

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

Features

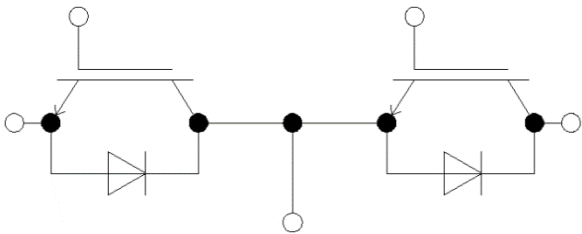
- Low Switching Losses
- Low V_{CEsat}
- Low $V_{CE(sat)}$ with Positive Temperature Coefficient

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	$T_C=100^{\circ}C$	450	A
I_{CRM}	Repetitive Peak Collector Current	$t_p=1ms$	900	A
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vj\ max}=175^{\circ}C$	2420	W

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=450A, T_{vj}=25^{\circ}C$	---	1.80	--	V
		$V_{GE}=15V, I_C=450A, T_{vj}=125^{\circ}C$	---	1.96	--	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE}=V_{CE}, I_C=16mA$	5.0	---	7.0	V
I_{CES}	Collector-Emitter Cut-Off Current	$V_{CE}=1200V, V_{GE}=0V$	---	---	1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=20V, V_{CE}=0V$	---	---	600	nA
R_{Gint}	Internal gate resistor	$T_{vj}=25^{\circ}C$	---	1.65	---	Ω
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$	---	37.8	---	nF
C_{res}	Reverse Transfer Capacitance		---	0.42	---	nF
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V$ $V_{GE}=\pm 15V$ $I_C=450A$ $R_G=1.8\Omega$ Inductive Load $T_{vj}=25^{\circ}C$	---	180	---	ns
t_r	Turn-on Rise Time		---	40	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	280	---	ns
t_f	Turn-off Fall Time		---	111	---	ns
E_{on}	Turn-on Switching Loss		---	9	---	mJ
E_{off}	Turn-off Switching Loss		---	44	---	mJ
I_{SC}	Short Circuit Data	$V_{GE}\leq 15V, V_{CC}=800V$ $t_p\leq 10\mu s, T_{vj}=25^{\circ}C$	---	1800	---	A
R_{thJC}	Thermal Resistance, Junction to Case	Per IGBT	---	---	0.062	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		450	A
I_{FRM}	Repetitive Peak Collector Current	$t_p=1ms$	900	A

Characteristic Values

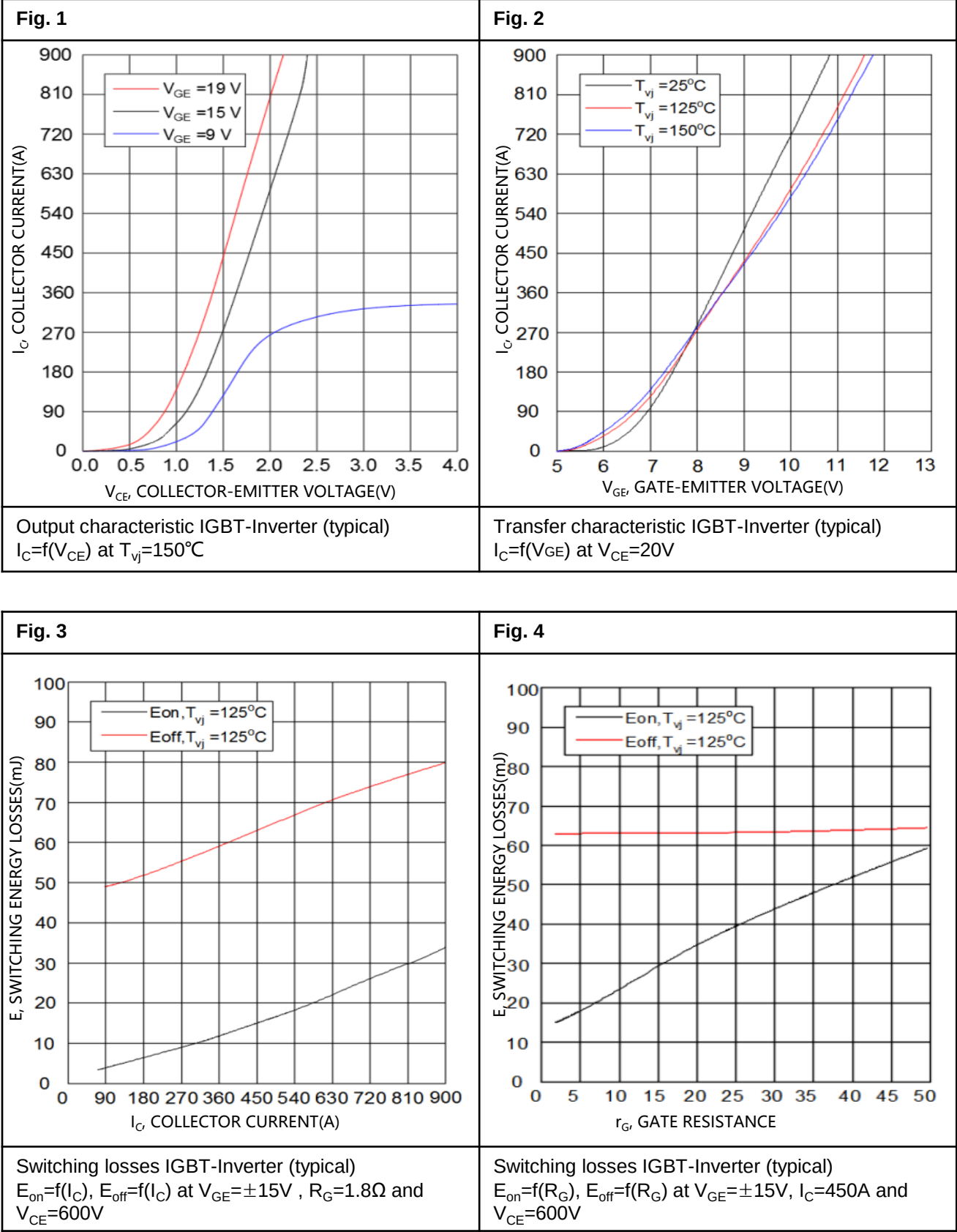
Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
V_F	Forward Voltage	$I_F=450A, V_{GE}=0V, T_{vj}=25^{\circ}C$	---	1.95	---	V
		$I_F=450A, V_{GE}=0V, T_{vj}=125^{\circ}C$	---	1.80	---	V
I_{RM}	Peak Reverse Recovery Current	$I_F=450A, V_R=600V, V_{GE}=-15V$ $T_{vj}=25^{\circ}C$	---	492	---	A
Q_r	Recovered Charge		---	44	---	uC
E_{rec}	Reverse Recovery Energy		---	18	---	mJ
$T_{VJ OP}$	Virtual Junction Temperature	Under Switching	-40	---	150	$^{\circ}C$

Module

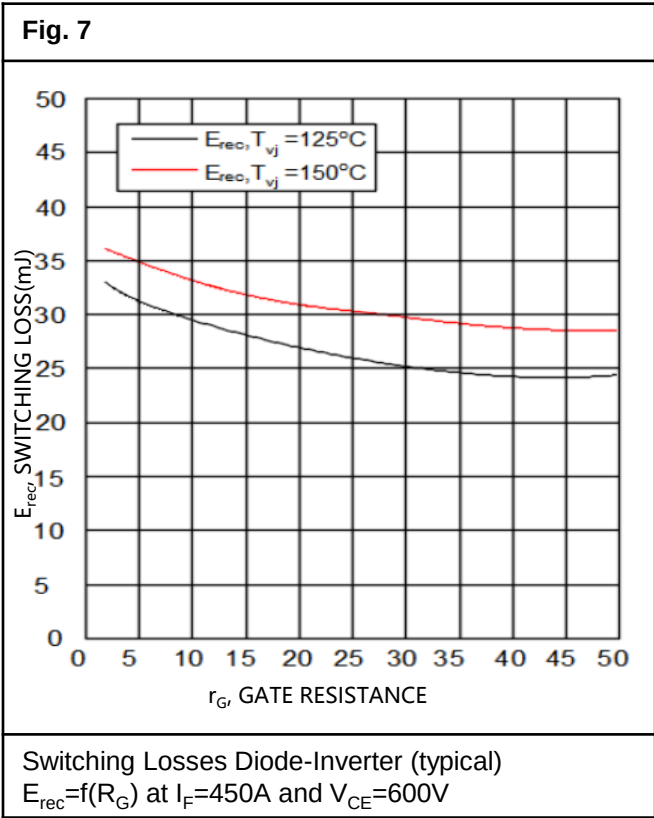
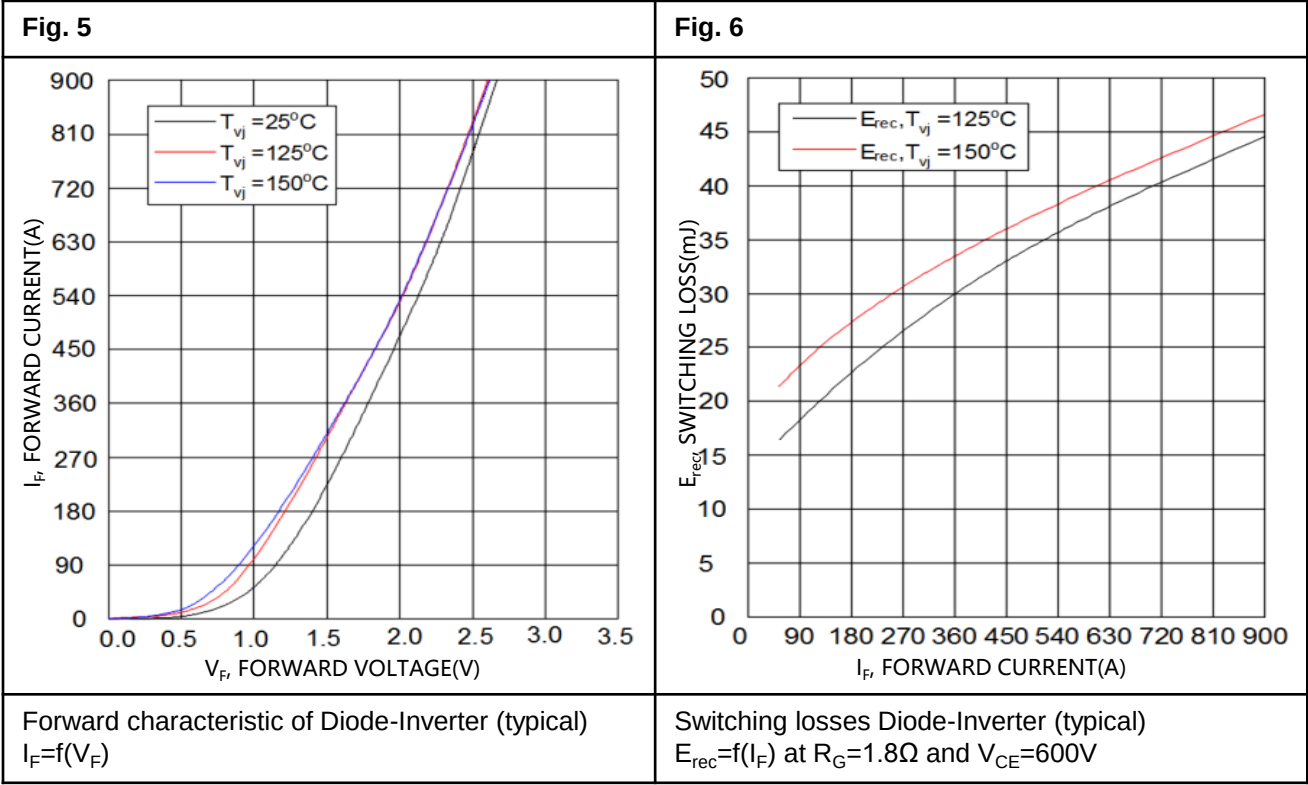
Symbol	Description	Conditions	Values	Unit
V_{ISOL}	Isolation Test Voltage	RMS, f=50Hz, t=1min	4.0	KV
	Material of Module Baseplate		Cu	
	Internal Isolation	Basic Insulation (Class 1, IEC 61140)	Al_2O_3	
	Creepage Distance	Terminal to Terminal	23.0	mm
	Clearance	Terminal to Terminal	11	mm
CTI	Comparative Tracking Index		> 400	

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
L_{sCE}	Stray inductance module		---	20	---	nH
$R_{CC'+EE'}$	Module lead resistance, terminals-chip	Per switch, $T_c=25^{\circ}C$	---	0.7	---	mΩ
T_{stg}	Storage Temperature		-40	---	125	$^{\circ}C$
M	Mounting Torque for Modul Mounting		3.0	---	6.0	Nm
G	Weight		---	340	---	g

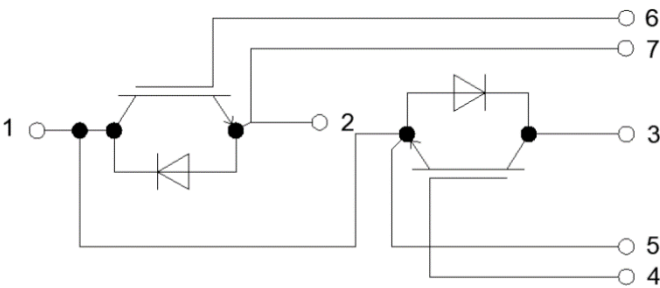
Typical Characteristics



Typical Characteristics



Circuit Diagram



Package Outlines (mm)

