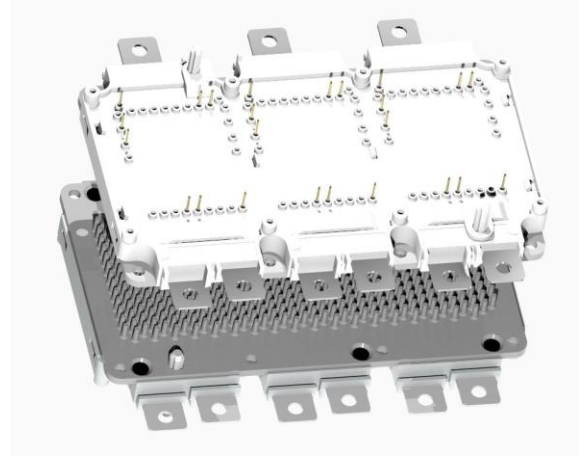


HPD module with Trench/Field stop IGBT and Fast recovery diode and NTC

Features

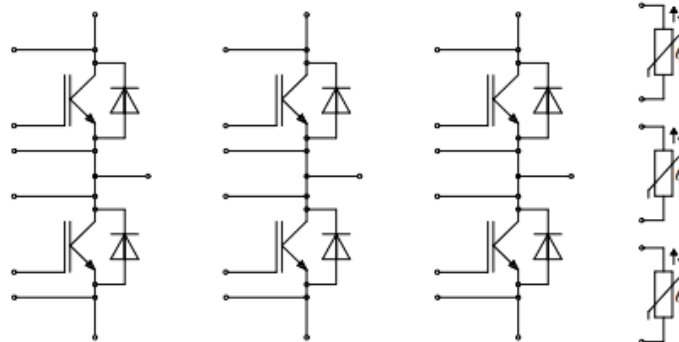
- 1200V 600A
- Ultra Low Conduction and Switching Loss
- High Short Circuit Capability
- Including Ultra Fast & Soft Recovery
Anti-parallel FWD



Applications

- AC Motor Control
- Inverters
- Motor Drives
- Solar Power

Equivalent Circuit Schematic



IGBT - Inverter

Maximum Rated Values

Symbol	Description	Conditions	Values	Unit
V_{CES}	Collector-Emitter Voltage	$T_{vj}=25^{\circ}C$	1200	V
V_{GES}	Gate-Emitter Peak Voltage	$T_{vj}=25^{\circ}C$	± 20	V
I_C	Continuous DC Collector Current	$T_C=100^{\circ}C$	600	A
I_{CRM}	Repetitive Peak Collector Current	$t_p=1ms$	1200	A
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vj,max}=175^{\circ}C$	1875	W

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=600A, T_{vj}=25^{\circ}C$	---	1.75	2.4	V
		$V_{GE}=15V, I_C=600A, T_{vj}=125^{\circ}C$	---	2.05	--	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE}=V_{CE}, I_C=15.0mA$	4.0	6.0	7.0	V
I_{CES}	Collector-Emitter Cut-Off Current	$V_{CE}=1200V, V_{GE}=0V$	---	---	1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=20V, V_{CE}=0V$	---	---	400	nA
Q_G	Gate Charge	$V_{CC}=600V, I_C=600A, V_{GE}=15V$	---	4835	---	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V$ $V_{GE}=\pm 15V$ $I_C=600A$ $R_G=10\Omega$ Inductive Load $T_{vj}=25^{\circ}C$	---	0.89	---	us
t_r	Turn-on Rise Time		---	0.36	---	us
$t_{d(off)}$	Turn-off Delay Time		---	1.10	---	us
t_f	Turn-off Fall Time		---	0.45	---	us
E_{on}	Turn-on Switching Loss		---	186	---	mJ
E_{off}	Turn-off Switching Loss		---	148	---	mJ
I_{SC}	Short Circuit Data	$V_{GE}\leq 15V, V_{CC}=600V$ $t_p=6\mu s, T_{vj}=150^{\circ}C$	---	3000	---	A
R_{thJF}	Thermal Resistance, Junction to Cooling fluid	Per IGBT	---	---	0.085	K/W
T_{vjop}	Temperature under switching conditions		-40	---	150	$^{\circ}C$

**Diode - Inverter
Maximum Rated Values**

Symbol	Description	Conditions	Values	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj}=25^{\circ}C$	1200	V
I_F	Continuous DC Forward Current		600	A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1ms$	1200	A

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
V _F	Forward Voltage	I _F =600A, V _{GE} =0V, T _{vj} =25°C	---	1.85	2.5	V
		I _F =600A, V _{GE} =0V, T _{vj} =125°C	---	1.90	---	V
I _{RM}	Peak Reverse Recovery Current	I _F =600A, V _R =600V, V _{GE} =-15V T _{vj} =25°C	---	170	---	A
Q _r	Recovered Charge		---	8.15	---	uC
E _{rec}	Reverse Recovery Energy		---	9.5	---	mJ
R _{thJF}	Thermal Resistance, Junction to Cooling fluid	Per Diode	---	---	0.11	K/W
T _{vjop}	Temperature under switching conditions		-40	---	150	°C

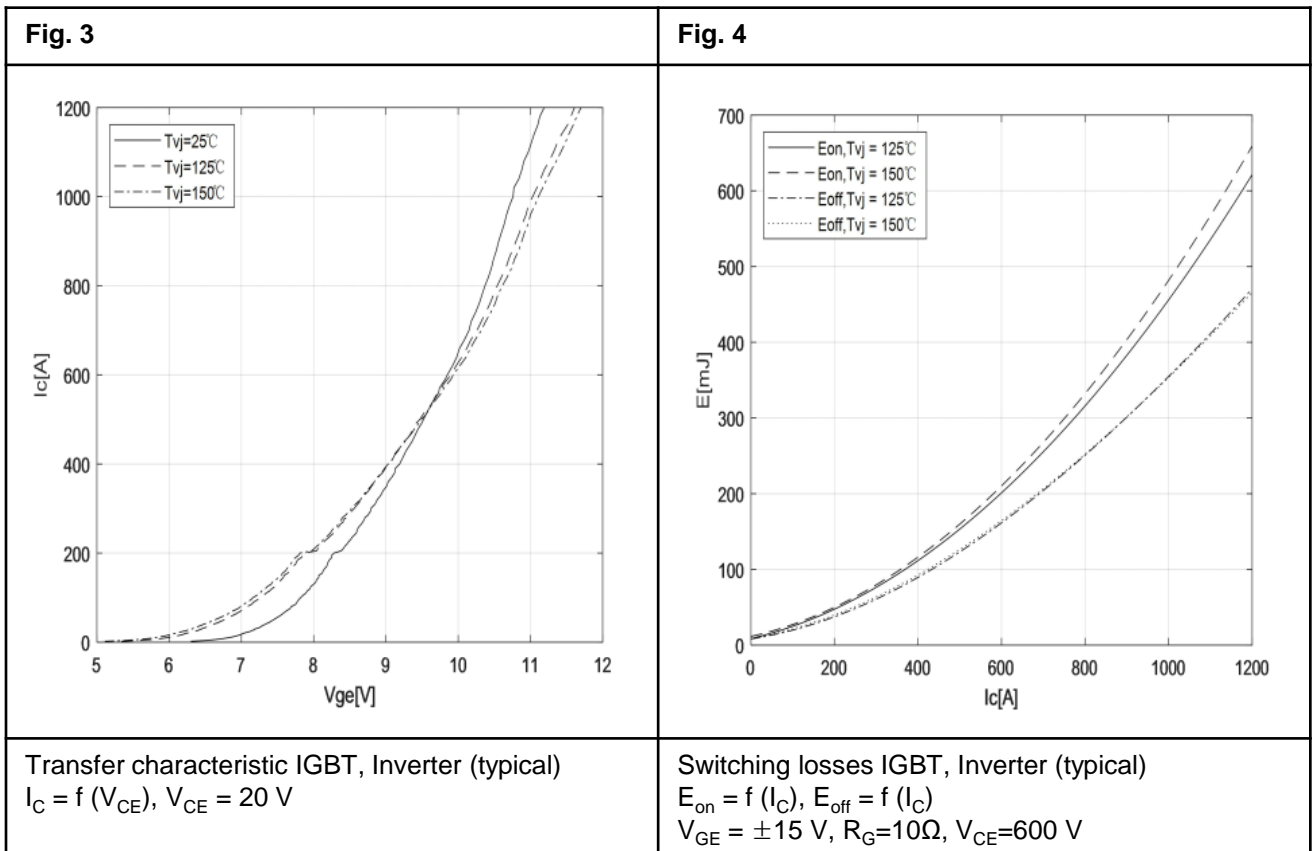
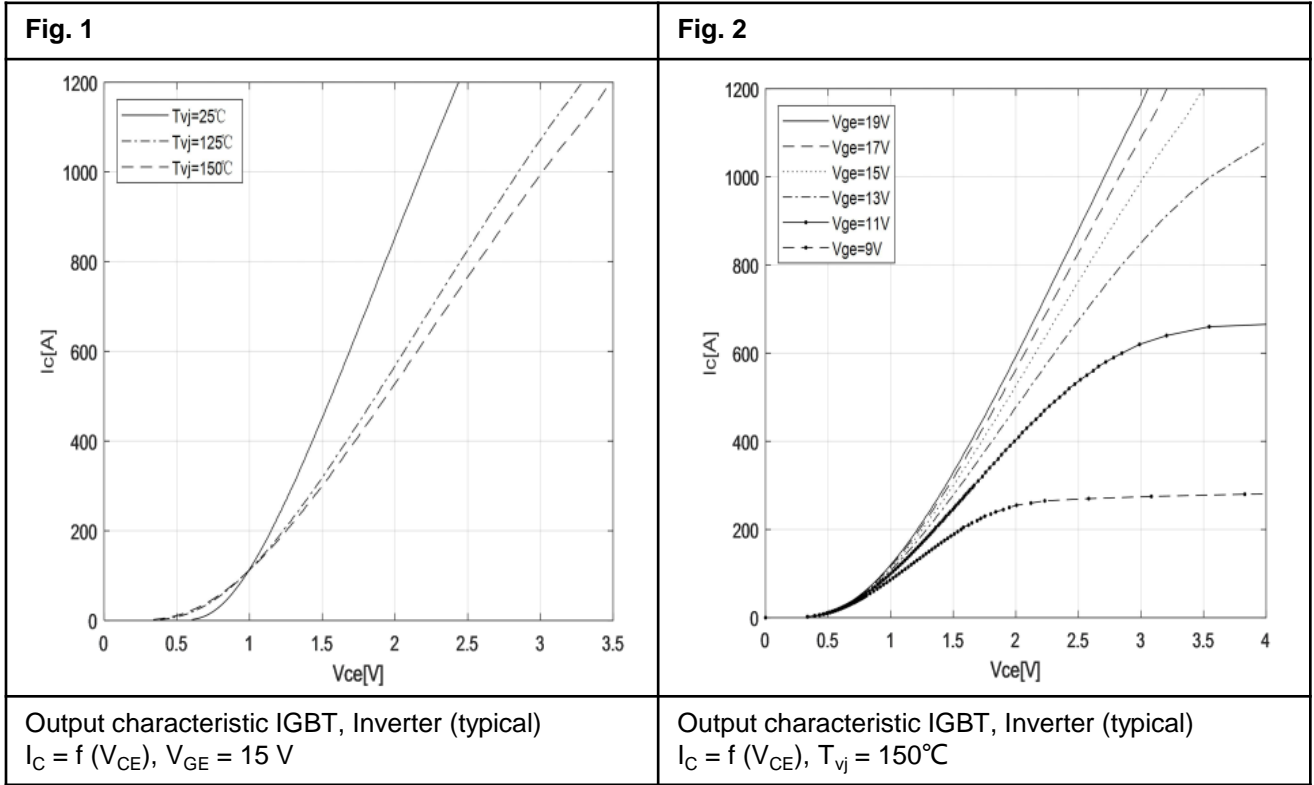
**NTC-Thermistor
Characteristic Values**

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
R ₂₅	Rated Resistance	T _C =25°C	---	5.0	---	KΩ
B _{25/50}	B Value	$R_2 = R_{25} \exp [B_{25/50} (1/T_2 - 1/(298 K))]$	---	3375	---	K

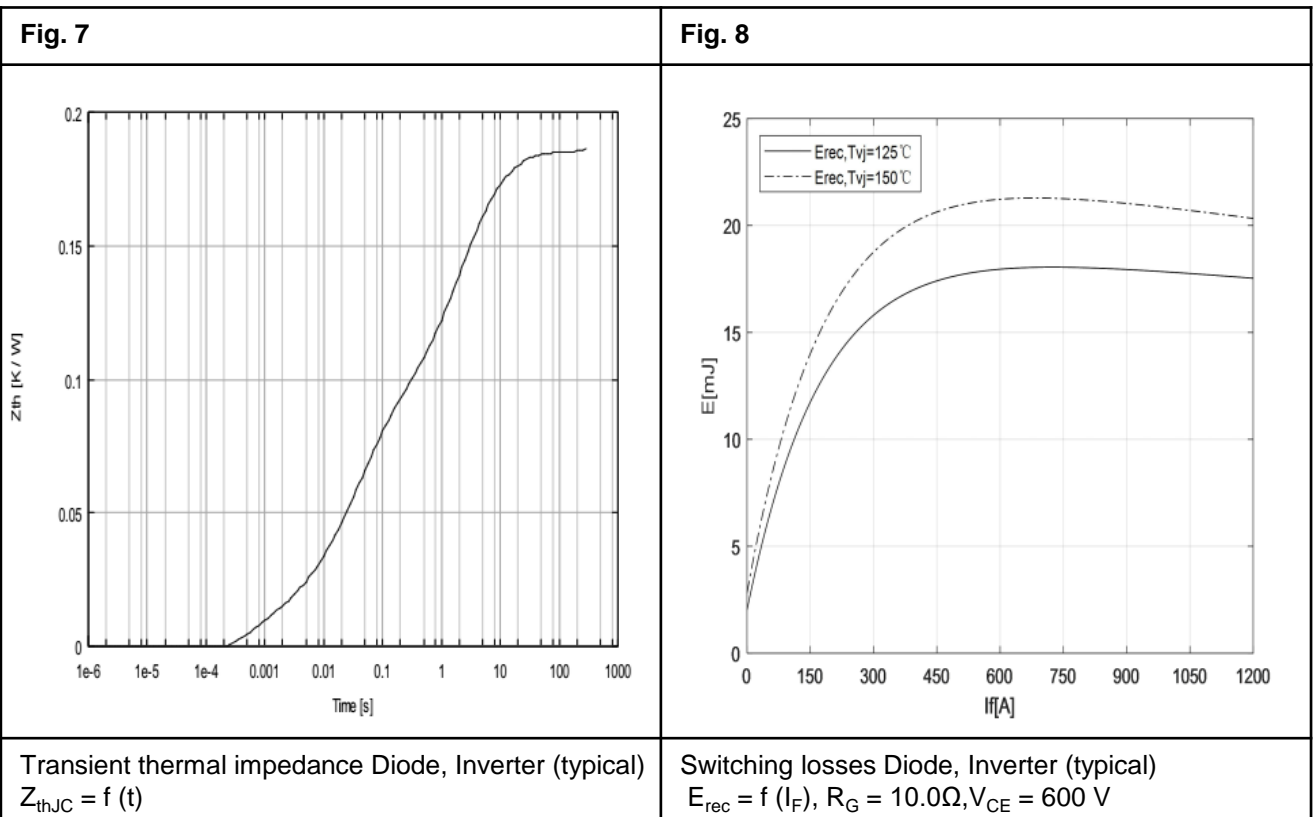
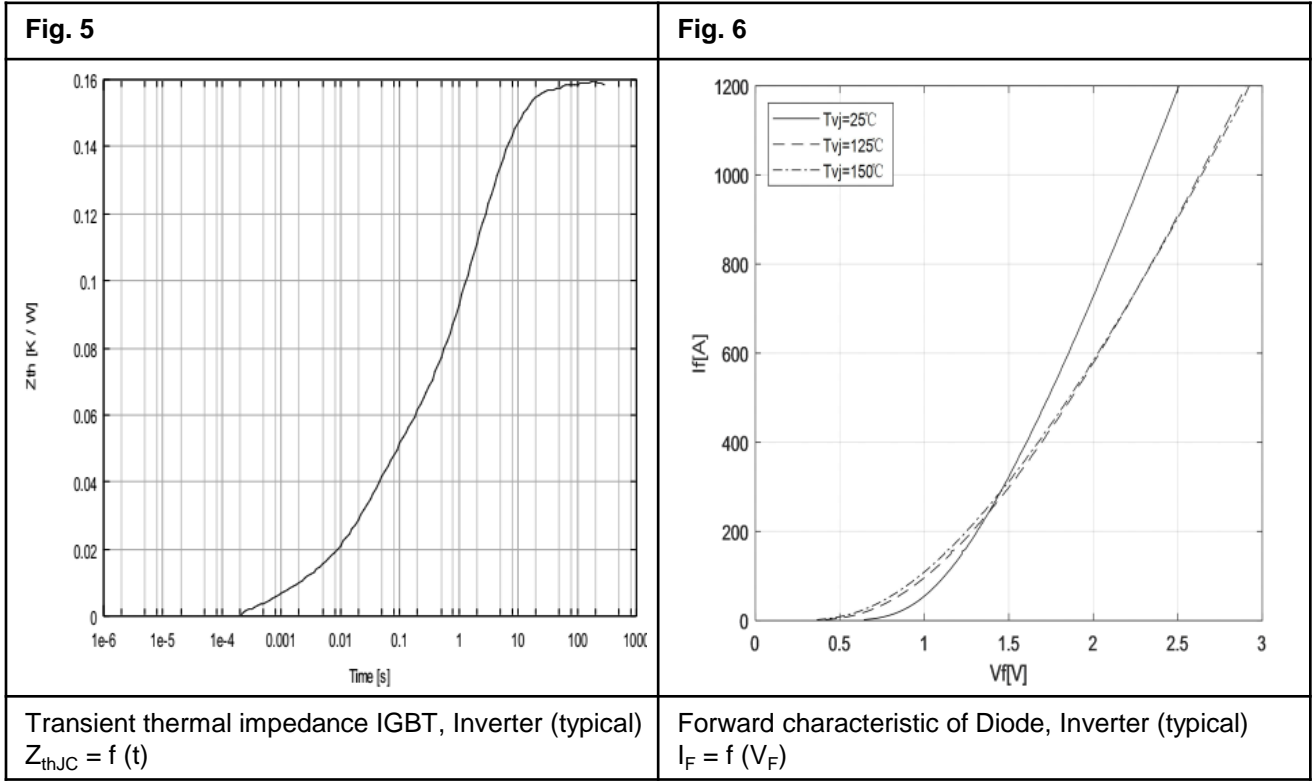
Module

Symbol	Description	Conditions	Values	Unit
V _{ISOL}	Isolation Test Voltage	RMS, f=0Hz, t=1.2 sec	4.7	KV
	Material of Module Baseplate		Cu	
	Internal Isolation		Si ₃ N ₄	
	Creepage Distance	Terminal to Heatsink	9.0	mm
		Terminal to Terminal	9.0	
	Clearance	Terminal to Heatsink	4.5	mm
		Terminal to Terminal	4.5	
T _{stg}	Storage temperature		-40~125	°C
M	Mounting torque for module mounting	Mounting - M4	1.8 ~ 2.2	N·m
M	Mounting torque for module mounting	PCB Mounting	3.6 ~ 4.4	N·m
G	Weight		730	g

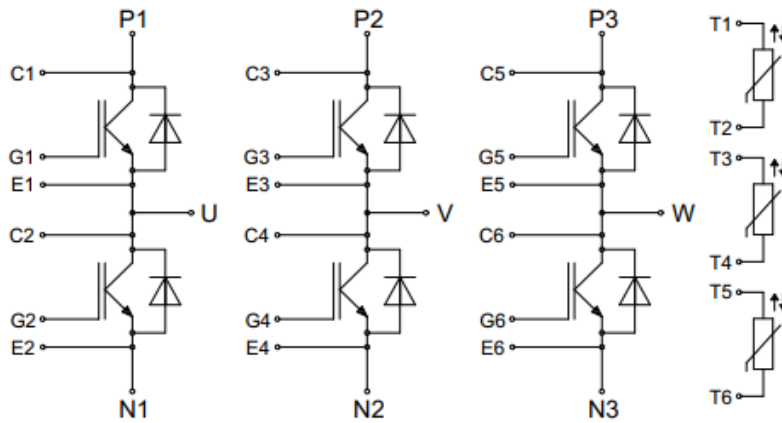
Typical Characteristics



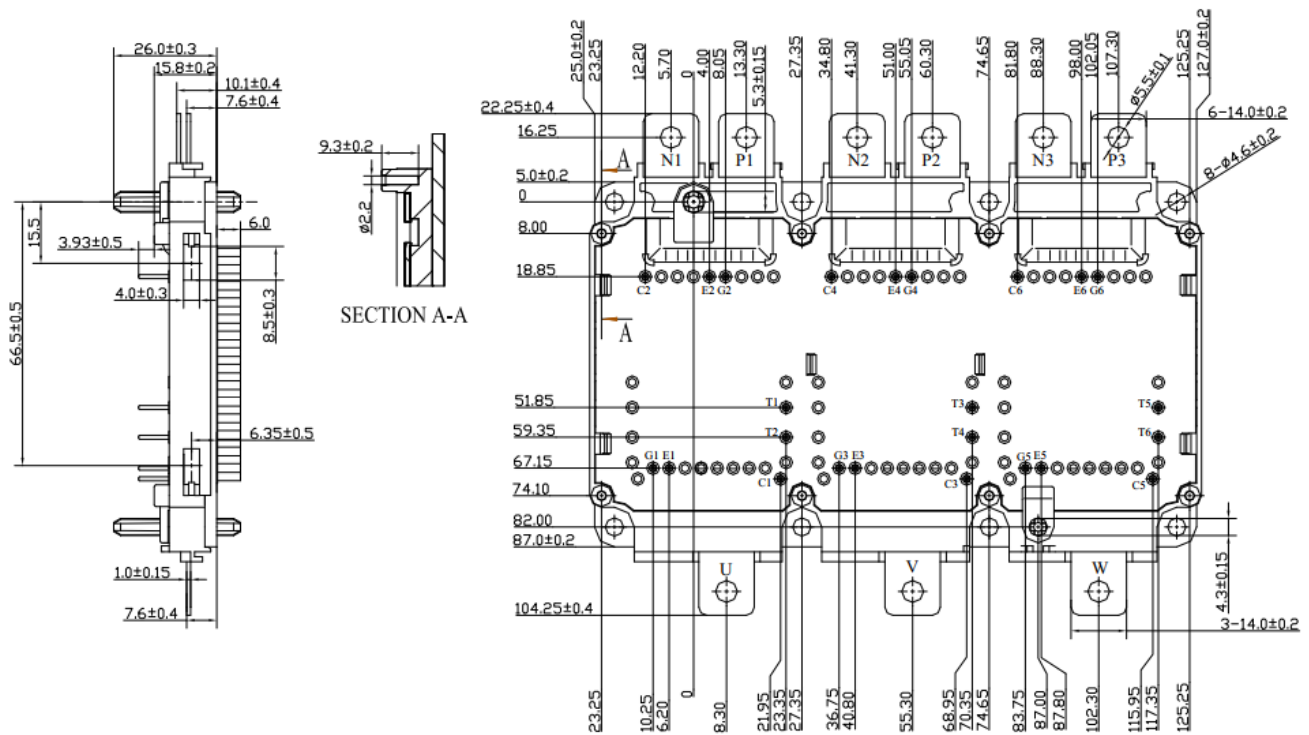
Typical Characteristics



Circuit Diagram



Package Outlines (mm)



单位: mm