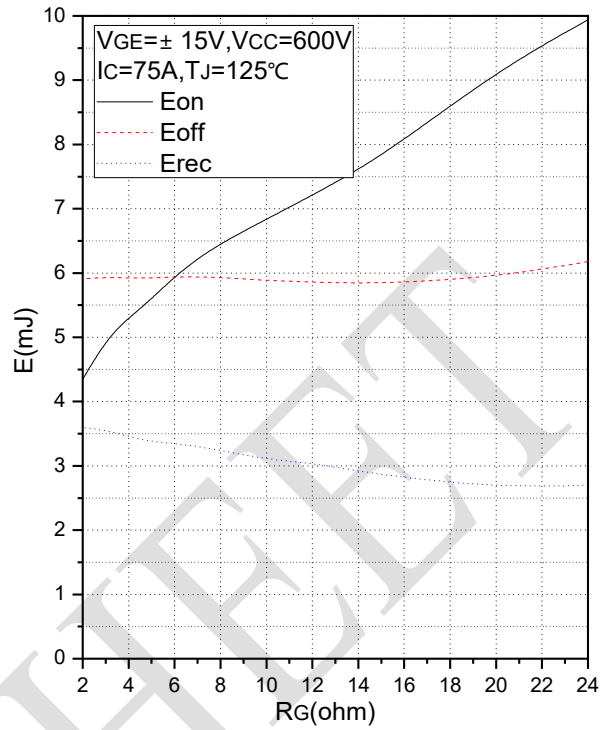


Fig.6 Typical Switching Loss vs. Gate Resistance

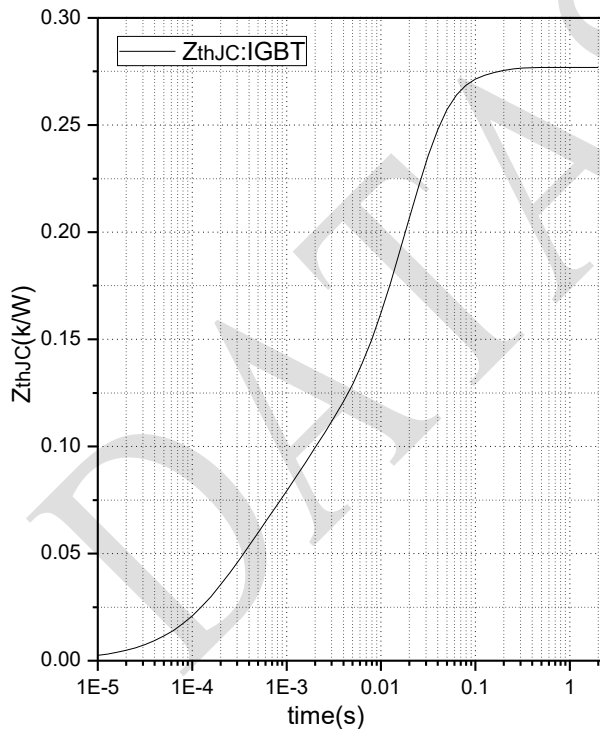


Fig.7 Transient Thermal Impedance (IGBT)

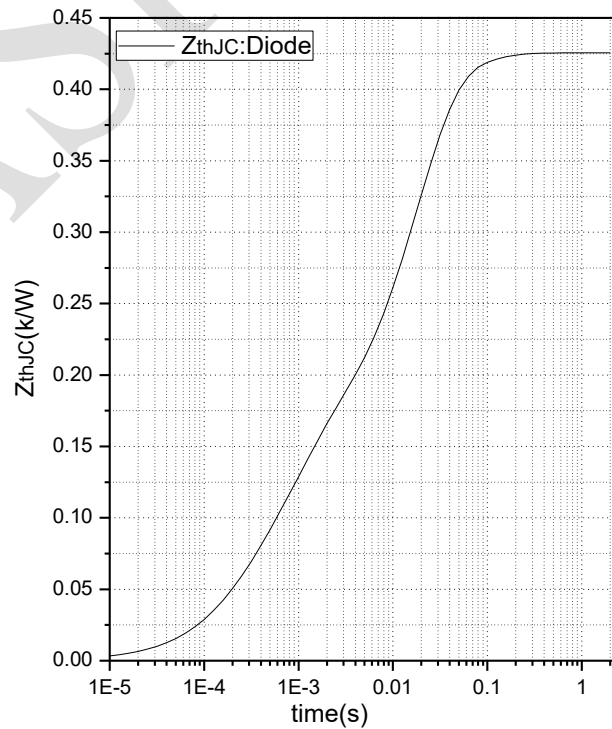


Fig.8 Transient Thermal Impedance (Diode-Chopper)

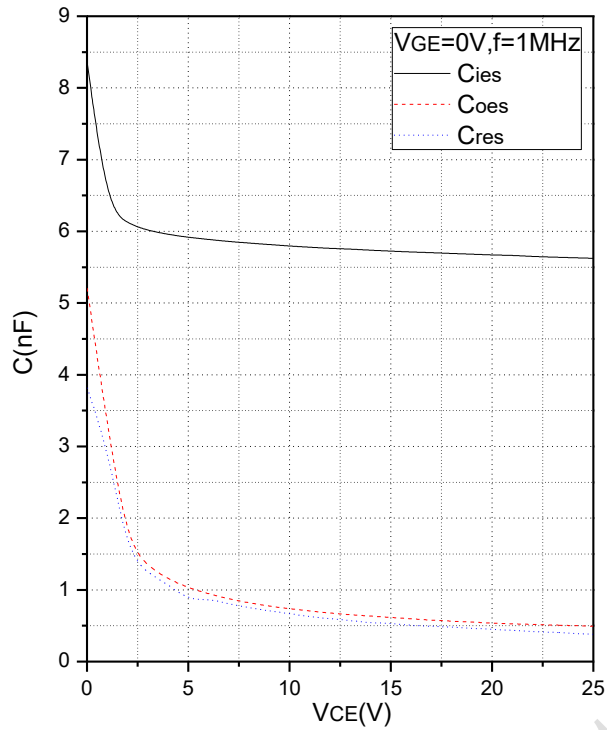


Fig.9 Capacitance Characteristics

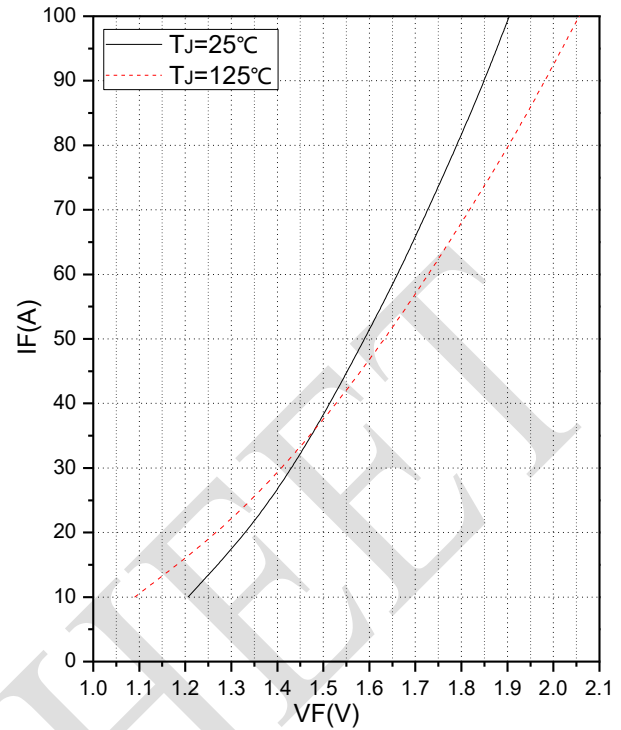
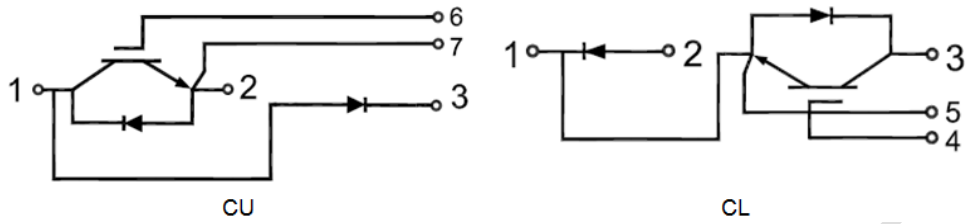


Fig.10 Forward Characteristics of Reverse Diode

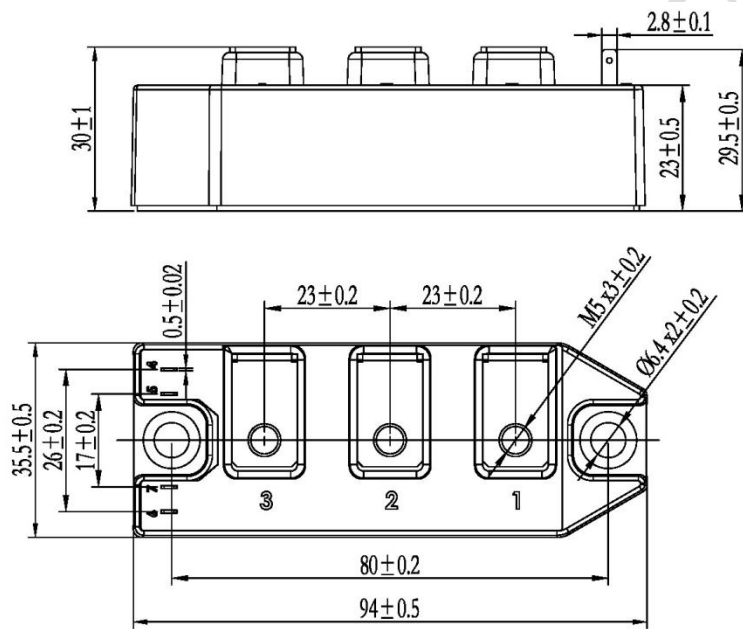
DATA SHEET



Internal Circuit



Package Outline (Unit: mm):





Date	Revision	Notes
08/16/2019	A	Final Version

Announcements

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