

Discrete With with Trench Gate/Field Stop IGBT and NTC.

Features

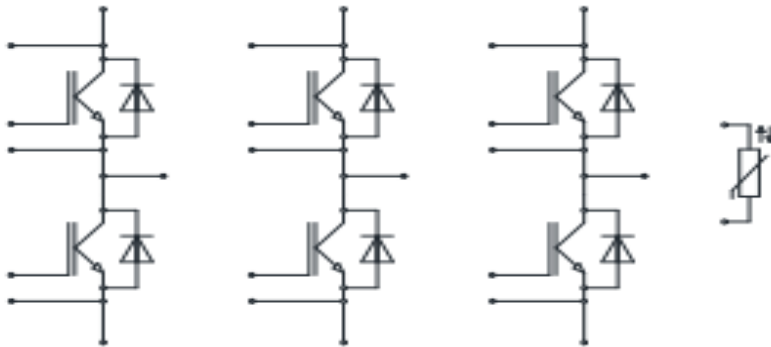
- $V_{CE}=1200V$ $I_C=450A$
- Low $V_{CE(sat)}$ with Positive Temperature Coefficient
- Trench+ Field Stop Technology

Applications

- UPS
- Electric Welder
- Motor Drives
- High Power Converters



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	$T_C=100^{\circ}C$	450	A
I_{CRM}	Repetitive Peak Collector Current	$t_p=1ms$	900	A
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vj\ max}=175^{\circ}C$	1500	W

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=450A, T_{vj}=25^{\circ}C$	---	1.77	2.5	V
		$V_{GE}=15V, I_C=450A, T_{vj}=125^{\circ}C$	---	2.02	---	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE}=V_{CE}, I_C=23.0mA$	4.0	5.8	7.0	V
I_{CES}	Collector-Emitter Cut-Off Current	$V_{CE}=1200V, V_{GE}=0V$	---	---	1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=\pm 20V, V_{CE}=0V$	---	---	± 400	nA
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V$ $V_{GE}=\pm 15V$ $I_C=450A$ $R_G=10.0\Omega$ Inductive Load $T_{vj}=25^{\circ}C$	---	720	---	ns
t_r	Turn-on Rise Time		---	230	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	1100	---	ns
t_f	Turn-off Fall Time		---	110	---	ns
E_{on}	Turn-on Switching Loss		---	122	---	mJ
E_{off}	Turn-off Switching Loss		---	64	---	mJ
I_{SC}	Short Circuit data	$V_{GE}=15V, V_{CC}=600V$ $t_p=10\mu s, T_{vj}=150^{\circ}C$	---	2189	---	A
R_{thJC}	Thermal Resistance, Junction to Case	Per IGBT	---	---	0.1	K/W
T_{VJOP}	Virtual Junction Temperature	Under Switching	-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		450	A
I_{FRM}	Repetitive Peak Collector Current	$t_p=1ms$	900	A

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
V _F	Forward Voltage	I _F =450A, V _{GE} =0V, T _{vj} =25°C	---	1.89	2.5	V
		I _F =450A, V _{GE} =0V, T _{vj} =125°C	---	2.11	---	V
I _{RM}	Peak Reverse Recovery Current	I _F =450A, V _R =600V, V _{GE} =-15V T _{vj} =25°C	---	154	---	A
Q _r	Recovered Charge		---	8.53	---	uC
E _{rec}	Reverse Recovery Energy		---	10.6	---	mJ
T _{VJ OP}	Virtual Junction Temperature	Under Switching	-40	---	150	°C

**NTC-Thermistor
Characteristic Values**

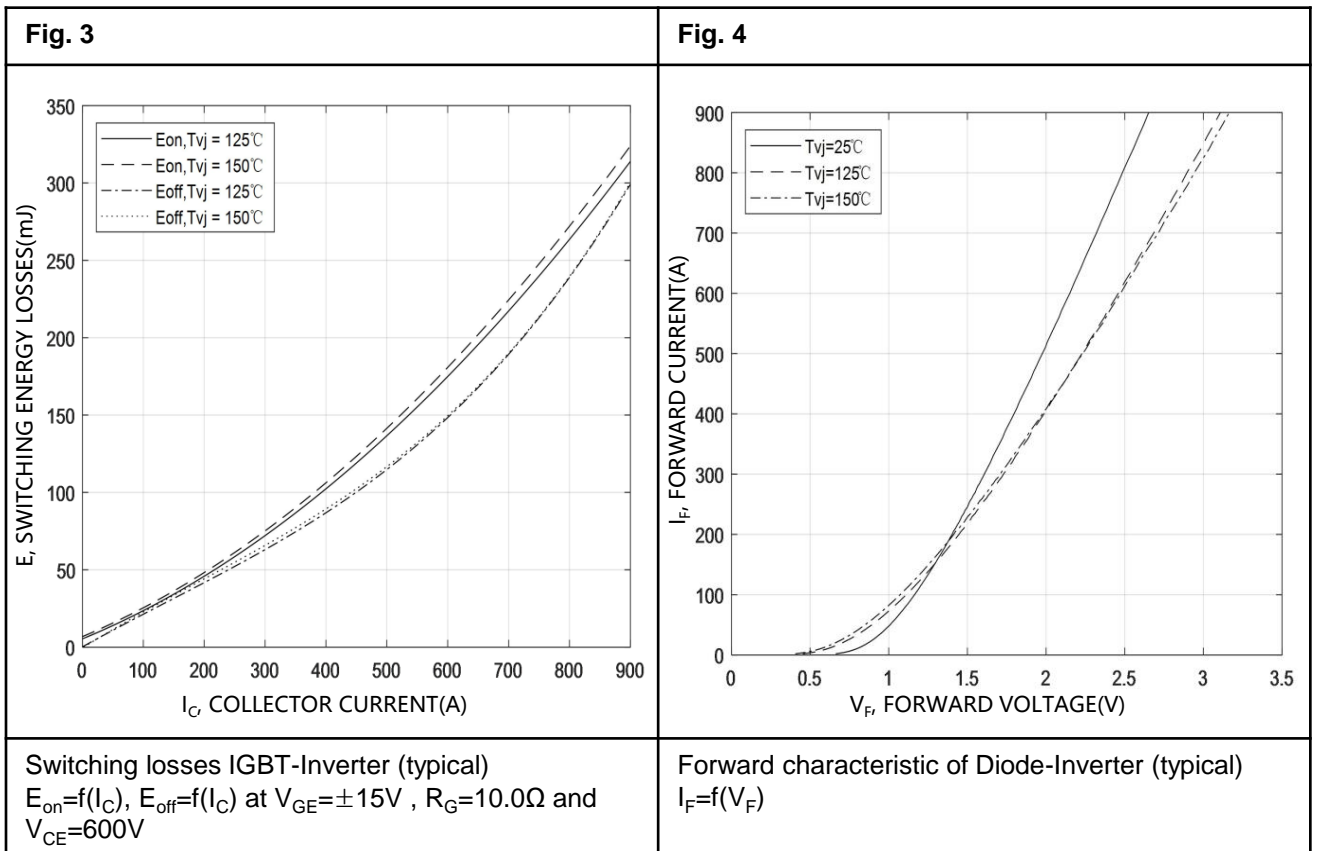
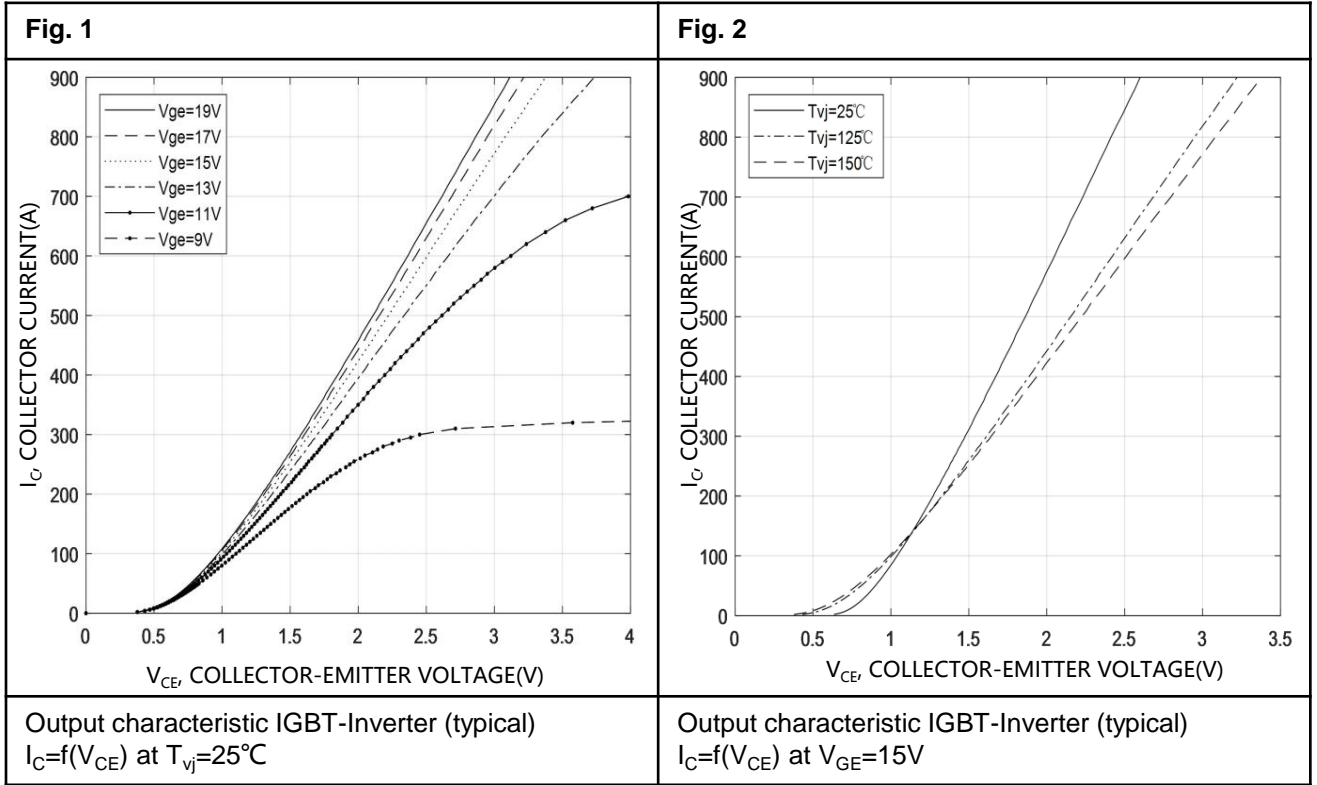
Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
R ₂₅	Rated Resistance	T _C =25°C	---	5	---	KΩ
B _{25/50}	B Value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298 K))]$	---	3375	---	K

Module

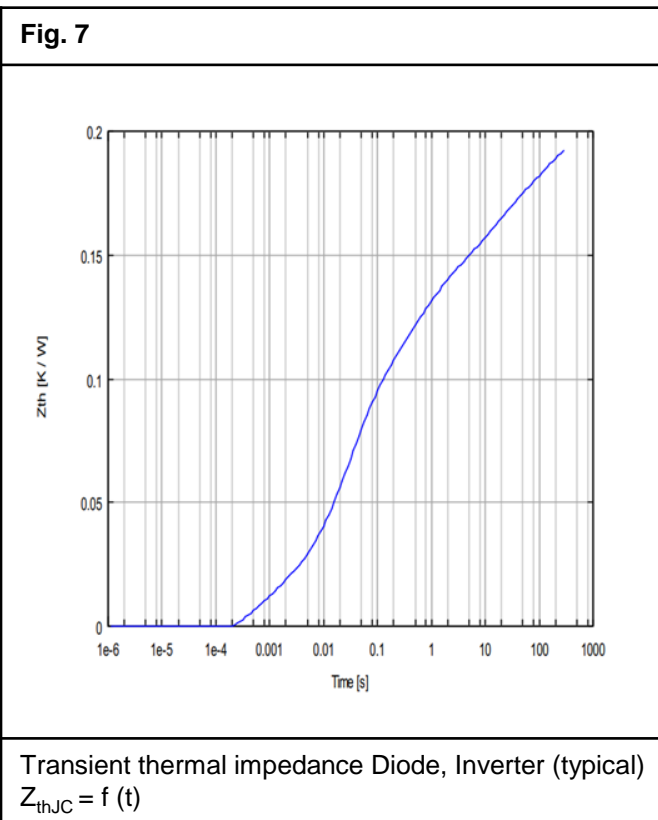
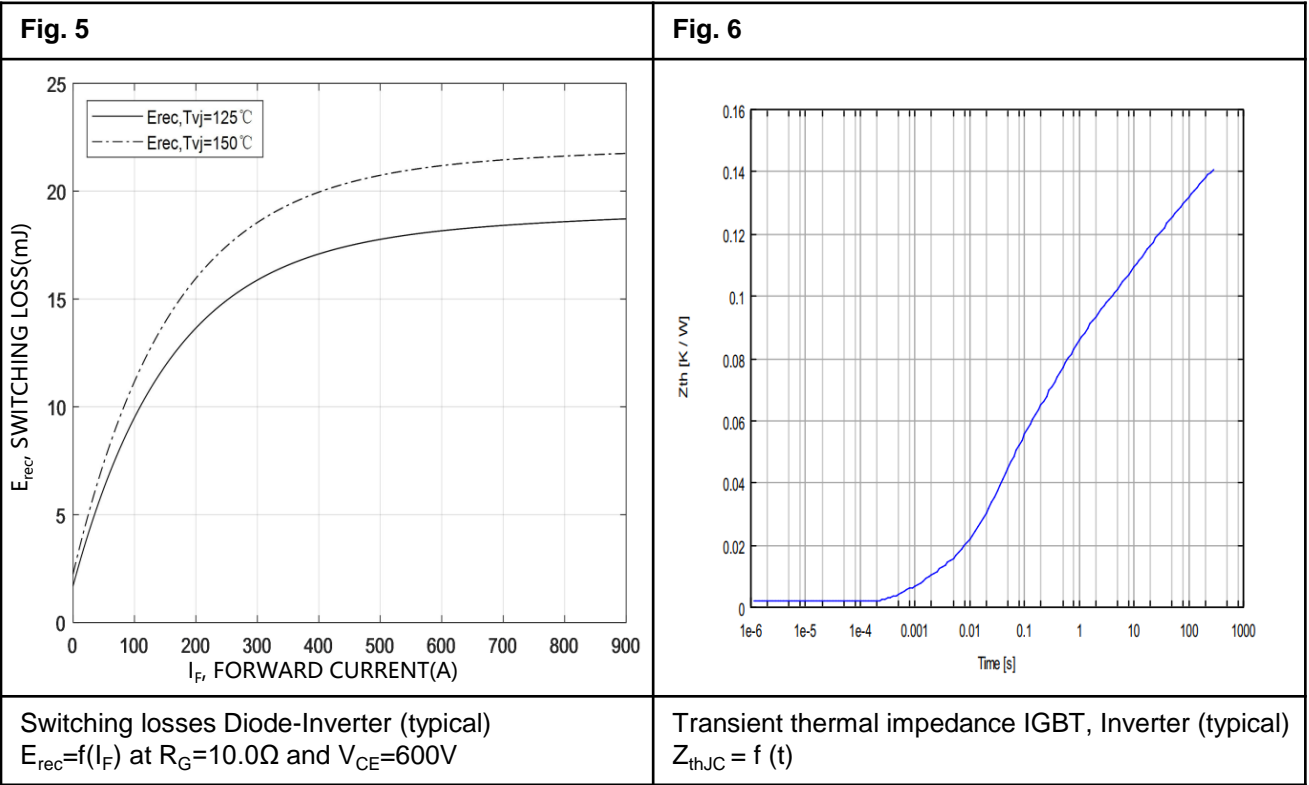
Symbol	Description	Conditions	Values	Unit
V _{ISOL}	Isolation Test Voltage	RMS, f=50Hz, t=1min	2.5	KV
	Material of module baseplate		Cu	
	Internal Isolation	Basic Insulation (Class 1, IEC 61140)	Al ₂ O ₃	
	Creepage Distance	Terminal to Heatsink	18.5	mm
		Terminal to Terminal	12.6	
	Clearance	Terminal to Heatsink	16.0	mm
		Terminal to Terminal	10.0	

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
L _{sCE}	Stray Inductance Module		---	35	---	nH
T _{stg}	Storage Temperature		-40	---	125	°C
M	Mounting torque for module mounting		3.00	---	6.00	Nm
G	Weight		---	992	---	g

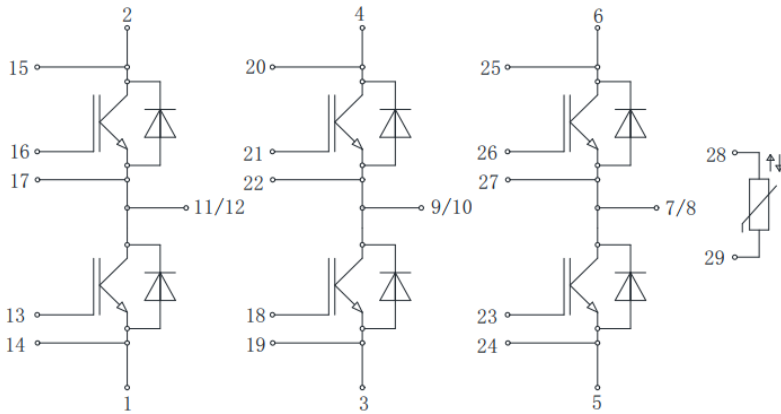
Typical Characteristics



Typical Characteristics



Circuit Diagram



Package Outlines (mm)

