1200 VOLT, 30 AMP MOSFET FULL-BRIDGE MODULE

Features

- Isolated base plate
- Light weight low profile standard package
- Aluminum Nitride substrate
- High temperature engineering plastic shell construction

ELECTRICAL CHARACTERISTICS PER MOSFET LEG **(T_j=25^{0}C UNLESS OTHERWISE SPECIFIED)**

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
MOSFET SPECIFICATIONS					
BV_{DSS}	Drain to Source Breakdown Voltage I_D = 100 µA, V_{GS} = 0V	1200	-	-	V
I_D	Continuous Drain Current T_C = 25°C T_C = 100°C	-	-	40 34	A
$I_{D(pulse)}$	Pulsed Drain Current, 1ms	-	-	90	A
V_{GS}	Gate to Source Voltage	-	-	-10/+25	V
I_{GSS}	Gate-Source Leakage Current , V_{GS} = -10/+22V	-	-	100	nA
$V_{GS(th)}$	Gate Threshold Voltage, T_J = 25°C I_D = 1mA, V_{DS} = V_{GS} T_J = 150°C	1.8 1.2	3.5 2.5	4.0 3.0	V
I_{DSS}	Zero Gate Voltage Drain Current V_{DS} = 1200 V, V_{GS}=0V	-	-	100	µA
$R_{DS(on)}$	Drain-Source On-State Resistance T_J = 25°C I_D = 20A, V_{GS} = 20V T_J = 150°C	- -	80 90	100 113	mΩ
C_{iss} C_{oss} C_{rss}	Input Capacitance Output Capacitance Reverse Transfer Cap. V_{DS} = 400 V, V_{GS} = 0 V, f = 1 MHz, V_{AC} = 25 mV	- - -	1700 130 25	- - -	pF
$t_{D(on)}$ t_R $t_{D(off)}$ t_F	Turn On Delay Time Rise Time Turn Off Delay Time Fall Time V_{DS} = 800 V, I_D = 20A, V_{GS} = 20V, R_G = 0Ω, R_L = 40Ω	- - - -	19 28 45 20	- - - -	ns
E_{ON} E_{OFF}	Turn on Energy Loss Turn off Energy Loss V_{DS} = 800 V, I_D = 20A, V_{GS} = -2/+20V, R_G = 6.8Ω	- -	500 350	- -	µJ
$R_{G(int)}$	Internal Gate Resistance f = 1MHz, V_{AC} = 25mV	-	5	-	Ω
Q_{GS} Q_{GD} Q_G	Gate to Source Charge Gate to Drain Charge Total Gate Charge V_{DS} = 800 V, I_D = 20A, V_{GS} = 0/+20V	-	16 40 105	-	nC

REVERSE DIODE CHARACTERISTICS

($T_j=25^0C$ UNLESS OTHERWISE SPECIFIED)

SYMBOL	PARAMETER		MIN	TYP	MAX	UNIT
DIODE SPECIFICATIONS						
V_{SD}	Diode Forward Voltage V_{GS} = 0V, I_{SD} = 10A	T_J = 25°C T_J = 150°C	-	3.5 3.3	3.8 3.5	V
I_S	Continuous Forward Current,	T_J = 25°C	-	-	20	A
t_{rr}	Reverse Recovery Time V_{GS} = 0V, I_{SD} = 20A, V_R =800V, di/dt = 100A/ μs		-	140	-	ns
Q_{rr}	Reverse Recovery Charge V_{GS} = 0V, I_{SD} = 20A, V_R =800V, di/dt = 100A/ μs		-	140	-	nC
I_{rrm}	Peak Reverse Recovery Current V_{GS} = 0V, I_{SD} = 20A, V_R =800V, di/dt = 100A/ μs		-	2	-	A

ZVS SiC DIODE CHARACTERISTICS

($T_j=25^0C$ UNLESS OTHERWISE SPECIFIED)

SYMBOL	PARAMETER		MIN	TYP	MAX	UNIT
DIODE SPECIFICATIONS						
V_{RRM}	Repetitive Peak Reverse Voltage		1200	-	-	V
V_{RSM}	Surge Peak Reverse Voltage		1300	-	-	V
V_R	DC Peak Blocking Voltage		1200	-	-	V
I_F	Continuous Forward Current,	T_J = 150°C	-	-	20	A
I_{FRM}	Repetitive Peak Forward Surge Current t_P = 10ms, Half Sine Pulse	T_C = 25°C T_C = 110°C	-	-	91 61	A
I_{FSM}	Non-Repetitive Forward Surge Current t_P = 10ms, Half Sine Pulse	T_C = 25°C T_C = 110°C	-	-	130 110	A
V_F	Forward Voltage I_F = 20A	T_J = 25°C T_J = 150°C	-	1.5 2.2	1.8 3.0	V
I_R	Reverse Current V_R = 1200V	T_J = 25°C T_J = 150°C	-	35 65	200 400	μA
Q_C	Total Capacitive Charge $V_{R=}$ 800V, I_F = 20A, di/dt = 200A/μs, T_J = 25 ^OC		-	99	-	nC
C	Total Capacitance V_R = 0V, T_J = 25 ^OC, f = 1MHz V_R = 400V, T_J = 25 ^OC, f = 1MHz V_R = 800V, T_J = 25 ^OC, f = 1MHz		-	1500 93 67	-	pF

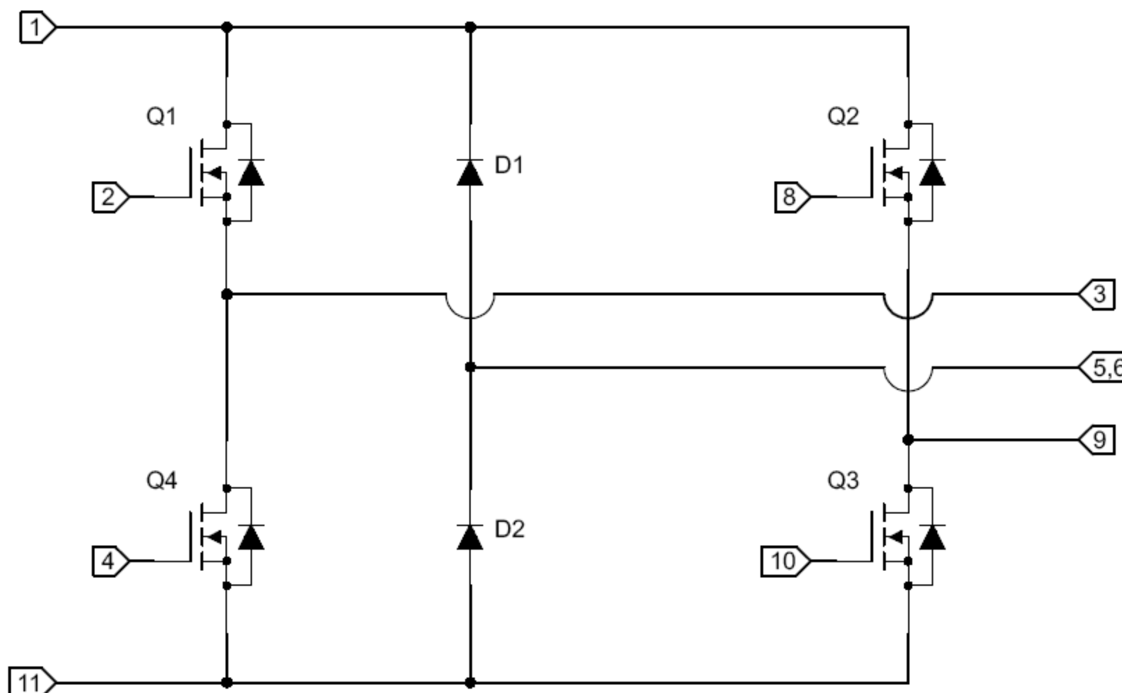
Note: Production units are only tested at room temperature. Low/High temperature operation is guaranteed by design.

THERMAL AND MECHANICAL CHARACTERISTICS

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JB_M}$	MOSFET Junction-to-Base Plate Thermal Resistance Per Leg	-	0.36	0.44	$^oC/W$
$R_{\theta JB_D}$	Diode Junction-to-Base Plate Thermal Resistance Per Leg	-	0.66	0.79	$^oC/W$
V_{iso}	Isolation to Base Plate	-	-	2500	VDC
T_J	Operating Junction Temperature	-55	-	150	^oC
T_{STG}	Storage Temperature	-55	-	150	^oC
	Mounting Torque for Module Mounting	3	-	4	in-lbs.
	Weight	-	10	-	g

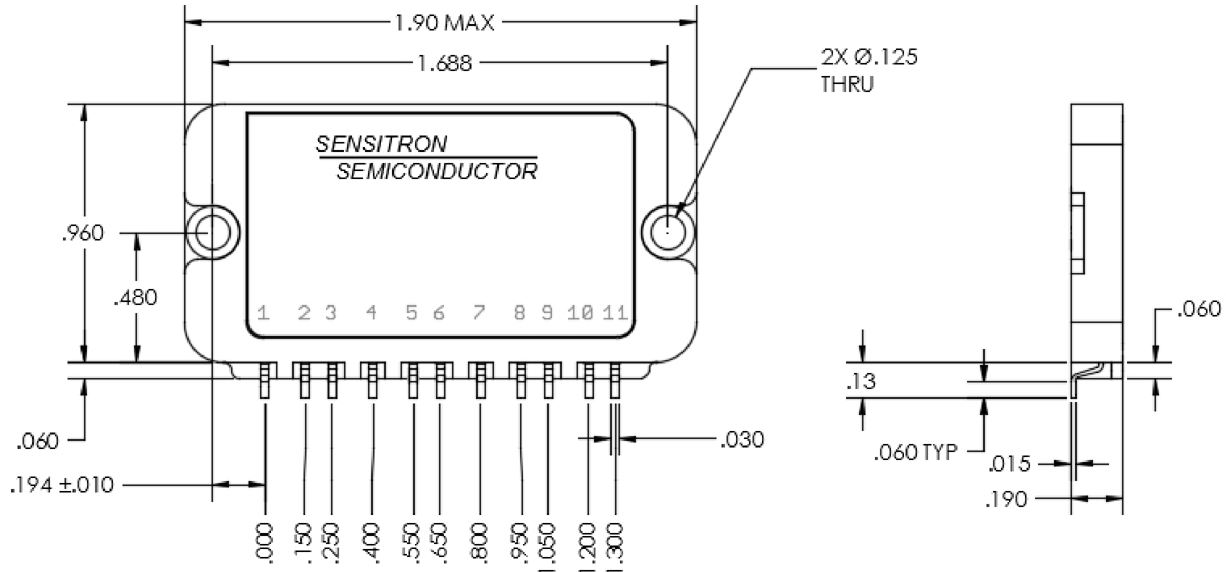
Recommended TIM = Laird Tgon 805

Schematic Diagram:



Note: Pin 7 is not used (No Connect)

Mechanical Outline (inches):



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