

62mm module with fast Trench/Fieldstop IGBT and Fast Recovery Diode

Features

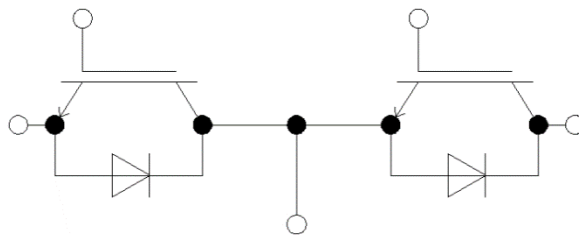
- Low Switching Losses
- Low V_{CEsat}
- Low $V_{CE(sat)}$ with Positive Temperature Coefficient

Applications

- The inverter
- Motor control and drives
- UPS Systems



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	$T_C=100^{\circ}C$	300	A
I_{CRM}	Repetitive Peak Collector Current	$t_p=1ms$	600	A
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vj\ max}=175^{\circ}C$	1600	W

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=300A, T_{vj}=25^{\circ}C$	---	2.26	--	V
		$V_{GE}=15V, I_C=300A, T_{vj}=125^{\circ}C$	---	2.74	--	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE}=V_{CE}, I_C=8.0mA$	---	5.75	---	V
I_{CES}	Collector-Emitter Cut-Off Current	$V_{CE}=1200V, V_{GE}=0V$	---	---	1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=20V, V_{CE}=0V$	---	---	600	nA
R_{Gint}	Internal Gate Resistor	$T_{vj}=25^{\circ}C$	---	1.7	---	Ω
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$	---	22.5	---	nF
C_{oes}	Output Capacitance		---	1.8	---	nF
C_{res}	Reverse Transfer Capacitance		---	0.8	---	nF
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V$ $V_{GE}=\pm 15V$ $I_C=300A$ $R_G=3.0\Omega$ Inductive Load $T_{vj}=25^{\circ}C$	---	115	---	ns
t_r	Turn-on Rise Time		---	57	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	270	---	ns
t_f	Turn-off Fall Time		---	120	---	ns
E_{on}	Turn-on Switching Loss		---	16.3	---	mJ
E_{off}	Turn-off Switching Loss		---	17.9	---	mJ
I_{SC}	Short Circuit Data	$V_{GE}\leq 15V, V_{CC}=600V$ $t_p\leq 10\mu s, T_{vj}=25^{\circ}C$	---	1012	---	A
R_{thJC}	Thermal Resistance, Junction to Case	Per IGBT	---	---	0.093	K/W
$T_{VJ OP}$	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		300	A
I_{FRM}	Repetitive Peak Collector Current	$t_p=1ms$	600	A

Characteristic Values

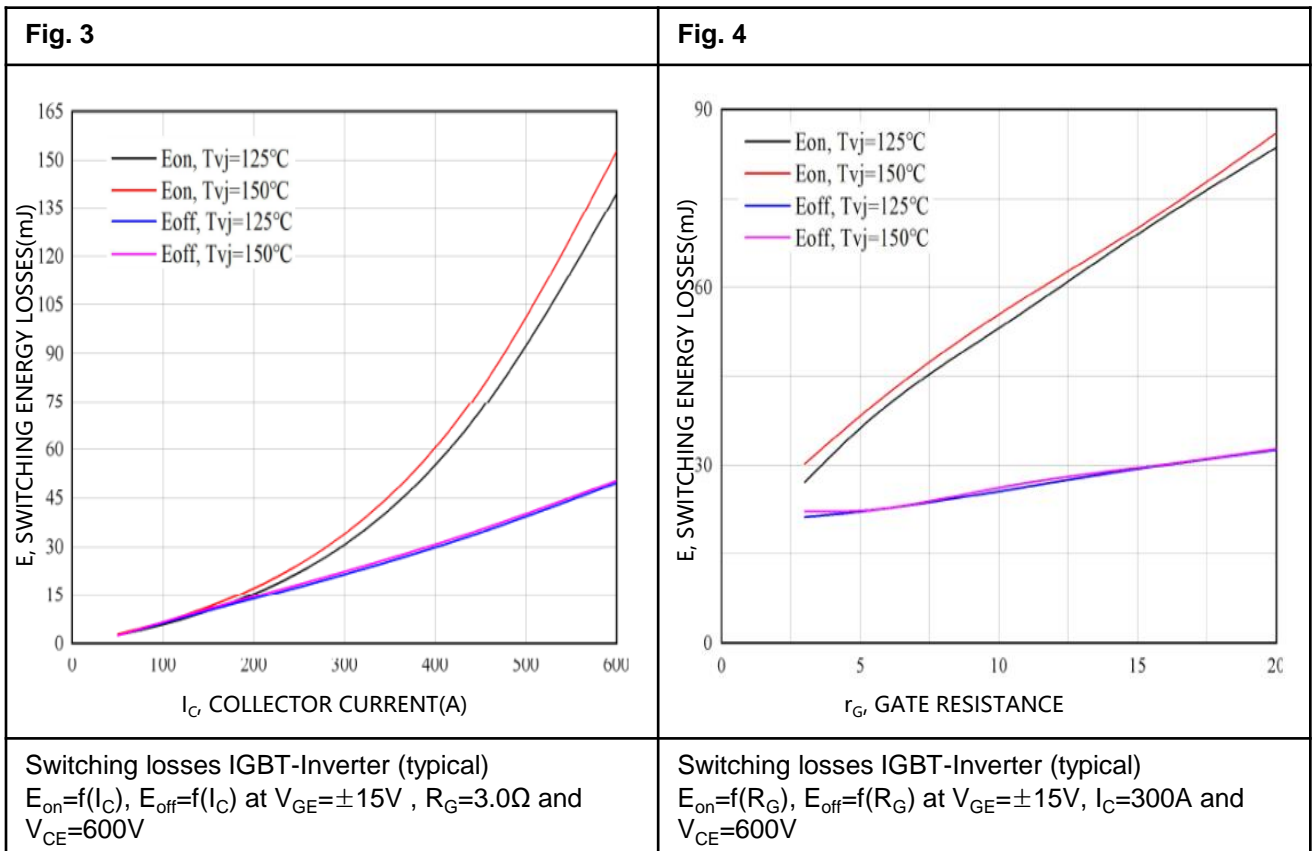
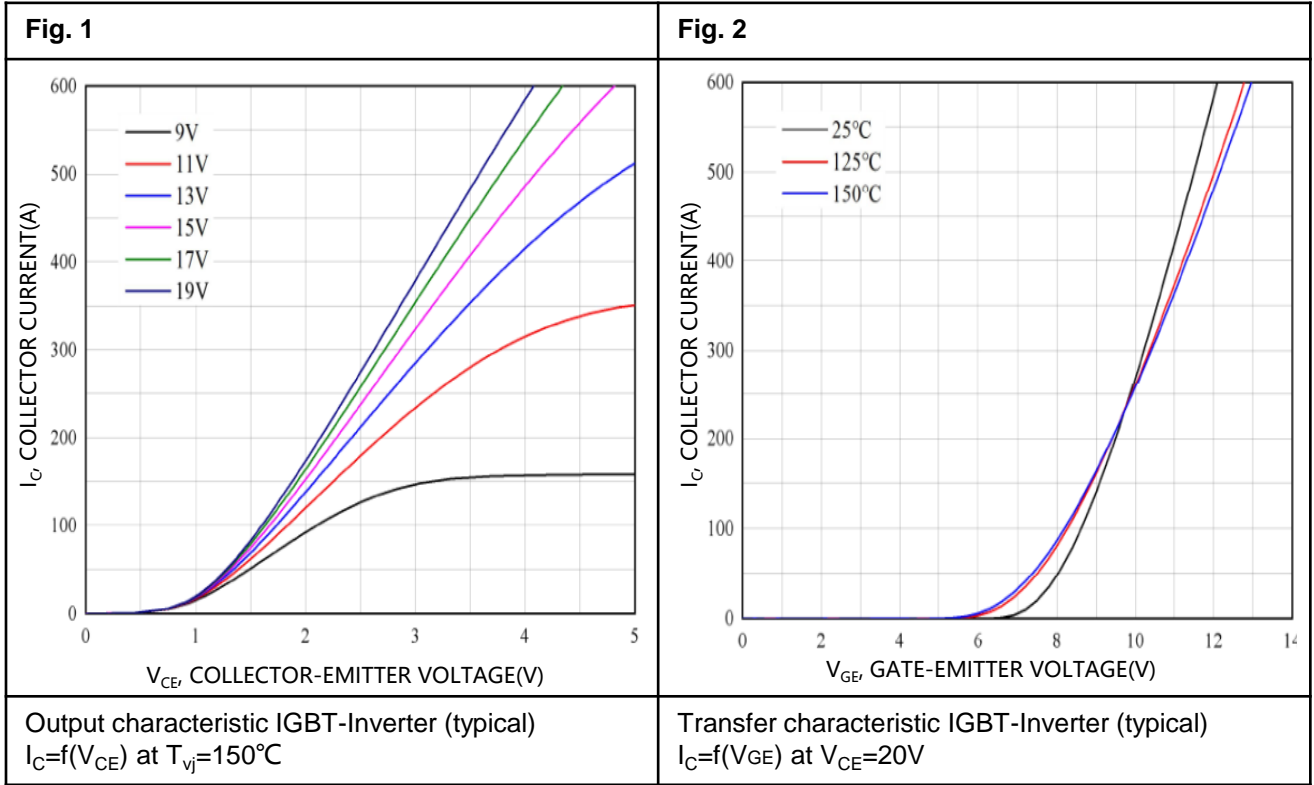
Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
V _F	Forward Voltage	I _F =300A, V _{GE} =0V, T _{vj} =25°C	---	2.68	---	V
		I _F =300A, V _{GE} =0V, T _{vj} =125°C	---	2.01	---	V
I _{RM}	Peak Reverse Recovery Current	I _F =300A, V _R =600V, V _{GE} =-15V T _{vj} =25°C	---	70	---	A
Q _r	Recovered Charge		---	2.66	---	uC
E _{rec}	Reverse Recovery Energy		---	0.63	---	mJ
T _{VJ OP}	Virtual Junction Temperature	Under Switching	-40	---	150	°C

Module

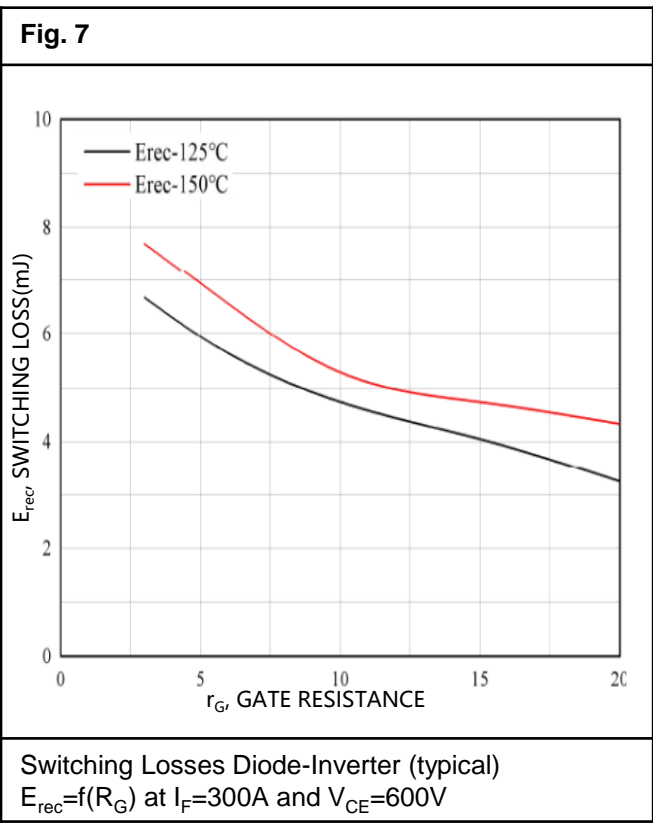
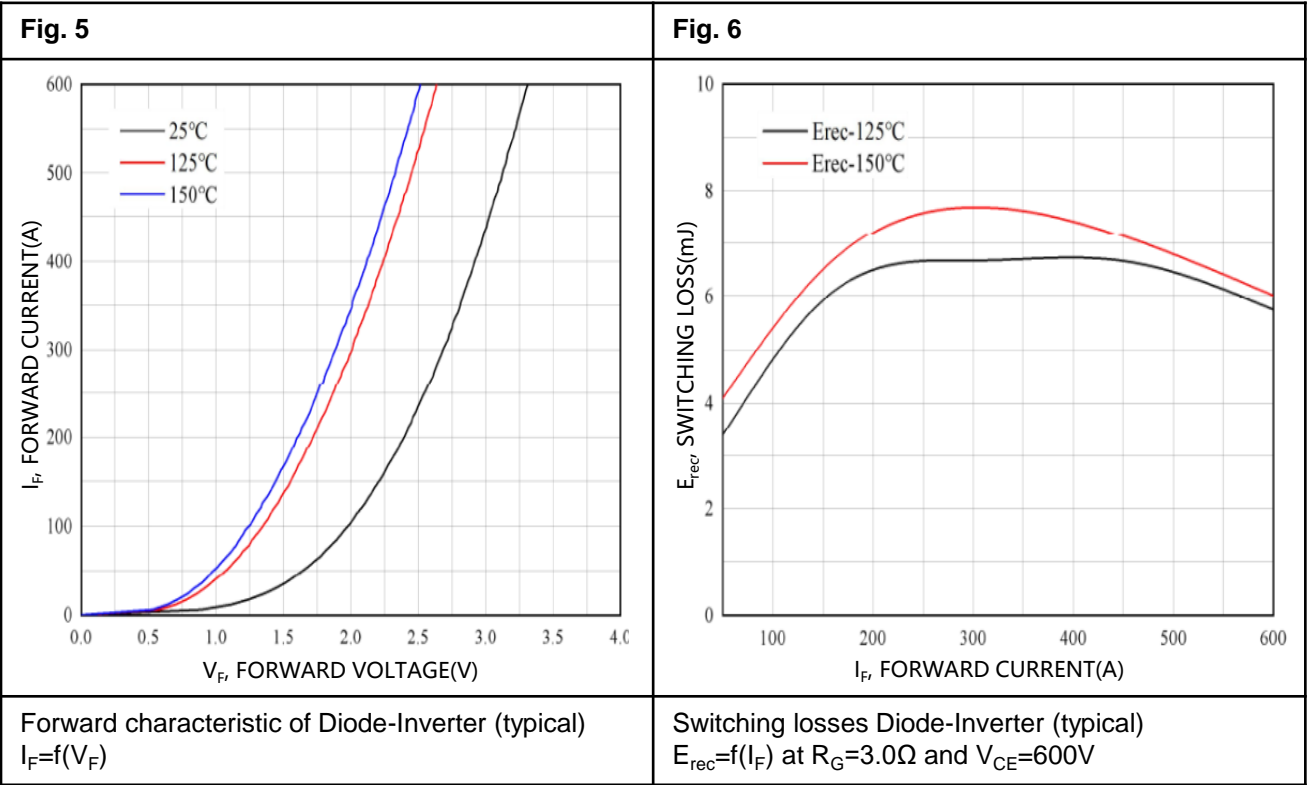
Symbol	Description	Conditions	Values	Unit
V _{ISOL}	Isolation Test Voltage	RMS, f=50Hz, t=1min	4	KV
	Material of Module Baseplate		Cu	
	Internal Isolation	Basic Insulation (Class 1, IEC 61140)	Al ₂ O ₃	
	Creepage Distance	Terminal to Heatsink Terminal to Terminal	29.3 22.8	mm
	Clearance	Terminal to Heatsink Terminal to Terminal	24.0 11.0	mm
CTI	Comparative Tracking Index		> 400	

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
R _{thCH}	Thermal Resistance, Case to Heatsink	Per Module λ _{Paste} =1W/(m·k) / λ _{Grease} =1W/(m·k)	---	0.01	---	K/W
L _{sCE}	Stray Inductance Module		---	20	---	nH
R _{CC+EE'}	Module Lead Resistance, Terminals-chip	TC=25°C, Per Switch	---	0.69	---	mΩ
T _{stg}	Storage Temperature		-40	---	125	°C
M	Mounting Torque for Modul Mounting		3.0	---	6.0	Nm
G	Weight		---	344	---	g

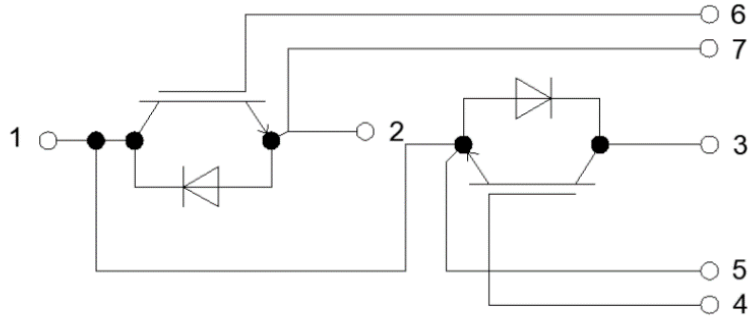
Typical Characteristics



Typical Characteristics



Circuit Diagram



Package Outlines (mm)

