

Three-Phase IGBT BRIDGE, With Gate Driver and Optical Isolation

DESCRIPTION: A 1200 VOLT, 140 AMP, THREE PHASE IGBT BRIDGE

ELECTRICAL CHARACTERISTICS PER IGBT DEVICE

(T_j=25°C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
IGBT SPECIFICATIONS					
Collector to Emitter Breakdown Voltage I _C = 250 μA, V _{GE} = 0V	BV _{CES}	1200	-	-	V
Continuous Collector Current T _C = 25 °C T _C = 90 °C	I _C	-	-	140 120	A
Pulsed Collector Current, 1mS	I _{CM}	-	-	350	A
Gate to Emitter Voltage	V _{GE}	-	-	+/-20	V
Gate-Emitter Leakage Current , V _{GE} = +/-20V	I _{GES}	-	-	+/- 100	nA
Gate Threshold Voltage, I _C =2mA	V _{GE(TH)}	3.0	-	6.0	V
Zero Gate Voltage Collector Current V _{CE} = 600 V, V _{GE} =0V T _j =25°C V _{CE} = 480 V, V _{GE} =0V T _j =125°C	I _{CES}	-	-	2 20	mA mA
Collector to Emitter Saturation Voltage, T _C = 25 °C I _C = 100A, V _{GE} = 15V,	V _{CE(SAT)}	-	2.5	2.8	V
Maximum Thermal Resistance	R _{θJC}	-	-	0.15	°C/W
Brake IGBT 60A Maximum Current				0.30	°C/W
Brake IGBT SPECIFICATIONS					
Continuous Collector Current T _C = 25 °C T _C = 90 °C	I _C	-	-	80 60	A
Pulsed Collector Current, 0.5mS	I _{CM}	-	-	120	A
Over-Temperature Shutdown					
Over-Temperature Shutdown	Tsd	100	110	120	°C
Over-Temperature Shutdown Hysteresis			20		°C
Over-Temperature Output	Tso		10		10mV/°C

SENSITRON SEMICONDUCTOR

TECHNICAL DATA

DATASHEET 4100, REV B

ULTRAFAST DIODES RATING AND CHARACTERISTICS

Diode Peak Inverse Voltage	PIV	1200	-	-	V
Continuous Forward Current, $T_C = 90^\circ\text{C}$	I_F	-	-	110	A
Forward Surge Current, $t_p = 10$ msec	I_{FSM}	-	-	350	A
Diode Forward Voltage, $I_F = 100\text{A}$	V_F	-	2.0	2.3	V
Diode Reverse Recovery Time ($I_F=100\text{A}$, $V_{RR}=600\text{V}$, $di/dt=200\text{ A}/\mu\text{s}$)	t_{rr}	-	180	250	nsec
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.3	$^\circ\text{C}/\text{W}$
Gate Driver					
Supply Voltage	VCC	10	15	20	V
Input On Current	HIN, LIN	2		5.0	mA
Opto-Isolator Logic High Input Threshold	I_{th}	-	1.6	-	mA
Input Reverse Breakdown Voltage	BV_{in}	5.0	-	-	V
Input Forward Voltage @ $I_{in} = 5\text{mA}$	V_F	-	1.5	1.7	V
Under Voltage Lockout	VCCUV	7.0	-	9.7	V
ITRIP Reference Voltage ⁽¹⁾	Itrip-ref	1.45	1.5	1.55	V
Desaturation Over-Current Protection Blanking time ⁽²⁾		3	5	TBD	μsec
Input-to-Output Turn On Delay	t_{ond}	-		800	nsec
Output Turn On Rise Time	t_r	-		180	
Input-to-Output Turn Off Delay	t_{offd}	-		1000	
Output Turn Off Fall Time	t_f	-		160	
At VCC=300V, IC=50A, $T_C = 25$					
Input-Output Isolation Voltage	-	1000	-	-	V

Maximum operating Junction Temperature	T_{jmax}	-40	-	150	$^\circ\text{C}$
Maximum Storage Junction Temperature	T_{jmax}	-55	-	150	$^\circ\text{C}$

(1) ITRIP Cycle-by cycle current limit is internally set to 70A peak. The set point can be lowered by connecting a resistor between Itrip-ref and Gnd. The set point can be increased by connecting a resistor between Itrip-ref and +5V ref

(2) Desaturation blanking maximum time is TBD and is only provided at the low-side IGBTs.

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TECHNICAL DATA

DATASHEET 4100, REV B

Package Drawing:

