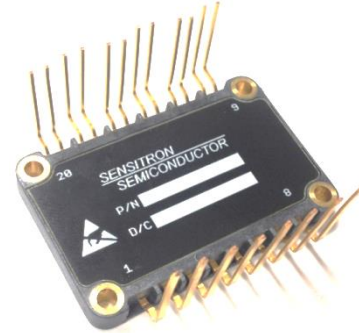


1200 VOLT, 50 AMP MOSFET FULL BRIDGE MODULE

Features

- Electrically isolated, base-less construction
- Light weight, low profile standard package
- Aluminum nitride substrate
- High temperature engineering plastic shell construction



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 μA, V _{GS} = 0V	1200	-	-	V
I _D	Continuous Drain Current T _C = 25°C T _C = 100°C	-	-	90 60	A
I _{D(pulse)}	Pulsed Drain Current, 1ms	-	-	180	A
V _{GS}	Gate to Source Voltage	-	-	-10/+25	V
I _{GSS}	Gate-Source Leakage Current, V _{GS} = +20V	-	-	600	nA
V _{GS(th)}	Gate Threshold Voltage, I _D = 15mA, V _{DS} = V _{GS}	1.8 1.4	2.6 2.2	4.2 3.8	V
I _{DSS}	Zero Gate Voltage Drain Current V _{DS} = 1200 V, V _{GS} = 0V	-	2	100	μA
R _{DS(on)}	Drain-Source On-State Resistance I _D = 50A, V _{GS} = 20V	- -	35 56	40 69	mΩ
C _{iss}	Input Capacitance	-	2810	-	pF
C _{oss}	Output Capacitance	-	393	-	
C _{rss}	Reverse Transfer Cap. V _{DS} = 800 V, V _{GS} = 0 V, f = 1 MHz, V _{AC} = 25 mV	-	14	-	
t _{D(on)}	Turn On Delay Time	-	14	-	ns
t _R	Rise Time	-	32	-	
t _{D(off)}	Turn Off Delay Time	-	29	-	
t _F	Fall Time V _{DS} = 800 V, I _D = 50A, V _{GS} = -5/+20V, R _G = 2.5Ω, R _L = 16Ω	-	28	-	
E _{AS}	Avalanche Energy, Single Pulse I _D = 50A, V _{DS} = 50V	-	3.5	-	J
E _{ON}	Turn on Energy Loss	-	1400	-	μJ
E _{OFF}	Turn off Energy Loss V _{DS} = 800 V, I _D = 50A, V _{GS} = -5/+20V, R _G = 2.5Ω, L = 412μH	-	300	-	
R _{G(int)}	Internal Gate Resistance f = 1MHz, V _{AC} = 25mV	-	1.1	-	Ω
Q _{GS}	Gate to Source Charge	-	46	-	nC
Q _{GD}	Gate to Drain Charge	-	50	-	
Q _G	Total Gate Charge V _{DS} = 800 V, I _D = 50A, V _{GS} = -5/+20V	-	161	-	

DATASHEET 5528, REV -

REVERSE SiC DIODE CHARACTERISTICS

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
DIODE SPECIFICATIONS					
V _{SD}	Diode Forward Voltage I _F = 50A		T _J = 25°C 1.6 T _J = 175°C 2.25	1.8 2.7	V
I _F	Continuous Forward Current	-	-	50	A
I _{FRM}	Repetitive Peak Forward Surge Current t _p = 10ms, Half Sine Pulse			150 90	A
I _R	Reverse Current V _R = 1200V V _R = 1200V	-	T _J = 25°C 100 T _J = 175°C 300	500 1000	μA
Q _C	Total Capacitive Charge V _R = 800V	-	246	-	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	-	3380 230 173	-	pF

NTC-THERMISTOR CHARACTERISTICS

(T_J=25°C UNLESS OTHERWISE SPECIFIED)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
NTC SPECIFICATIONS					
R ₂₅	Resistance	-	4.7	-	kOhm
R _{TOL}	Resistance Tolerance	-	-	1	%
P	Maximum Power Dissipation	-	-	50	mW
B _{25/85}	NTC Thermistor Beta Value $R = R_{25} e^{B_{25/85} (\frac{1}{T} - \frac{1}{298.15})}$		3435		K

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

THERMAL AND MECHANICAL CHARACTERISTICS

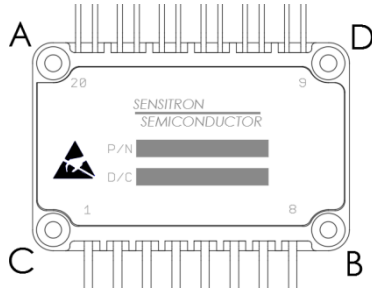
SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
R _{θJB_M}	MOSFET Junction-to- Base Plate Thermal Resistance Per Device	-	0.30	0.33	°C/W
R _{θJB_D}	Diode Junction-to-Base Plate Thermal Resistance Per Device	-	0.33	0.36	°C/W
V _{iso}	Isolation to Base Plate	2500	-	-	VDC
T _J	Operating Junction Temperature	-55	-	150	°C
T _{STG}	Storage Temperature	-55	-	150	°C
	Mounting Torque for Module Mounting (see installation instructions) #4 Size Screw	3	-	4	in-lbs.
	Weight Module	-	15	20	g

Installation instructions:

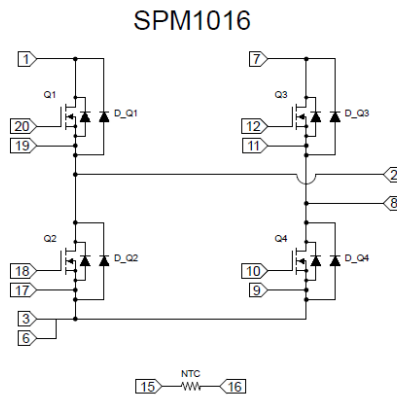
Recommended thermal interface material = Laird Tgon 805 (5 mil thick graphite pad)

1. Fasten screws to 1 to 2 in-lb of torque in the following sequence: A, B, C, D.
2. Fasten screws to final torque in the same sequence: A, B, C, D

DATASHEET 5528, REV -

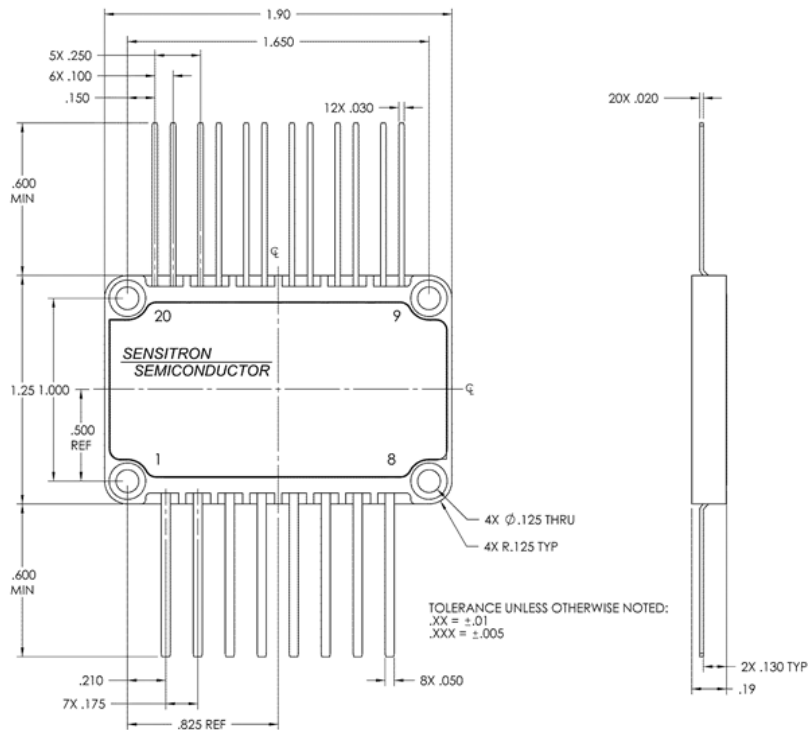


Schematic Diagram:

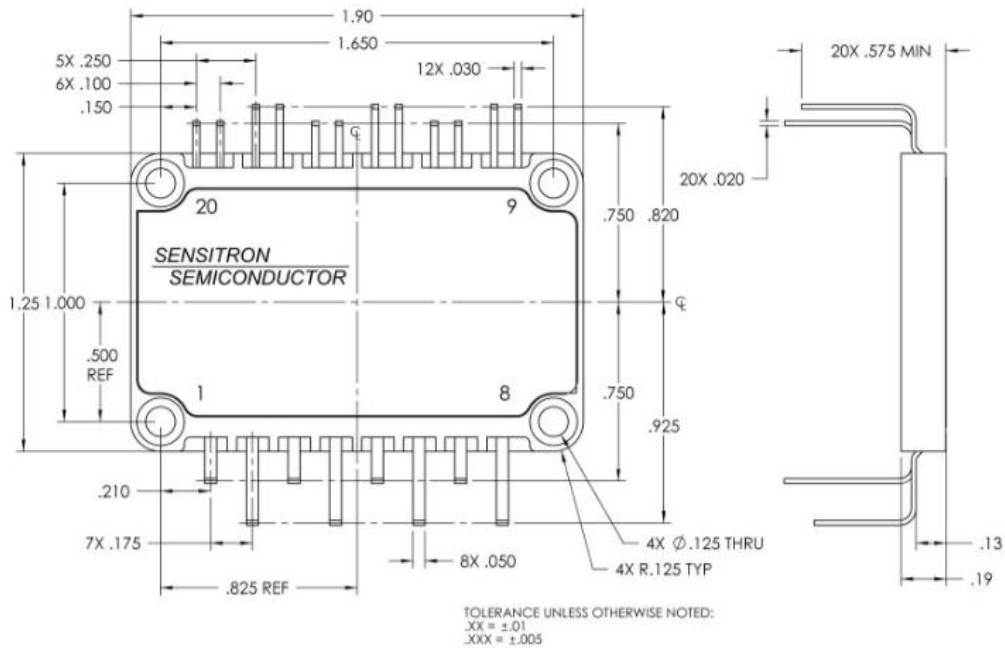


Mechanical Outline (inches):

Part Number SPM1016



Part Number SPM1016-1



Part Number Description

“SPM1016”: Straight leads

“SPM1016-1”: Leads bent up in staggered configuration

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