Features：

- MPT Gate Technology
- Low Losses
- High RBSOA capability
- Low reverse-recovery losses

Typical Applications：

- Motor Drives
- Servo Drives

1 IGBT

Symbol	Characteristic	Test Conditions	VALUE			Unit
			Min	Type	Max	
V_{CES}	Collector-Emitter voltage	T_{vj}=25°C			1200	V
V_{GES}	Gate-Emitter voltage	T_{vj}=25°C			±20	V
I_C	Continuous DC collector current	Continuous@T_C=100°C			150	A
I_{CP}	Repetitive peak collector current	T_P=1ms			300	A
I_{CES}	Collector-emitter cut-off current	T_{vj}=25°C,V_{CE}=1200V,V_{GE}=0V			0.2	mA
I_{GES}	Gate-emitter leakage current	T_{vj}=25°C,V_{CE}=0V,V_{GE}=±20V			±0.2	μA
$V_{GE(th)}$	Gate threshold voltage	T_{vj}=25°C,V_{CE}=20V,I_C=3mA	5.5	6.0	7.0	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	T_{vj}=25°C,V_{GE}=15V,I_C=150A		1.50	1.70	V
		T_{vj}=125°C,V_{GE}=15V,I_C=150A		1.70		V
		T_{vj}=175°C,V_{GE}=15V,I_C=150A		1.84		V
Q_G	Gate charge	V_{GE}=±15V		1.42		μC
R_{Gint}	Internal gate resistor	T_{vj}=25°C		3.5		Ω
C_{ies}	Input capacitance	T_{vj}=25°C,V_{CE}=25V,V_{GE}=0V,f=100kHz		36.0		nF
C_{res}	Reverse transfer capacitance			0.09		nF
t_{don}	Turn-on Delay time,inductive load	T_{Vj}=175°C,V_{CC}=600V,I_C=150A,V_{GE}=±15V, R_g=3.3Ω,Inductive load		170		ns
t_r	Rise time,inductive load			75		ns
t_{doff}	Turn-off Delay time,inductive load			340		ns
t_f	Fall time,inductive load			280		ns
E_{on}	Turn-on energy loss per pulse	I_C=150A,V_{CE}=600V, V_{GE}=±15V, d_i/d_t=1600A/μs(T_{vj}=175°C),R_{Gon}=3.3Ω		22.0		mJ
E_{off}	Turn-off energy loss per pulse	I_C=150A,V_{CE}=600V, V_{GE}=±15V, d_v/d_t=6300V/μs(T_{vj}=175°C),R_{Gon}=3.3Ω		18.5		mJ
I_{SC}	SC data	V_{GE}≤15V,V_{CC}=800V,V_{CEmax}=V_{CES}-L_{sCE}·d_i/d_t, t_P≤6μs,T_{vj}=175°C		760		A
$R_{th(j-c)}$	Thermal resistance,junction to case	per IGBT			0.163	℃/W
$T_{vj\ op}$	Temperature under switching conditions	/	-40		175	℃

2 Diode

Symbol	Characteristic	Test Conditions	VALUE			Unit
			Min	Type	Max	
V_{RRM}	Repetitive peak reverse voltage	T_{vj}=25°C			1200	V
I_F	Continuous DC forward current	/			150	A
I_{FRM}	Repetitive peak forward current	T_P=1ms			300	A
V_F	Forward voltage	T_{vj}=25°C,I_F=150A		1.85	2.20	V
		T_{vj}=125°C,I_F=150A		2.05		V
		T_{vj}=175°C,I_F=150A		2.05		V
I_{RM}	Peak reverse recovery current	I_F=150A,-d_{iF}/d_t=1580A/μs,V_R=600V, V_{GE}=-15V,T_{vj}=175°C		130		A
Q_r	Recovered charge			17.0		μC
E_{rec}	Reverse recovery energy			6.40		mJ
$R_{th(j-c)}$	Thermal resistance,junction to case	per diode			0.245	℃/W
$T_{vj\ op}$	Temperature under switching conditions	/	-40		175	℃

3 NTC-Thermistor

Symbol	Characteristic	Test Conditions	VALUE			Unit
			Min	Type	Max	
R_{25}	Rated resistance	T_{Vj}=25°C		5		kΩ
△R/R	Deviation of R100	T_C=100°C,R_{100}=493W	-7.3		7.3	%
P_{25}	Power dissipation	T_C=25°C			10	mW
$B_{25/50}$	B-value	R_2=R_{25} exp [$B_{25/50}$(1/T_2-1/(298,15K))]		3380		K
$B_{25/80}$		R_2=R_{25} exp [$B_{25/80}$(1/T_2-1/(298,15K))]		3470		K
$B_{25/100}$		R_2=R_{25} exp [$B_{25/100}$(1/T_2-1/(298,15K))]		3520		K

4 Package

Symbol	Characteristic	Test Conditions	VALUE			Unit
			Min	Type	Max	
V_{iso}	Isolation test voltage	T_{vj}=25°C,AC:1minute	3000			V
T_{stg}	Storage temperature	/	-40		125	℃
M	Mounting torque for module(M5)	/	2.4		3.0	N·m
W_t	Weight			310		g
Outline	M40a					

Output characteristic IGBT Inverter (typical)
$I_C = f(V_{CE})$,
$V_{GE} = 15V$

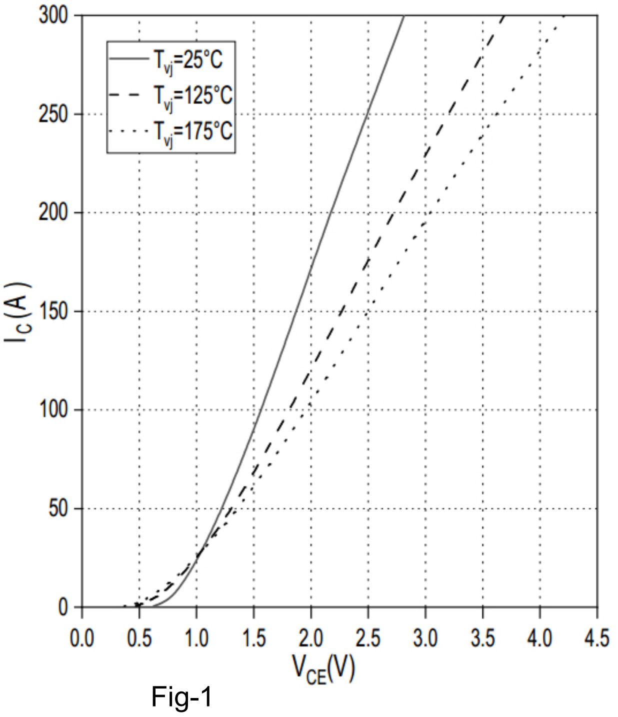


Fig-1

Output characteristic IGBT Inverter (typical)
$I_C = f(V_{CE})$,
$T_{vj} = 175℃$

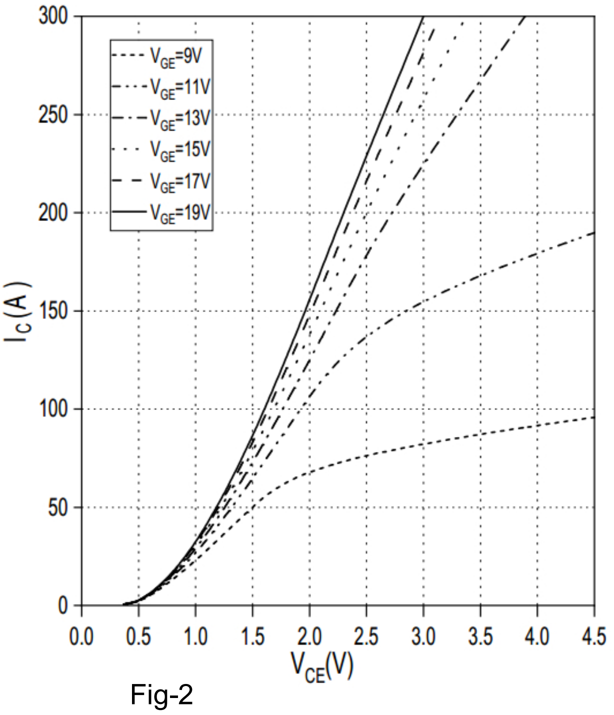


Fig-2

Transfer characteristic IGBT, Inverter (typical)
$I_C = f(V_{GE})$,
$V_{CE} = 20V$

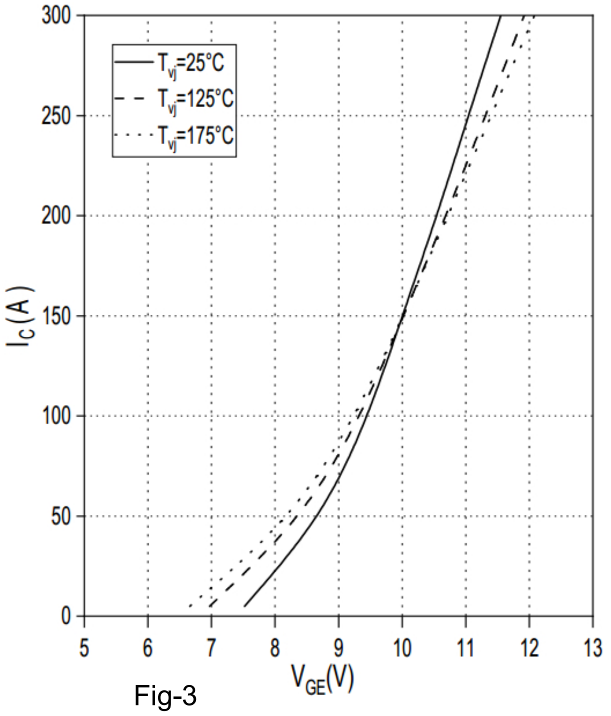


Fig-3

Switching losses IGBT , Inverter (typical)
$E_{on} = f(I_C), E_{off} = f(I_C)$, $V_{GE} = \pm15V$,
$R_{Gon} = 3.3\Omega, R_{Goff} = 3.3\Omega, V_{CE} = 600V$

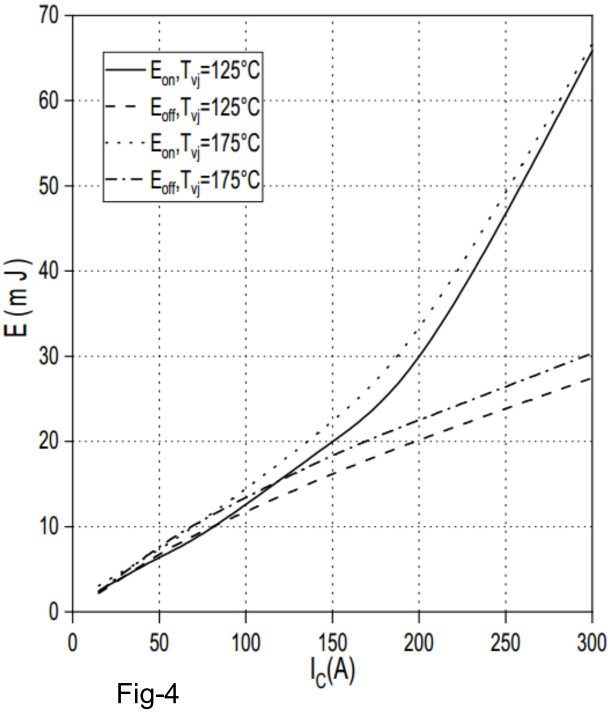


Fig-4

Switching losses IGBT, Inverter (typical)
E = f(Rg) V_{GE} = ±15V, I_C =150A, V_{CE} = 600V

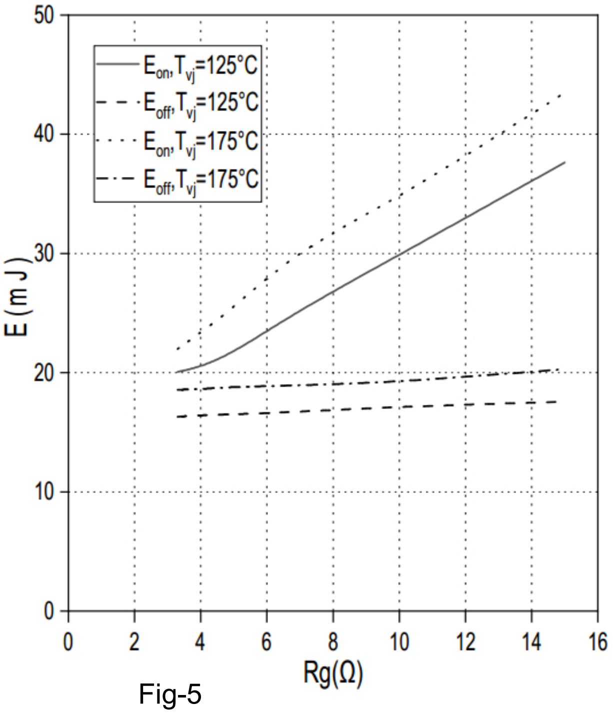
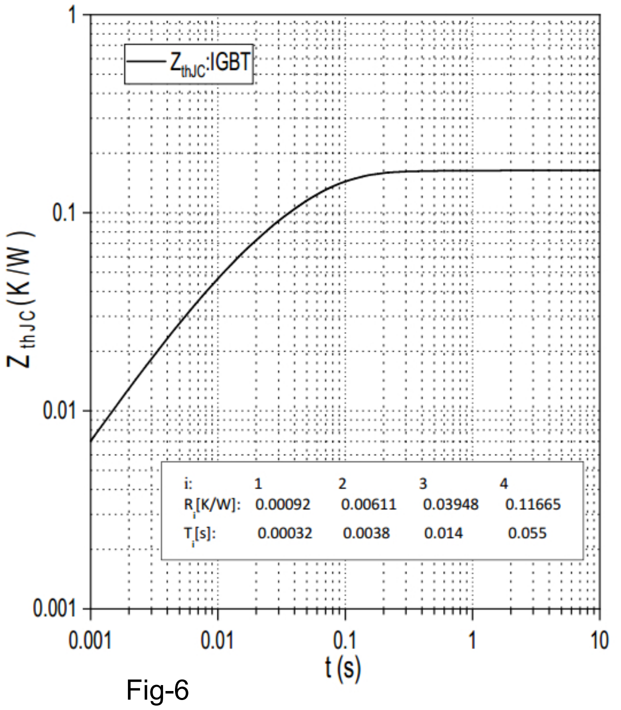


Fig-5

Transient thermal impedance IGBT , Inverter
Z_{thJC} = f(t)



i:	1	2	3	4
R_i[K/W]:	0.00092	0.00611	0.03948	0.11665
T_i[s]:	0.00032	0.0038	0.014	0.055

Fig-6

Gate charge characteristic, IGBT, Inverter (typical)
V_{GE} = f(Q_G)
I_C = 150 A, Tvj = 25 °C

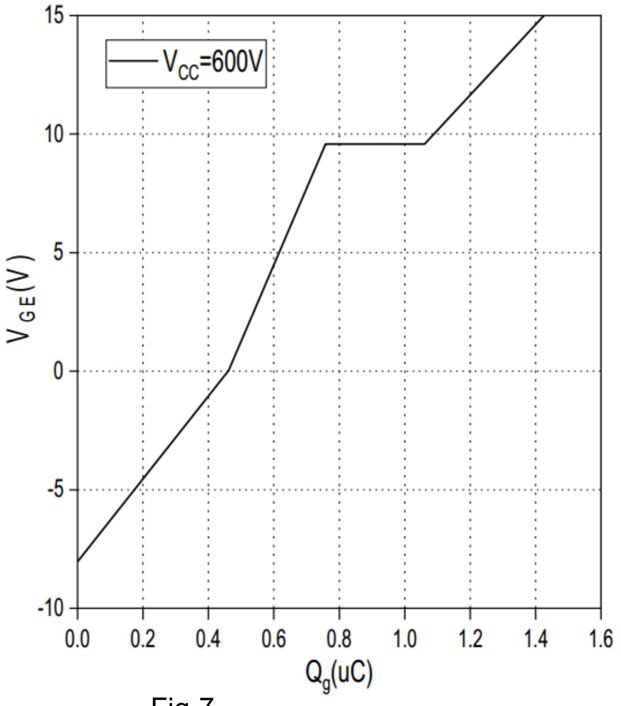


Fig-7

Capacity characteristic, IGBT, Inverter (typical)
C= f(V_{CE})
f= 100 kHz, V_{GE} = 0 V, Tvj = 25 °C

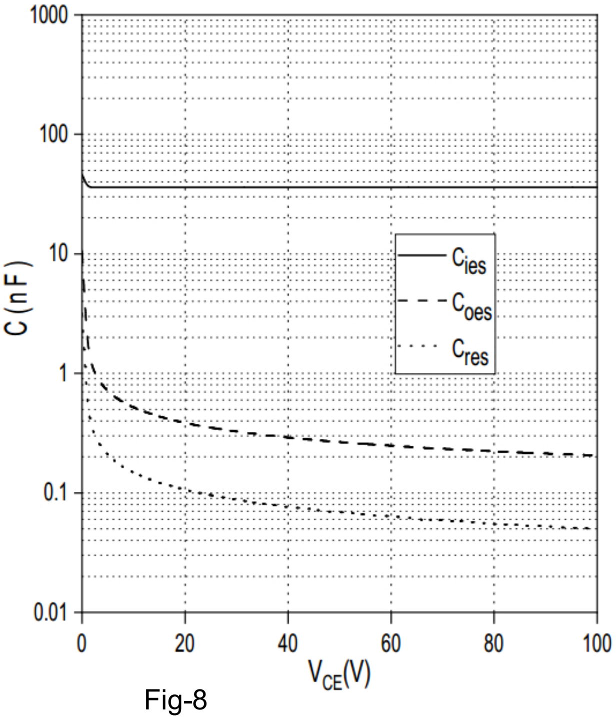


Fig-8

Reverse bias safe operating area IGBT, Inverter
(RBSOA) $I_C = f(V_{CE})$,
$V_{GE} = 15V, R_{Goff} = 3.3\Omega, T_{vj} = 175°C$

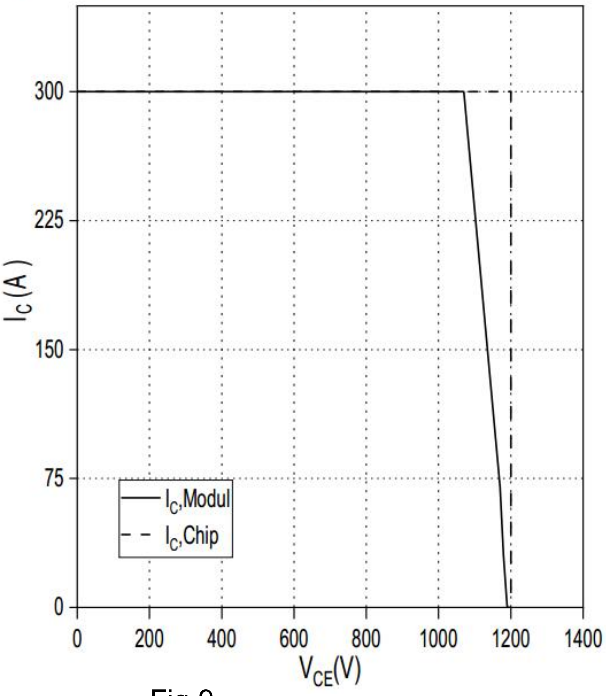


Fig-9

Forward characteristic of Diode, Inverter (typical)
$I_F = f(V_F)$

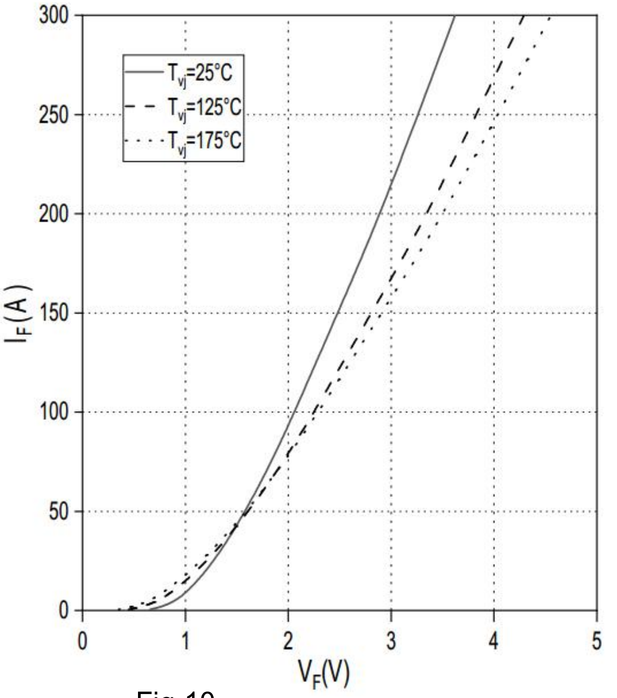


Fig-10

Switching losses Diode, Inverter (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 3.3\Omega, V_{CE} = 600V$

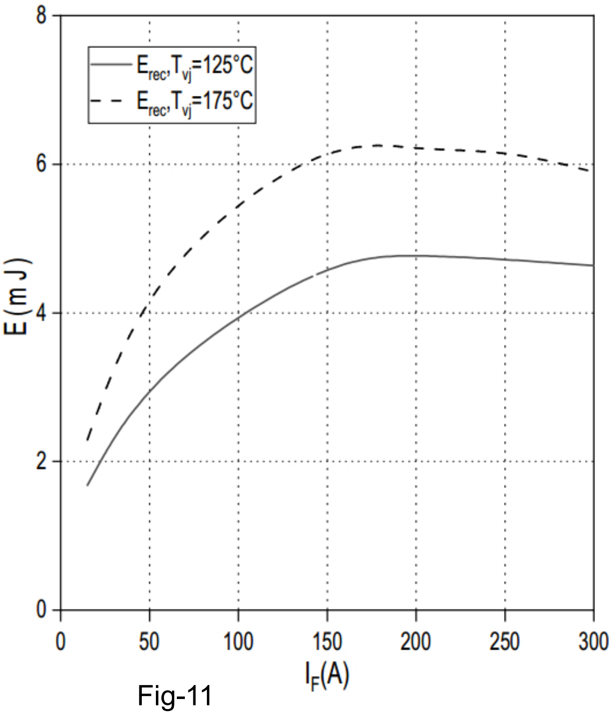


Fig-11

Switching losses Diode, Inverter (typical)
$E_{rec} = f(R_g)$
$I_F = 150A, V_{CE} = 600V$

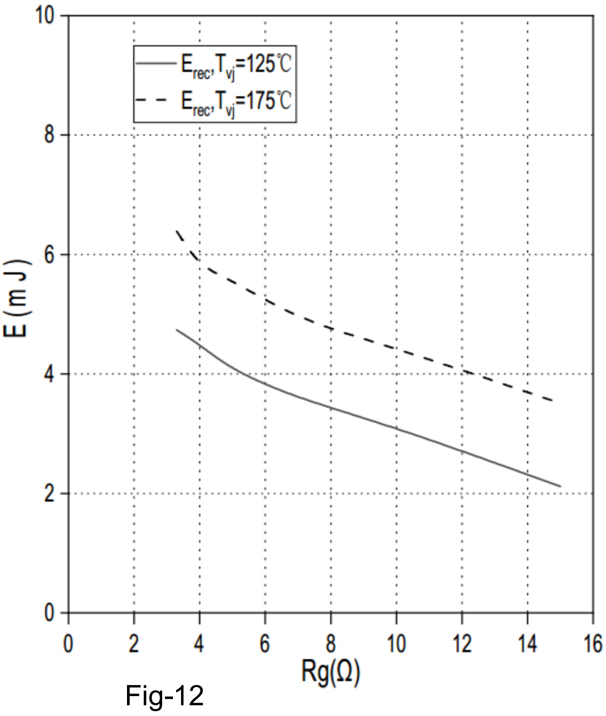
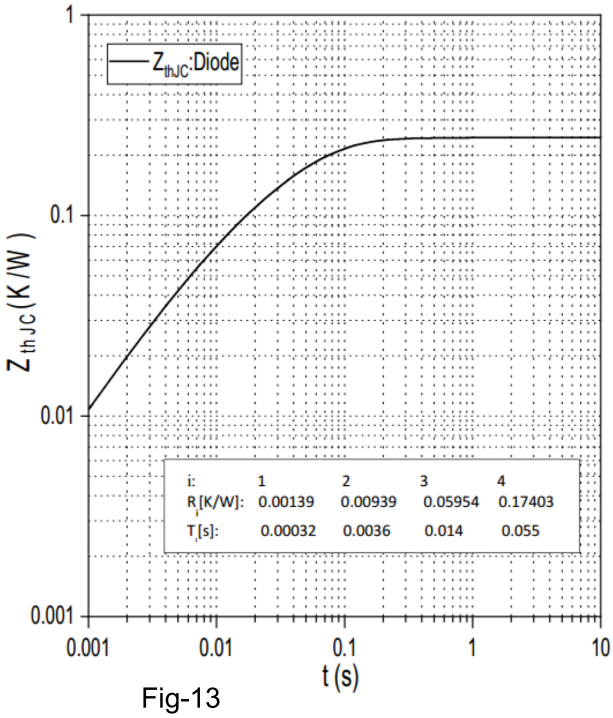


Fig-12

Transient thermal impedance Diode , Inverter

$Z_{thJC} = f(t)$



i:	1	2	3	4
R_i[K/W]:	0.00139	0.00939	0.05954	0.17403
T_i[s]:	0.00032	0.0036	0.014	0.055

Fig-13

NTC-Thermistor-temperature characteristic

$R = f(T_{NTC})$

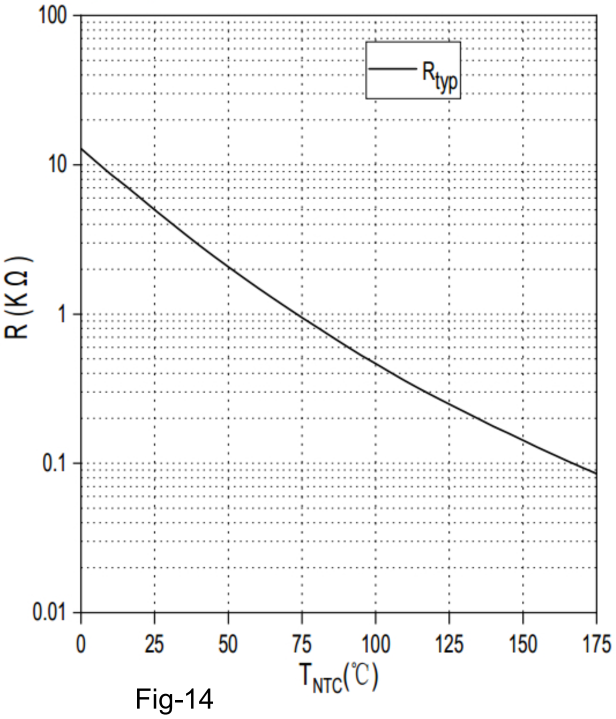
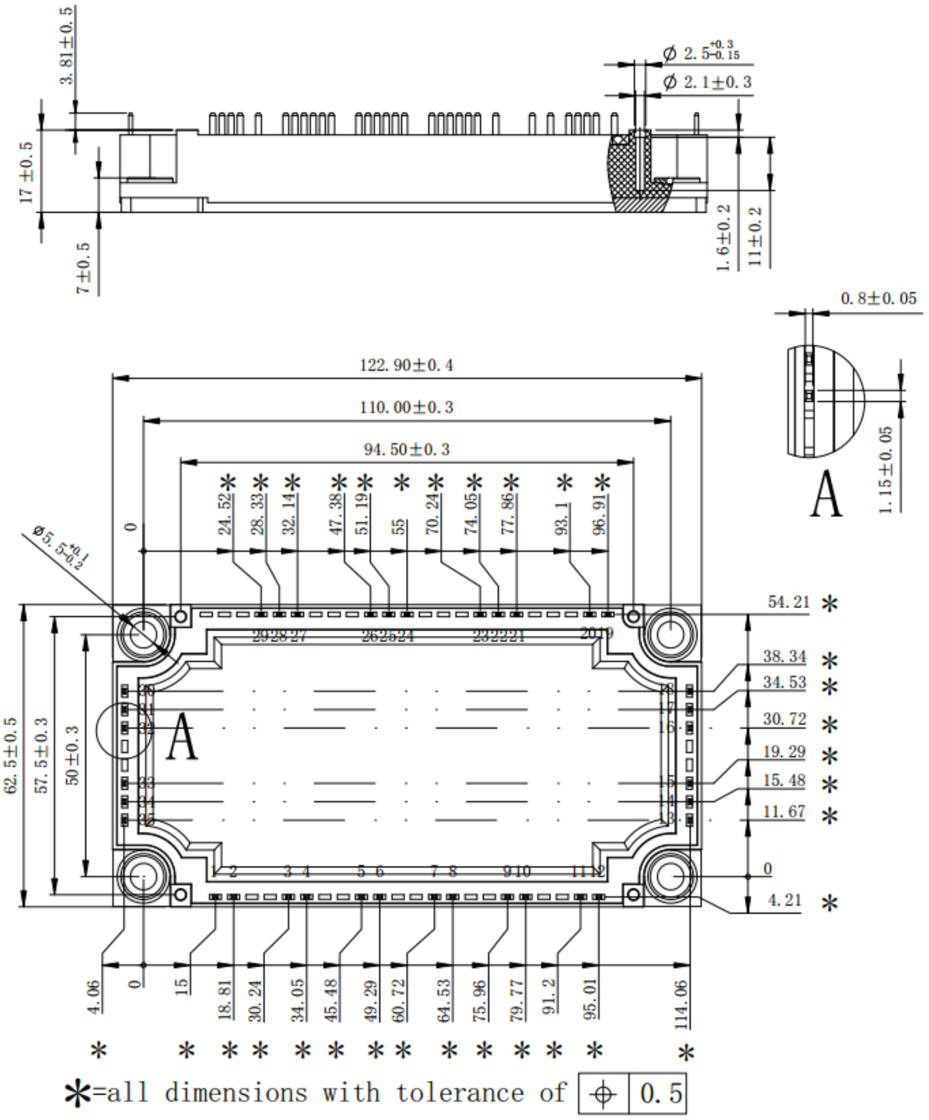
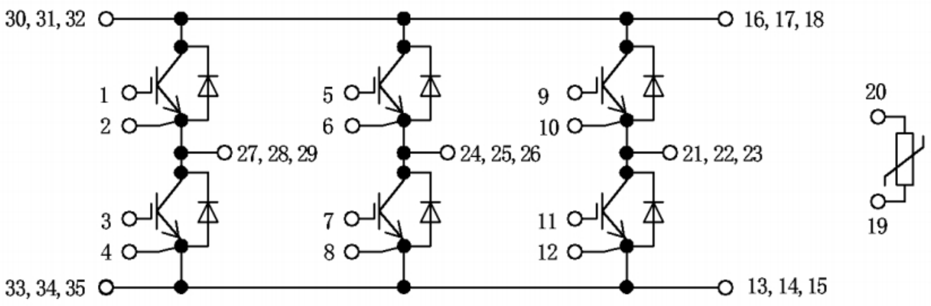


Fig-14

Package outlines & Circuit diagram



MT150MB120CS



Unmarked dimensional tolerance：±0.5mm

NIPS reserves the right to change specifications without notice.