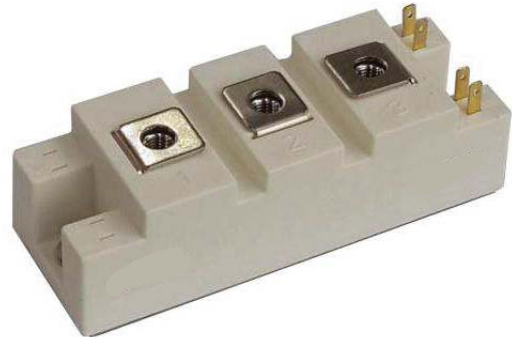# Type:YZPST-SKM195GB066D

IGBT Power Module

$V_{CE}=650V \quad I_C=200A$

Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- UPS (Uninterruptible Power Supplies)
- Soft switching welding machine

Features

- Low Vce(sat) with Trench Field-stop technology
- Vce(sat) with positive temperature coefficient
- Including fast & soft recovery anti-parallel FWD
- High short circuit capability(10us)
- Low inductance module structure
- Maximum junction temperature 175℃
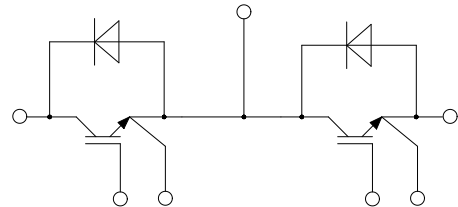
Equivalent Circuit Schematic

- **Absolute Maximum Ratings**

Parameter	Symbol	Conditions	Value	Unit
Collector-Emitter Voltage	V_{CES}	V_{GE}=0V, I_C =1mA, T_{vj}=25℃	650	V
Continuous Collector Current	I_C	T_c=100℃	200	A
Peak Collector Current	I_{CRM}	t_p=1ms	400	A
Gate-Emitter Voltage	V_{GES}	T_{vj}=25℃	±20	V
Total Power Dissipation (IGBT-inverter)	P_{tot}	T_c=25℃ T_{vjmax}=175℃	695	W

● IGBT Characteristics

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$, I_C =3.2mA,T_{vj}=25℃	5.1	5.8	6.3	V
Collector-Emitter Cut-off Current	I_{CES}	V_{CE}=650V,V_{GE}=0V, T_{vj}=25℃			1.0	mA
		V_{CE}=650V,V_{GE}=0V, T_{vj}=125℃			5.0	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	Ic=200A,V_{GE}=15V, T_{vj}=25℃		1.45	1.95	V
		Ic=200A,V_{GE}=15V, T_{vj}=125℃		1.65		V
Input Capacitance	C_{ies}	V_{CE}=25V,V_{GE} =0V, f=1MHz, T_{vj}=25℃		12.3		nF
Reverse Transfer Capacitance	C_{res}			0.37		nF
Internal Gate Resistance	R_{gint}			1.0		Ω
Turn-on Delay Time	$t_{d(on)}$	I_C =200 A V_{CE} =300 V V_{GE} = ±15V R_G = 3.6Ω T_{vj}=25℃		48		Ns
Rise Time	t_r			48		Ns
Turn-off Delay Ttime	$t_{d(off)}$			348		Ns
Fall Time	t_f			58		Ns
Energy Dissipation During Turn-on Time	E_{on}			2.32		mJ
Energy Dissipation During Turn-off Time	E_{off}			5.85		mJ
Turn-on Delay Time	$t_{d(on)}$	I_C =200 A V_{CE} = 300V V_{GE} = ±15V R_G =3.6Ω T_{vj}=125℃		48		Ns
Rise Time	t_r			48		Ns
Turn-off Delay Time	$t_{d(off)}$			364		Ns
Fall Time	t_f			102		Ns
Energy Dissipation During Turn-on Time	E_{on}			3.08		mJ
Energy Dissipation During Turn-off Time	E_{off}			7.92		mJ
SC Data	Isc	T_p≤10us,V_{GE}=15V,T_{vj}=150℃, V_{cc}=300V,V_{CEM}≤650V		1000		A

● Diode Characteristics

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Diode DC Forward Current	I_F	T_c=100℃		200		A
Diode Peak Forward Current	I_{FRM}			400		A
Forward Voltage	V_F	I_F=200A,T_{vj}=25℃		1.55	1.95	V
		I_F=200A,T_{vj}=125℃		1.50		V

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Recovered Charge	Q_{rr}	I_F =200 A V_R=300V -di_F/dt =4200A/us T_{vj}=25℃		8.05		uC
Peak Reverse Recovery Current	I_{rr}			148		A
Reverse Recovery Energy	E_{rec}			1.94		mJ
Recovered Charge	Q_{rr}	I_F =200 A V_R=300V -di_F/dt =4200A/us T_{vj}=125℃		16.9		uC
Peak Reverse Recovery Current	I_{rr}			186		A
Reverse Recovery Energy	E_{rec}			3.75		mJ

● Module Characteristics Tc=25°C unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation voltage	V_{isol}	t=1min,f=50Hz	2500			V
Maximum Junction Temperature	T_{jmax}				150	℃
Operating Junction Temperature	$T_{vj\,op}$		-40		125	℃
Storage Temperature	T_{stg}		-40		125	℃
Junction-to Case	$R_{\theta jc}$	per IGBT-inverter			0.19	K/W
		per Diode-inverter			0.31	K/W
Case to Sink	$R_{\theta cs}$	Conductive grease applied		0.085		K/W
Module ElectrodesTorque	M_t	Recommended(M5)	2.5		5.0	N·m
Module-to-SinkTorque	M_s	Recommended(M6)	3.0		5.0	N·m
Weight of Module	G			150		g

● **Circuit Diagram**
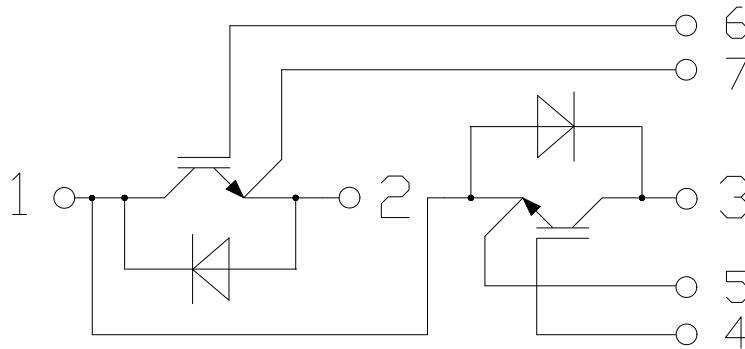
● **Package Dimensions**

Dimensions in Millimeters