

Super Solution Power Module (SUSPM™)

2pack IGBT Module

Features

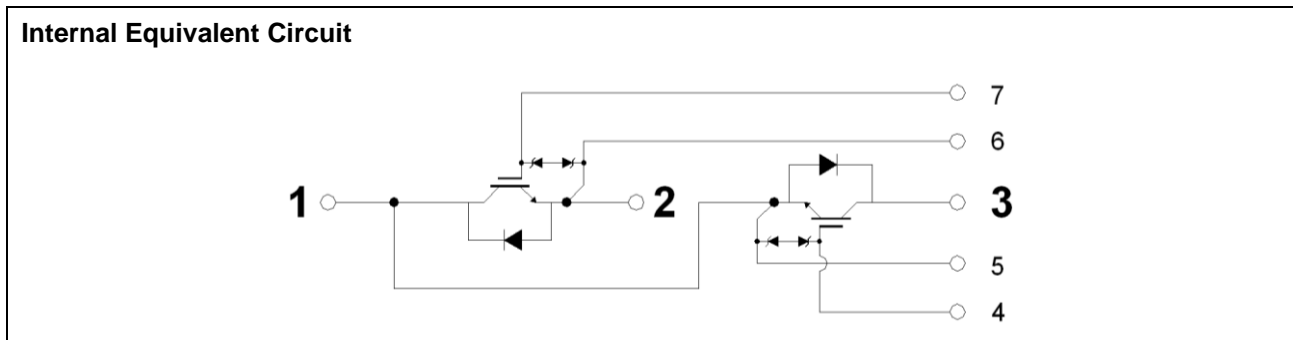
- Trench Field Stop Technology IGBT
 - low saturation voltage
 - positive temperature coefficient
 - fast switching($\leq 20\text{kHz}$)
 - high ruggedness(UIS tested)
- Free wheeling diodes with fast and soft reverse recovery
- Industrial standard package with insulated copper base plate
- 10us@ $T_J=125^\circ\text{C}$ Short circuit rated
- Included gate surge protection function



SUSPM™ 1
1700V / 50A

Applications

- Welder
- Switched Mode Power Supply / UPS
- Industrial Inverter / Motor Drive



Absolute Maximum Ratings

Item	Symbol	conditions	Ratings	Unit
IGBT	V_{CES}		1700	V
	V_{GES}	continuous	± 20	V
	V_{GEM}	transient	± 28	V
	I_C	$T_C=80^\circ\text{C}$	50	A
	I_{CM}	$T_C=80^\circ\text{C}$, $t_P=1\text{ms}$	100	A
	t_{SC}	$T_J=125^\circ\text{C}$, $V_{CC}=1000\text{V}$; $V_{GE}=15\text{V}$;	10	us
	$T_{J,MAX}$		150	$^\circ\text{C}$
	P_D	$T_C=80^\circ\text{C}$	304	W
Diode	V_{RRM}		1700	V
	$I_{F(AV)}$	$T_C=80^\circ\text{C}$	50	A
	I_{FRM}	$T_C=80^\circ\text{C}$; $t_P=1\text{ms}$	100	A
	$T_{J,MAX}$		150	$^\circ\text{C}$
	P_D	$T_C=80^\circ\text{C}$	145	W
Module	$T_{J,OP}$	Operating temperature	-40...+125	$^\circ\text{C}$
	T_{STG}	Storage temperature	-40...+125	$^\circ\text{C}$
	V_{ISOL}	$I_{ISOL} \leq 1\text{mA}$; 50/60 Hz; AC 1min	3400	V
	M_t	Main Terminal Mounting torque (M5)	2.5 – 5.0	Nm
	M_s	Heat sink Mounting torque (M6)	3.0 – 5.0	Nm

Characteristic Values (T_C=25°C, unless otherwise specified)

Item	Symbol	conditions	min	typ	max	Unit	
IGBT	V _{CE(sat)}	T _C = 25°C, I _C =50A; V _{GE} =15V T _C =125°C,		2.0 2.4	2.45	V V	
	V _{GE(th)}	I _C =2.0mA; V _{GE} =V _{CE} ; T _C = 25°C	5.2	5.8	6.4	V	
	I _{CES}	T _C = 25°C, V _{CE} =1700V; V _{GE} =0V T _C =125°C			1	mA	
	I _{GES}	V _{CE} =0V; V _{GE} =±20	-400		400	nA	
	t _{d(on)}	T _C = 25°C T _C = 125°C		370 400		ns	
	t _r	T _C = 25°C T _C = 125°C		40 50		ns	
	t _{d(off)}	T _C = 25°C T _C = 125°C	Inductive load V _{CC} =900V, I _C = 50A V _{GE} =±15V, R _G =8.0ohm:		650 800		ns
	t _f	T _C = 25°C T _C = 125°C			180 300		ns
	E _{on}	T _C = 25°C T _C = 125°C			11 16		mJ
	E _{off}	T _C = 25°C T _C = 125°C			10.5 15.5		mJ
	C _{ies}	V _{CC} =25V; V _{GE} =0V; f=1MHz			4.5		nF
	C _{res}	V _{CC} =25V; V _{GE} =0V; f=1MHz		0.15		nF	
	Q _G	V _{CC} =900V; V _{GE} =15V; I _C =50A		0.3		uC	
	R _{Gin}	T _C = 25°C		9.5		ohm	
	I _{SC}	t _p ≤10us, T _J =125°C, V _{CC} =1000V, V _{GE} =15V;		200		A	
R _{thJC}	(per IGBT)			0.23	°C/W		
Diode	V _F	T _C =25°C ; I _{F(AV)} =50A; V _{GE} =0V T _C =125°C ;		1.8 1.9	2.2	V V	
	I _{rr}	T _C = 25°C T _C = 125°C		76.5 83.5		A	
	Q _{rr}	T _C = 25°C T _C = 125°C	Inductive load V _R =900V ; I _F =50A; -dI _F /dt=1200A/us V _{GE} =-15V; R _G =8.0ohm		14.5 24.5		uC
	E _{rr}	T _C = 25°C T _C = 125°C			7.6 13.5		mJ
	R _{thJC}	(per diode)				0.48	°C/W
Module	d _s	Creepage distance along surface		20		mm	
	d _A	Clearance distance in the air		11		mm	
	T _s	Pin terminal soldering temperature, 10sec		260		°C	
	weight			190		gr	

Package Dimensions (dimensions are millimeters, mm)

