

34mm module with fast Trench/Fieldstop IGBT and Fast Recovery Diode

Features

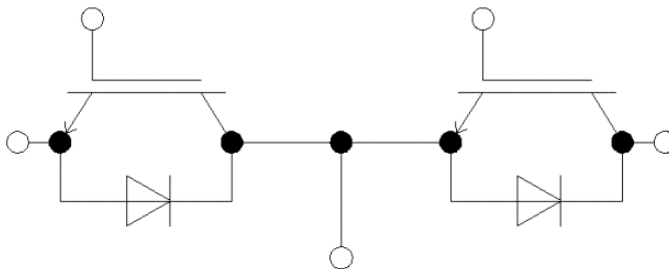
- Low Switching Losses
- Low V_{CEsat}
- Low $V_{CE(sat)}$ with Positive Temperature Coefficient

Applications

- Motor Drives
- Electromagnetic induction heating
- High Power Inverter



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	$T_C=100^{\circ}C$	150	A
I_{CRM}	Repetitive Peak Collector Current	$t_p=1ms$	300	A
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vj\ max}=175^{\circ}C$	1034	W

Characteristic Values

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE}=15V, I_C=150A, T_{vj}=25^{\circ}C$	---	1.86	--	V
		$V_{GE}=15V, I_C=150A, T_{vj}=125^{\circ}C$	---	2.28	--	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE}=V_{CE}, I_C=6.0mA$	5.0	5.8	6.8	V
I_{CES}	Collector-Emitter Cut-Off Current	$V_{CE}=1200V, V_{GE}=0V$	---	---	1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=20V, V_{CE}=0V$	---	---	150	nA
R_{Gint}	Internal Gate Resistor	$T_{vj}=25^{\circ}C$	---	3.05	---	Ω
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$	---	9.4	---	nF
C_{res}	Reverse Transfer Capacitance		---	0.4	---	nF
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V$ $V_{GE}=\pm 15V$ $I_C=150A$ $R_G=1.2\Omega$ Inductive Load $T_{vj}=25^{\circ}C$	---	112	---	ns
t_r	Turn-on Rise Time		---	41	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	303	---	ns
t_f	Turn-off Fall Time		---	110	---	ns
E_{on}	Turn-on Switching Loss		---	10.7	---	mJ
E_{off}	Turn-off Switching Loss		---	9.2	---	mJ
I_{SC}	Short Circuit Data	$V_{GE}\leq 15V, V_{CC}=800V$ $t_p\leq 10\mu s, T_{vj}=25^{\circ}C$	---	642	---	A
R_{thJC}	Thermal Resistance, Junction to Case	Per IGBT	---	0.145	---	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		150	A
I_{FRM}	Repetitive Peak Collector Current	$t_p=1ms$	300	A

Characteristic Values

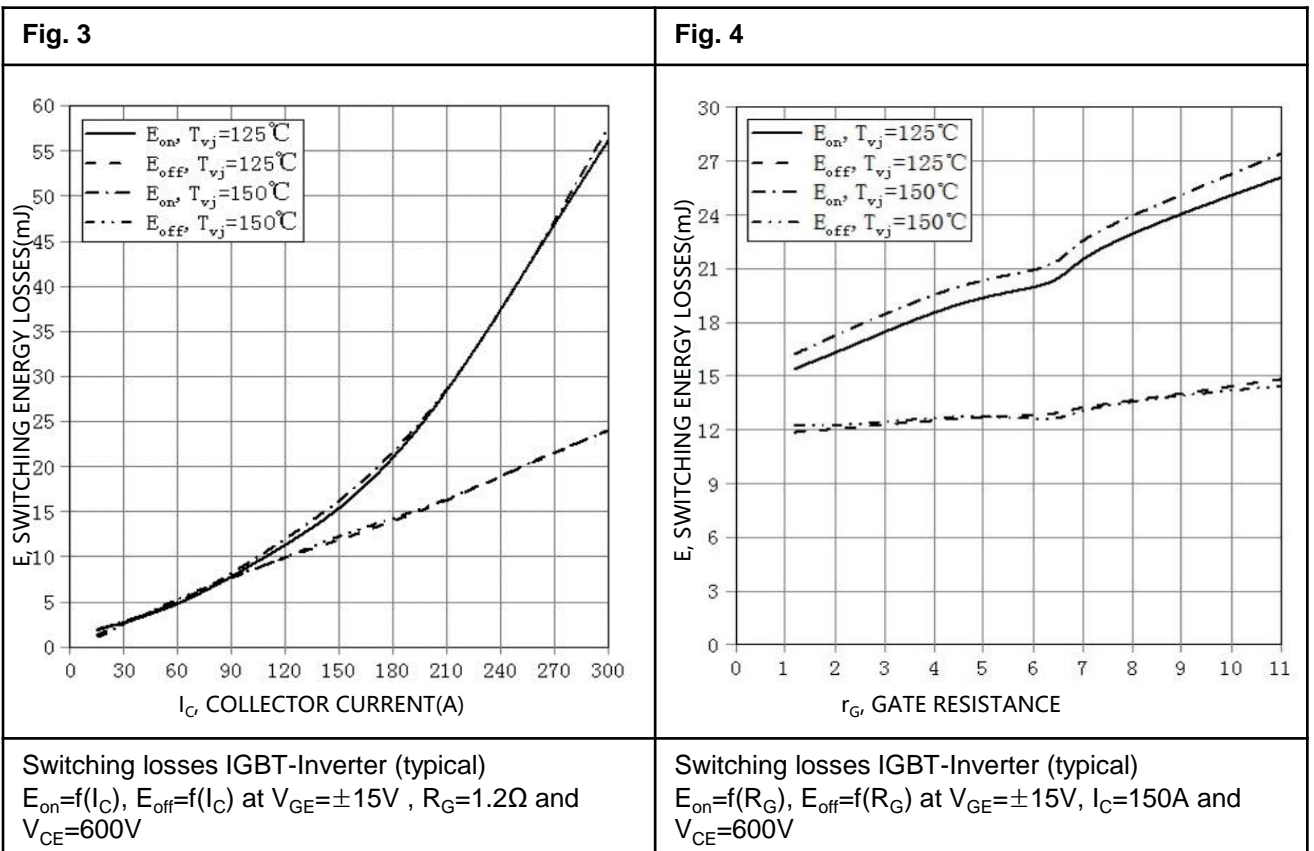
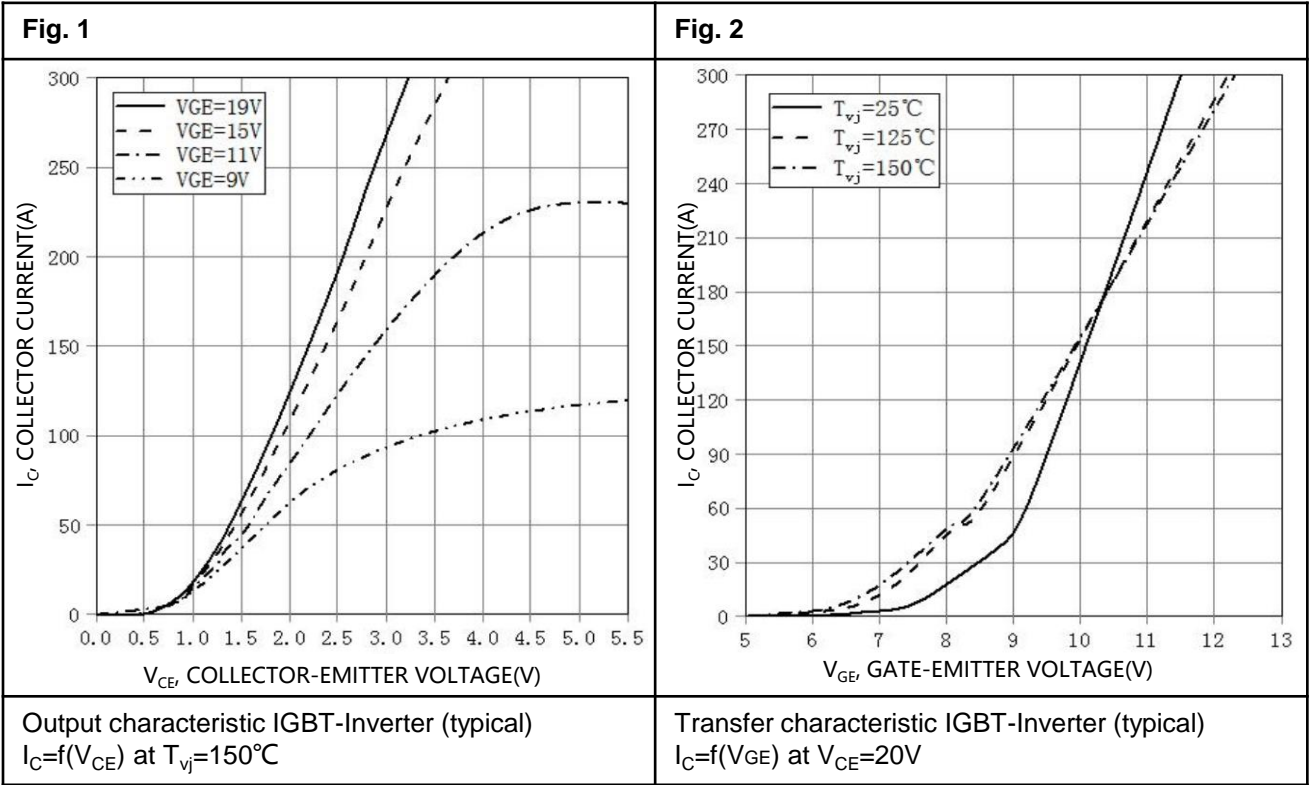
Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
V _F	Forward Voltage	I _F =150A, V _{GE} =0V, T _{vj} =25°C	---	2.62	---	V
		I _F =150A, V _{GE} =0V, T _{vj} =125°C	---	2.08	---	V
I _{RM}	Peak Reverse Recovery Current	I _F =150A, V _R =600V, V _{GE} =-15V T _{vj} =25°C	---	88	---	A
Q _r	Recovered Charge		---	10	---	uC
E _{rec}	Reverse Recovery Energy		---	3.3	---	mJ
R _{thJC}	Thermal Resistance, Junction to Case	Per Diode	---	0.264	---	K/W
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	4.0	KV
	Material of Module Baseplate		Cu	
	Internal Isolation	Basic Insulation (Class 1, IEC 61140)	Al ₂ O ₃	
	Creepage Distance	Terminal to Terminal	20.1	mm
	Clearance	Terminal to Terminal	9.5	mm
CTI	Comparative Tracking Index		> 200	

Symbol	Description	Conditions	Values			Unit
			Min.	Typ.	Max.	
L _{sCE}	Stray inductance module		---	29.2	---	nH
R _{CC'+EE'}	Module lead resistance, terminals-chip	Per switch, T _C =25°C	---	0.66	---	mΩ
T _{stg}	Storage Temperature		-40	---	125	°C
M	Mounting Torque for Modul Mounting		3.0	---	5.0	Nm
G	Weight		---	156	---	g

Typical Characteristics



Typical Characteristics

