

Descriptions

This is 700V 100A IGBT Power Module in a Isolation Type Package

Features

- $V_{CE}=700V$ $I_C=100A$
- Low $V_{CE(sat)}$
- V_{CEsat} with positive temperature coefficient
- Maximum junction temperature $175^{\circ}C$
- Isolation Type Packagee

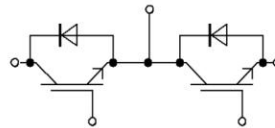
Application

- ups
- Motor control and drives

Package Type & Internal Circuit



L1



Internal Circuit

Maximum Rated Values (IGBT Inverter)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	$V_{EC}=0V, I_C=1mA, T_{vj}=25^{\circ}C$	700	V
I_C	Continuous Collector Current	$T_C=100^{\circ}C$	100	A
I_{CRM}	Peak Collector Current	$I_{CRM}=2I_C$	200	A
V_{GES}	Gate-Emitter Voltage	$T_{vj}=25^{\circ}C$	± 30	V
P_{tot}	Total Power Dissipation	$T_C=25^{\circ}C, T_{vjmax}=150^{\circ}C$	1000	W

Characteristics Values (IGBT Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100A, V_{GE}=15V, T_{vj}=25^\circ C$		1.5	1.9	V	
		$I_C=100A, V_{GE}=15V, T_{vj}=150^\circ C$		1.75		V	
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=2.0mA, V_{CE}=V_{GE}, T_{vj}=25^\circ C$	5.2	6.2	6.7	V	
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE}=700V, V_{GE}=0V, T_{vj}=25^\circ C$			1.0	mA	
I_{GES}	Gate-Emitter Leakage Current	$V_{CE}=0V, V_{GE}=15V, T_{vj}=25^\circ C$			400	nA	
$t_{d(on)}$	Turn-on Delay Time, Inductive Load	$I_C=100A, V_{CE}=300V$ $V_{GE}=\pm 15V$ $R_G=1\Omega$ $T_{vj}=25^\circ C$		52.3		ns	
t_r	Rise Time, Inductive Load			41.0		ns	
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			223		ns	
t_f	Fall Time, Inductive Load			51		ns	
E_{on}	Turn-on Energy Loss per Pulse				0.5		mJ
E_{off}	Energy Loss per Pulse				3.5		mJ
$t_{d(on)}$	Turn-on Delay Time, Inductive Load		$I_C=100A, V_{CE}=300V$ $V_{GE}=\pm 15V$ $R_G=1\Omega$ $T_{vj}=150^\circ C$		52.6		ns
t_r	Rise Time, Inductive Load			43.2		ns	
$t_{d(off)}$	Turn-off Delay Time, Inductive Load			251		ns	
t_f	Fall Time, Inductive Load			121		ns	
E_{on}	Turn-on Energy Loss per Pulse				0.7		mJ
E_{off}	Energy Loss per Pulse				4.5		mJ
R_{thJC}	Thermal resistance, junction to case	per IGBT				0.45	K/W
$T_{vj op}$	Temperature under switching conditions		-40		150	$^\circ C$	
I_{SC}	SC data	$V_{GE} \leq 15V, V_{CC} = 360V$ $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$ $t_p \leq 10\mu s, T_{vj} = 150^\circ C$		620		A	

Maximum Rated Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj}=25\text{ }^{\circ}\text{C}$		700		V
I_F	Continuous DC Forward Current	$T_C=100\text{ }^{\circ}\text{C}$		100		A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ ms}$		200		A

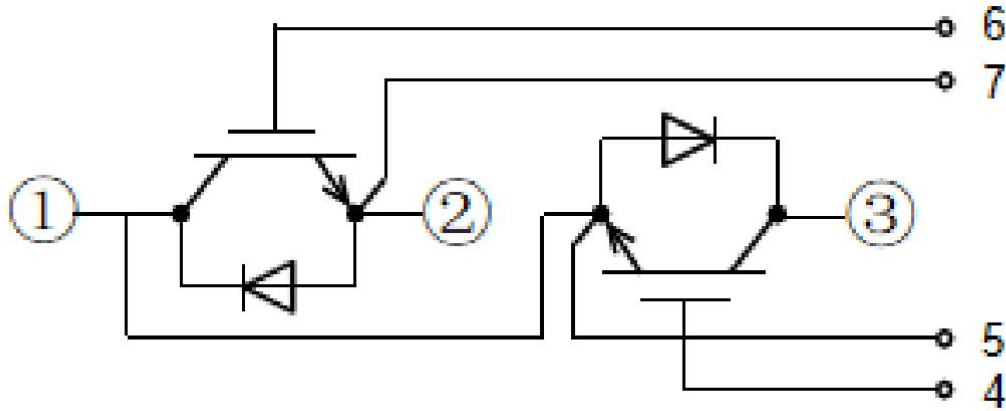
Characteristic Values (Diode Inverter)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=100\text{ A}, V_{CE}=0\text{ V}, T_{vj}=25\text{ }^{\circ}\text{C}$		1.7	2.2	V
		$I_F=100\text{ A}, V_{CE}=0\text{ V}, T_{vj}=150\text{ }^{\circ}\text{C}$		1.6		V
t_{rr}	Reverse Recovery time	$I_F=100\text{ A}, V_R=300\text{ V} -$ $di/dt=2800\text{ A/us}$		170		ns
Q_r	Recovered Charge			7		μC
E_{rec}	Reverse Recovery Energy	$T_{vj}=25\text{ }^{\circ}\text{C}$		0.7		mJ
t_{rr}	Reverse Recovery time	$I_F=100\text{ A}, V_R=300\text{ V} -$ $di/dt=2800\text{ A/us}$		230		ns
Q_r	Recovered Charge			9.7		μC
E_{rec}	Reverse Recovery Energy	$T_{vj}=150\text{ }^{\circ}\text{C}$		2.1		mJ
R_{thJC}	Thermal resistance, junction to case	per Diode			0.8	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40		150	$^{\circ}\text{C}$

Module Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{isol}	Isolation voltage	$t=1\text{ min}, f=50\text{ Hz}$	2500			V
T_{stg}	Storage Temperature		-40		150	$^{\circ}\text{C}$
M_t	Module Electrodes Torque	Recommended(M5)	2.5		5.0	$\text{N}\cdot\text{m}$
M_s	Module-to-Sink Torque	Recommended(M6)	3.0		6.0	$\text{N}\cdot\text{m}$
G	Weight of Module			160		g

Circuit Diagram



Package Dimensions

