

1200 VOLT, 40 AMP MOSFET FULL-BRIDGE MODULE

Features

- Isolated base plate
- Light weight low profile standard package
- Aluminum Nitride substrate
- High temperature engineering plastic shell construction
- Enhanced die coating
- Die back metal change from silver to gold



ELECTRICAL CHARACTERISTICS PER MOSFET LEG

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
MOSFET SPECIFICATIONS					
BV _{DSS}	Drain to Source Breakdown Voltage I _D = 100 μ A, V _{GS} = 0V	1200	-	-	V
I _D	Continuous Drain Current T _C = 25°C T _C = 100°C	-	-	60 40	A
I _{D(pulse)}	Pulsed Drain Current, 1ms	-	-	160	A
V _{GS}	Gate to Source Voltage	-	-	-10/+25	V
I _{GSS}	Gate-Source Leakage Current, V _{GS} = +20V / -5V	-	-	250	nA
V _{GS(th)}	Gate Threshold Voltage, I _D = 10mA, V _{DS} = V _{GS} T _J = 25°C T _J = 150°C	2.0 1.4	3.2 2.3	4.0 3.2	V
I _{DSS}	Zero Gate Voltage Drain Current V _{DS} = 1200 V, V _{GS} =0V	-	1	100	μ A
R _{DS(on)}	Drain-Source On-State Resistance I _D = 40A, V _{GS} = 20V T _J = 25°C T _J = 150°C	- -	47 98	56 118	m Ω
C _{iss} C _{oss} C _{rss}	Input Capacitance Output Capacitance Reverse Transfer Cap. V _{DS} = 1000 V, V _{GS} = 0 V, f = 1 MHz, V _{AC} = 25 mV	- - -	2287 157 8	- - -	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 = 40A, V _{GS} = -5/+20V, R _G = 2.5 Ω , R _L = 20 Ω	- - - -	15 52 26 34	- - - -	ns
E _{AS}	Avalanche Energy, Single Pulse I _D = 40A, V _{DS} = 50V	-	2	-	J
E _{ON} E _{OFF}	Turn on Energy Loss Turn off Energy Loss V _{DS} = 800 V, I _D = 40A, V _{GS} = -5/+20V, R _G = 2.5 Ω , L = 80 μ H	- -	1000 400	- -	μ J
R _{G(int)}	Internal Gate Resistance f = 1MHz, V _{AC} = 25mV	-	1.8	-	Ω
Q _{GS} Q _{GD} Q _G	Gate to Source Charge Gate to Drain Charge Total Gate Charge V _{DS} = 800 V, I _D = 40A, V _{GS} = -5/+20V	-	29 45 131	-	nC

REVERSE DIODE CHARACTERISTICS

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
DIODE SPECIFICATIONS					
V _{SD}	Diode Forward Voltage V _{GS} = -5V, I _{SD} = 20A T _J = 25°C T _J = 150°C	-	4.2 3.7	4.5 4.0	V
I _S	Continuous Forward Current, T _J = 25°C	-	-	60	A
t _{rr}	Reverse Recovery Time V _{GS} = -5V, I _{SD} = 40A, V _R = 800V, di/dt = 1406A/μs	-	63	-	ns
Q _{rr}	Reverse Recovery Charge V _{GS} = -5V, I _{SD} = 40A, V _R = 800V, di/dt = 1406A/μs	-	964	-	nC
I _{rrm}	Peak Reverse Recovery Current V _{GS} = -5V, I _{SD} = 40A, V _R = 800V, di/dt = 1406A/μs	-	18	-	A

ZVS SiC DIODE CHARACTERISTICS

(T_J=25°C 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	-	-	5	A
I _{FRM}	Repetitive Peak Forward Surge Current t _P = 10ms, Half Sine Pulse T _C = 25°C T _C = 110°C	-	-	26 18	A
I _{FSM}	Non-Repetitive Forward Surge Current t _P = 10ms, Half Sine Pulse T _C = 25°C T _C = 110°C	-	-	46 36	A
V _F	Forward Voltage I _F = 5A T _J = 25°C T _J = 150°C	-	1.4 1.9	1.8 3.0	V
I _R	Reverse Current V _R = 1200V T _J = 25°C T _J = 150°C	-	20 40	150 300	μA
Q _C	Total Capacitive Charge V _R = 800V, I _F = 5A, di/dt = 200A/μs, T _J = 25 °C	-	27	-	nC
C	Total Capacitance V _R = 0V, T _J = 25 °C, f = 1MHz V _R = 400V, T _J = 25 °C, f = 1MHz V _R = 800V, T _J = 25 °C, f = 1MHz	-	390 27 20	-	pF

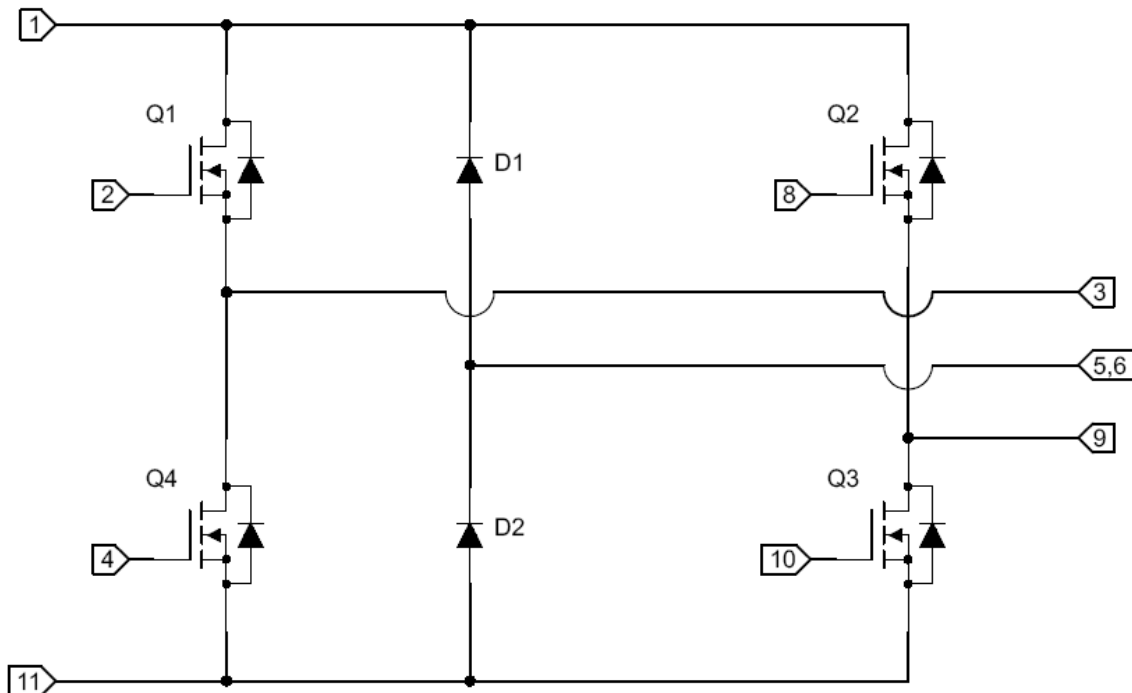
Note: Production units are only tested at room temperature. Low/High temperature operation is guaranteed by design.

THERMAL AND MECHANICAL CHARACTERISTICS

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JB_M}$	MOSFET Junction-to-Base Plate Thermal Resistance Per Leg	-	0.30	0.36	°C/W
$R_{\theta JB_D}$	Diode Junction-to-Base Plate Thermal Resistance Per Leg	-	1.60	1.76	°C/W
V_{ISO}	Isolation to Base Plate	-	-	2500	VDC
T_J	Operating Junction Temperature	-55	-	150	°C
T_{STG}	Storage Temperature	-55	-	150	°C
	Mounting Torque for Module Mounting	3	-	4	in-lbs.
	Weight	-	10	-	g

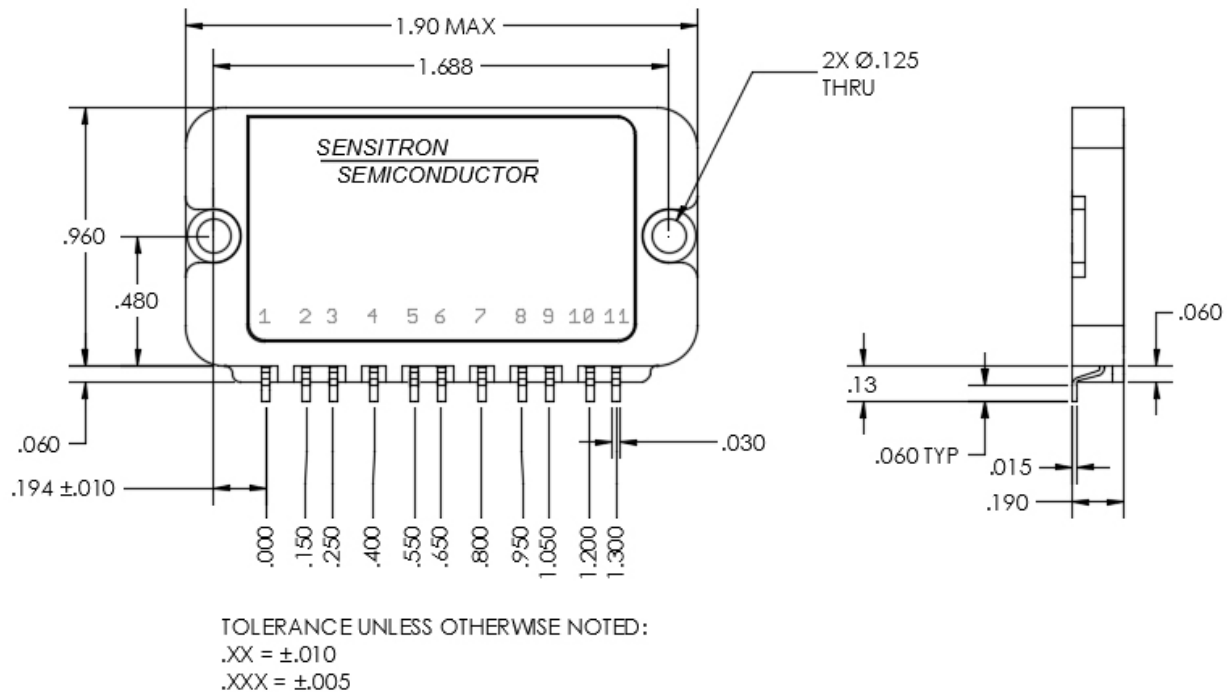
Recommended TIM = Laird Tgon 805

Schematic Diagram:



Note: Pin 7 is not used (No Connect)

Mechanical Outline (inches):



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