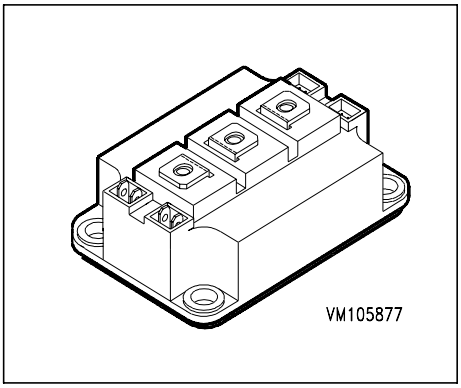
IGBT Power Module

- Single switch with chopper diode
- Including fast free-wheeling diodes
- Package with insulated metal base plate



Type	V_{CE}	I_C	Package	Ordering Code
BSM 150 GAL 120 DN2	1200V	210A	HALF BRIDGE GAL 2	C67076-A2013-A70

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE}	1200	V
Collector-gate voltage	V_{CGR}		
R_{GE} = 20 kΩ		1200	
Gate-emitter voltage	V_{GE}	± 20	
DC collector current	I_C		A
T_C = 25 °C		210	
T_C = 80 °C		150	
Pulsed collector current, t_p = 1 ms	I_{Cpuls}		
T_C = 25 °C		420	
T_C = 80 °C		300	
Power dissipation per IGBT	P_{tot}		W
T_C = 25 °C		1250	
Chip temperature	T_j	+ 150	°C
Storage temperature	T_{stg}	-55 ... + 150	
Thermal resistance, chip case	R_{thJC}	≤ 0.1	K/W
Diode thermal resistance, chip case	R_{thJCD}	≤ 0.25	
Diode thermal resistance, chip-case,chopper	R_{THJCDC}	≤ 0.18	
Insulation test voltage, t = 1min.	V_{is}	2500	Vac
Creepage distance	-	20	mm
Clearance	-	11	
DIN humidity category, DIN 40 040	-	F	-
IEC climatic category, DIN IEC 68-1	-	55 / 150 / 56	

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Gate threshold voltage $V_{GE} = V_{CE}$, I_C = 6 mA	$V_{GE(th)}$	4.5	5.5	6.5	V
Collector-emitter saturation voltage V_{GE} = 15 V, I_C = 150 A, T_j = 25 °C V_{GE} = 15 V, I_C = 150 A, T_j = 125 °C	$V_{CE(sat)}$	 - -	 2.5 3.1	 3 3.7	
Zero gate voltage collector current V_{CE} = 1200 V, V_{GE} = 0 V, T_j = 25 °C V_{CE} = 1200 V, V_{GE} = 0 V, T_j = 125 °C	I_{CES}	 - -	 2 8	 2.8 -	mA
Gate-emitter leakage current V_{GE} = 20 V, V_{CE} = 0 V	I_{GES}	-	-	320	nA
AC Characteristics					
Transconductance V_{CE} = 20 V, I_C = 150 A	g_{fs}	62	-	-	S
Input capacitance V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz	C_{iss}	-	11	-	nF
Output capacitance V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz	C_{oss}	-	1.6	-	
Reverse transfer capacitance V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz	C_{rss}	-	0.6	-	

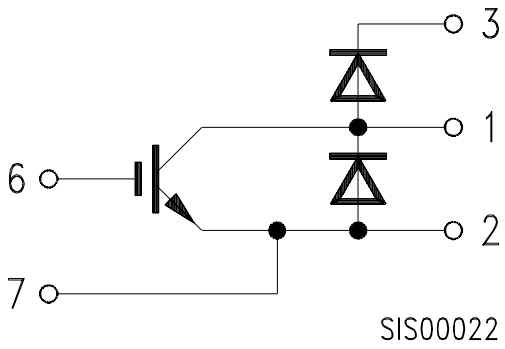
Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Switching Characteristics, Inductive Load at T_j = 125 °C					
Turn-on delay time V_{CC} = 600 V, V_{GE} = 15 V, I_C = 150 A R_{Gon} = 5.6 Ω	$t_{d(on)}$	-	200	400	ns
Rise time V_{CC} = 600 V, V_{GE} = 15 V, I_C = 150 A R_{Gon} = 5.6 Ω	t_r	-	100	200	
Turn-off delay time V_{CC} = 600 V, V_{GE} = -15 V, I_C = 150 A R_{Goff} = 5.6 Ω	$t_{d(off)}$	-	600	800	
Fall time V_{CC} = 600 V, V_{GE} = -15 V, I_C = 150 A R_{Goff} = 5.6 Ω	t_f	-	70	100	
Free-Wheel Diode					
Diode forward voltage I_F = 150 A, V_{GE} = 0 V, T_j = 25 °C I_F = 150 A, V_{GE} = 0 V, T_j = 125 °C	V_F	- -	2.3 1.8	2.8 -	V
Reverse recovery time I_F = 150 A, V_R = -600 V, V_{GE} = 0 V di_F/dt = -1500 A/µs, T_j = 125 °C	t_{rr}	-	0.4	-	µs
Reverse recovery charge I_F = 150 A, V_R = -600 V, V_{GE} = 0 V di_F/dt = -1500 A/µs T_j = 25 °C T_j = 125 °C	Q_{rr}	- -	5 18	- -	µC

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Chopper Diode					
Chopper diode forward voltage	V_{FC}				V
I_{FC} = 200 A, V_{GE} = 0 V, T_j = 25 °C		-	2.3	2.8	
I_{FC} = 200 A, V_{GE} = 0 V, T_j = 125 °C		-	1.8	-	
Reverse recovery time, chopper	t_{rrC}				µs
I_{FC} = 200 A, V_R = -600 V, V_{GE} = 0 V					
di_F/dt = -2000 A/µs, T_j = 125 °C		-	0.5	-	
Reverse recovery charge, chopper	Q_{rrC}				µC
I_{FC} = 200 A, V_R = -600 V, V_{GE} = 0 V					
di_F/dt = -2000 A/µs					
T_j = 25 °C		-	12	-	
T_j = 125 °C		-	36	-	

Circuit Diagram



Package Outlines

Dimensions in mm

Weight: 420g