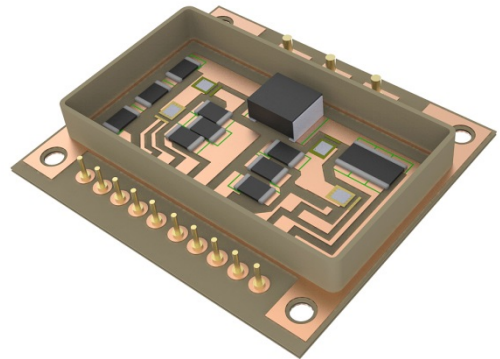


FULL SiC HALFBRIDGE CONVERTER

POWR-2SiC series

FEATURES

- Wide band gap semiconductor technology
- Super Junction Transistor (SJT) technology
- Various range of output characteristics
 - 600V, 20A
 - 1200V, 20A
- Operating junction temperature range -55°C to 230°C
- Direct board integration
- Heat spreader thermal connection
- Embedded current sensors



APPLICATIONS

- Harsh environment such as aeronautic, oil & gas, electrical traction and many others
- Full bridge and three-phased rectifier

ELECTRICAL PARAMETERS

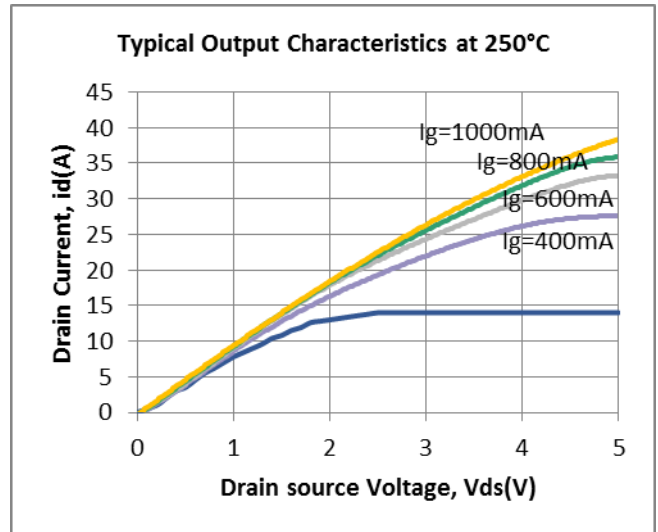
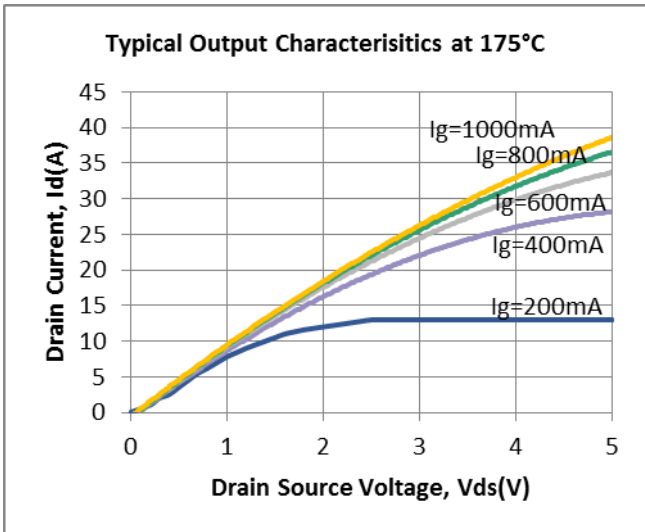
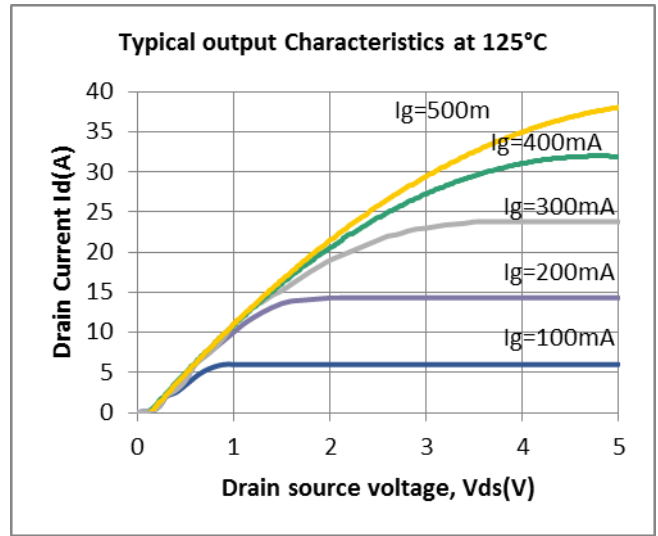
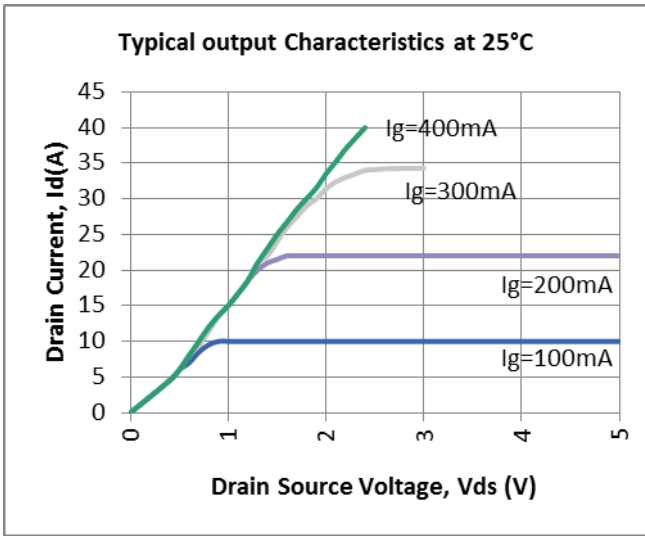
ABSOLUTE MAXIMUM RATINGS (T_{case}=25°C otherwise specified)

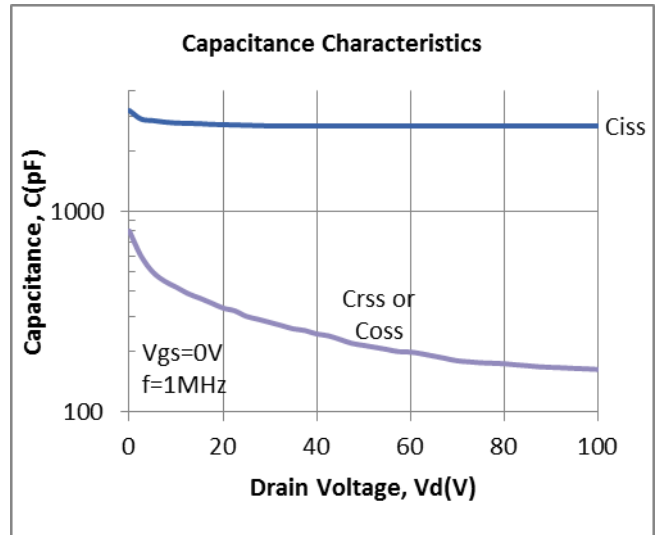
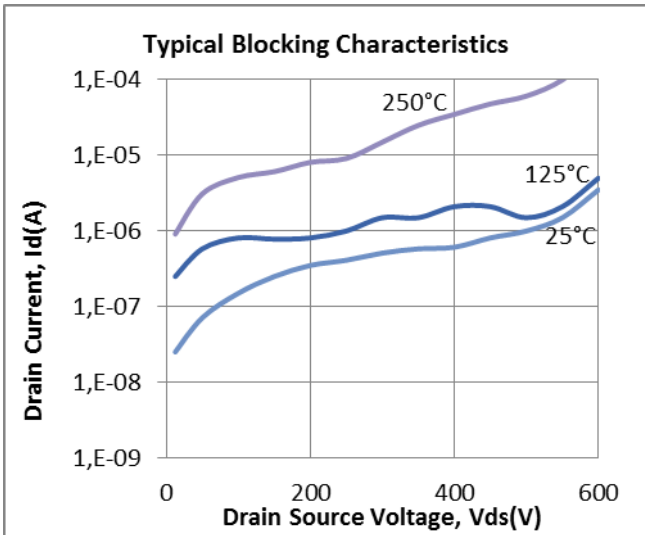
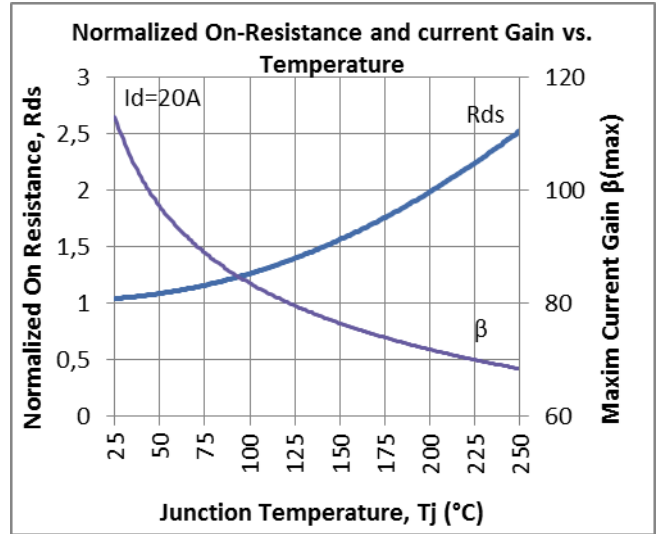
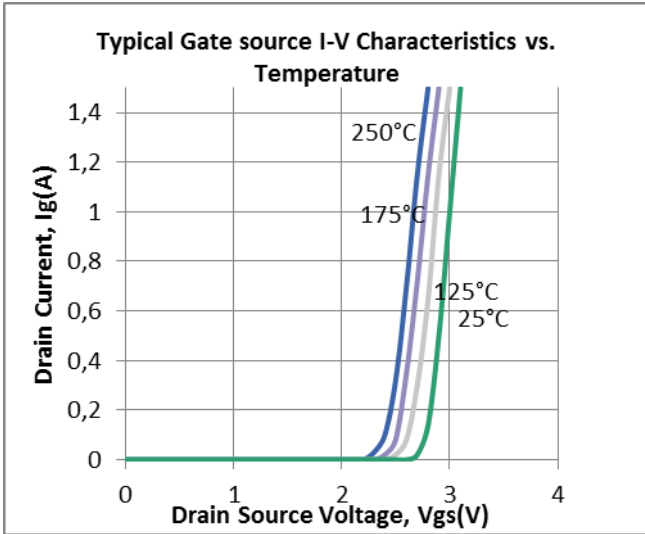
PARAMETER	DESIGNATION	MIN	MAX	UNIT
V _{DS}	Drain-Source Voltage 600V version		600	V
	Drain-Source Voltage 1200V version		1200	V
V _{GS}	Gate-Source Voltage	-30		V
I _{GM}	Gate peak current		10	A
I _D	Drain Current		20	A
T _J	Operating Junction Temperature Range	-55	230	°C
T _C , T _{STG}	Case & Storage T° range	-55	250	°C
V _{IS}	Case Isolation Voltage		1500	VAC
P _D	Power Dissipation			W

ELECTRICAL CHARACTERISTICS (T_{case}=25°C otherwise specified)

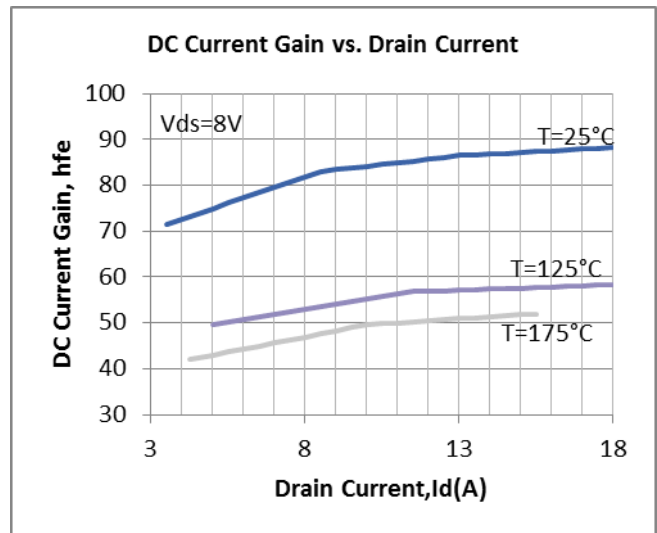
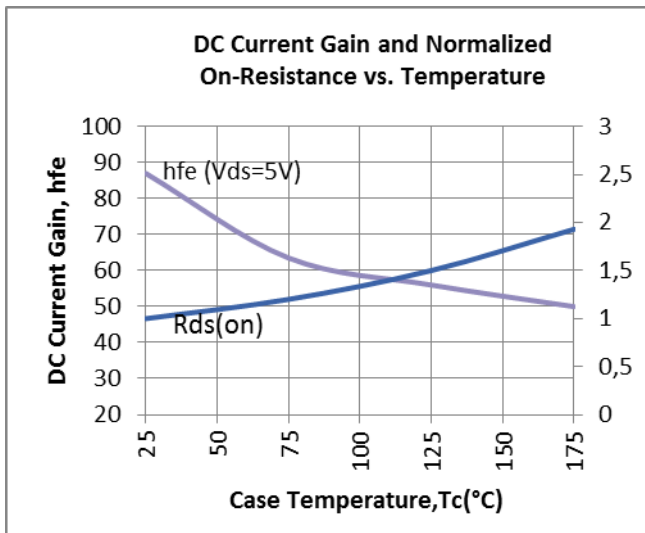
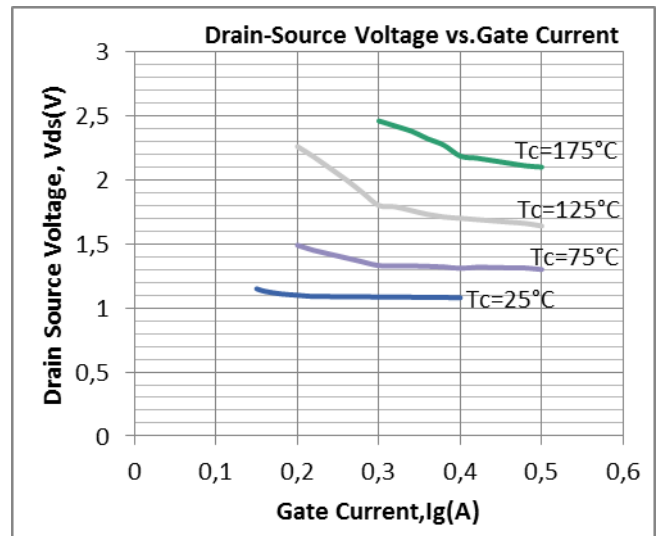
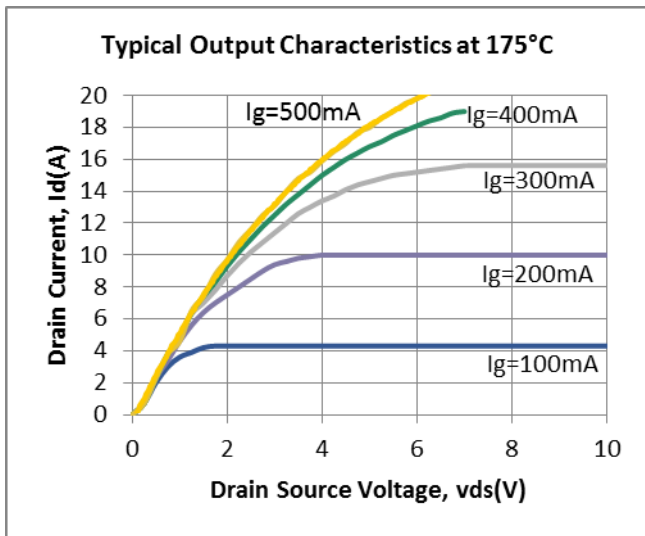
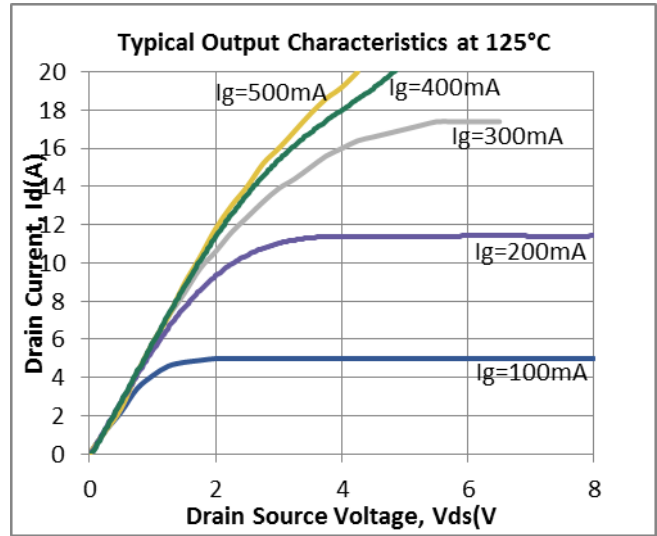
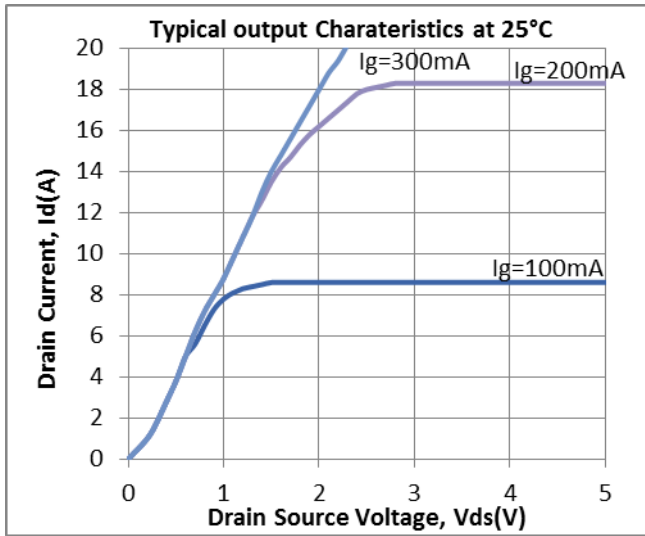
PARAMETER	DESIGNATION	CONDITIONS	MIN	TYP	MAX	UNIT
I _{DSS}	Zero gate voltage drain current POWR-2SiC-20A-600V-01-A POWR-2SiC-20A-1200-01-A	V _{GS} =0V		10		μA
		V _{DS} =600V				
		V _{DS} =1200V				
I _{GSS}	Gate-Source leakage current	V _{GS} =-20V		20		nA
V _{GS(FWD)}	Gate forward voltage POWR-2SiC-20A-600V-01-A POWR-2SiC-20A-1200-01-A	I _G =1000mA		3		V
		I _D =10A		3.5		
V _F	Reverse Diode forward voltage	I _F =20A		1.5	1.8	V
Q _C	Total Capacitive charge	I _F =20A di/dt=200A/μs V _R =1200V		130		nC
R _{DS(ON)}	Drain-Source ON resistance POWR-2SiC-20A-600V-01-A POWR-2SiC-20A-1200-01-A	I _D =20A		65		mΩ
		I _D =10A		120		

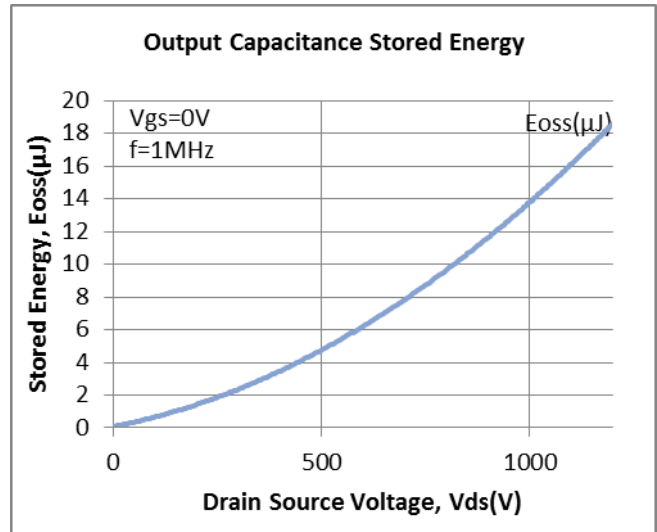
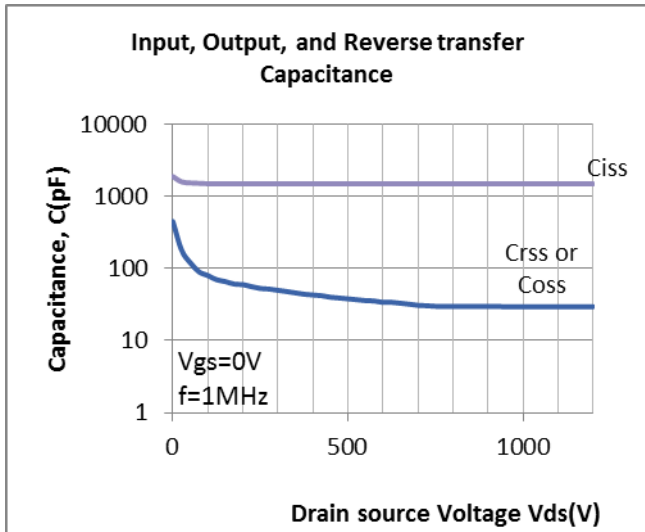
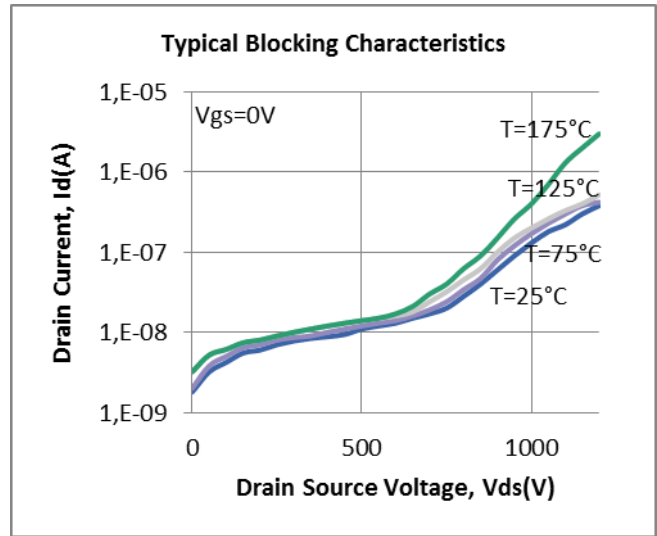
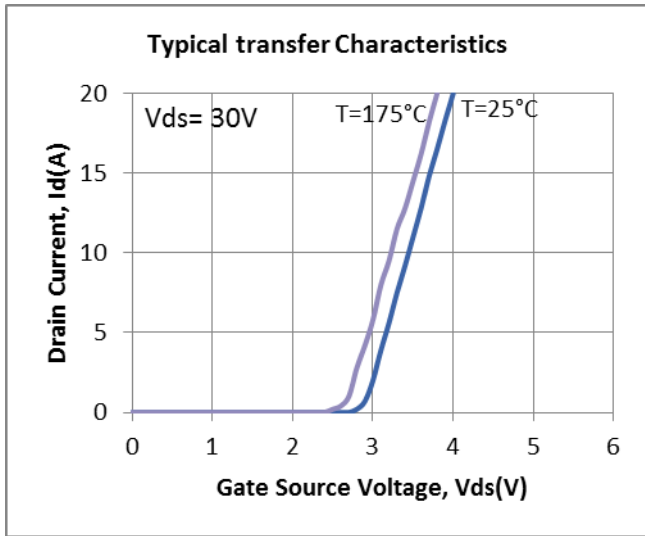
ELECTRICAL CURVES (POWR-2SIC-20A-600V)





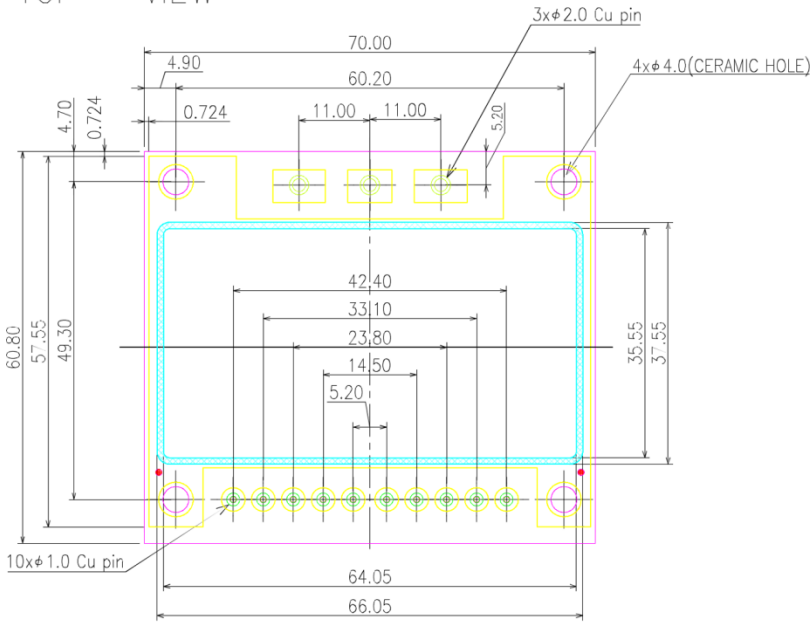
ELECTRICAL CURVES (POWR-2SIC-20-1200)



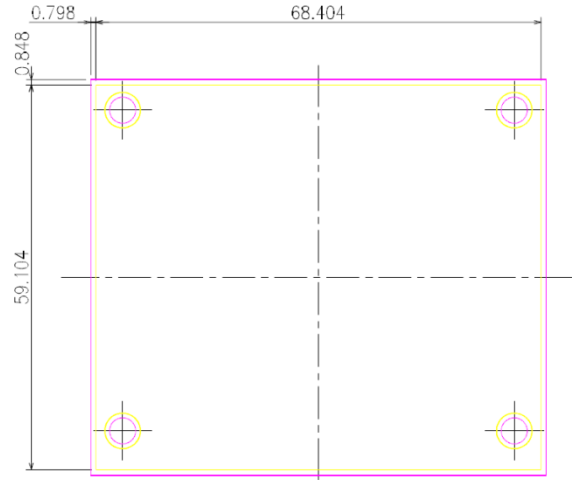


MECHANICAL CHARACTERISTICS

TOP VIEW

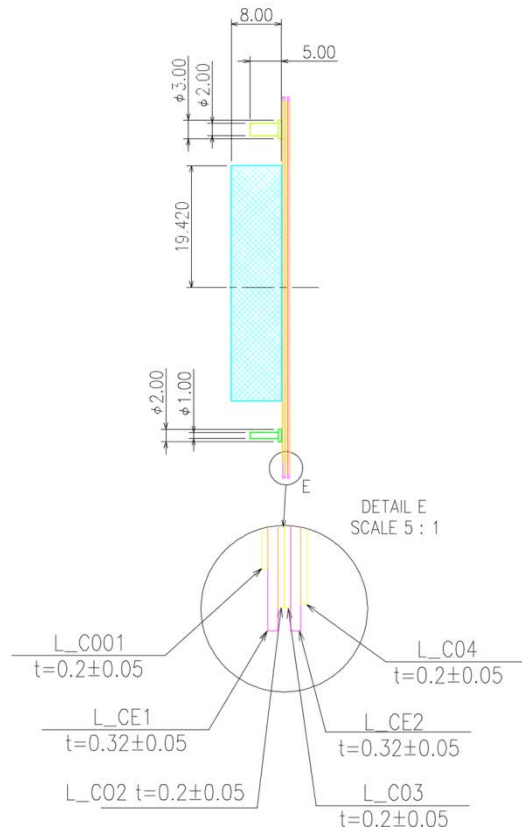


BOTTOM VIEW



- NOTE
1. FINISHED : ELECTROLESS Ni-P $4\pm 2\mu\text{m}$ + Au $0.1\mu\text{m}\pm 0.05\mu\text{m}$
 2. MARKS BY ELECTRICAL CHECK PROBES SHALL BE ACCEPTABLE.

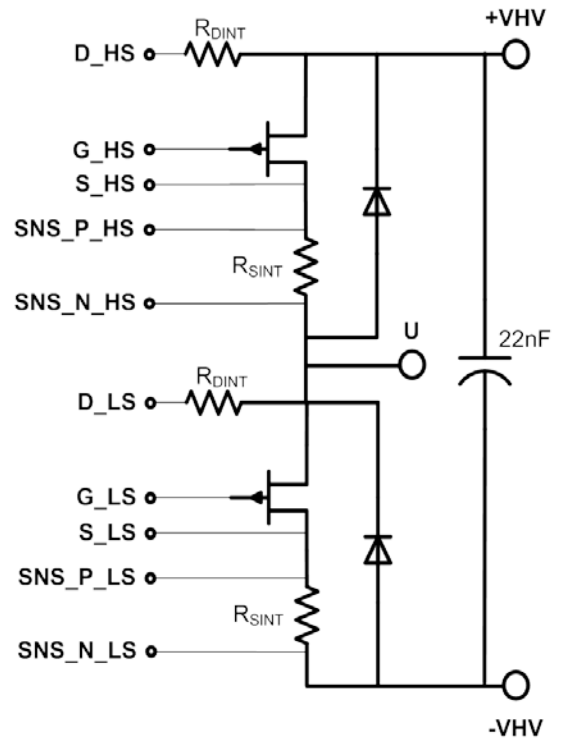
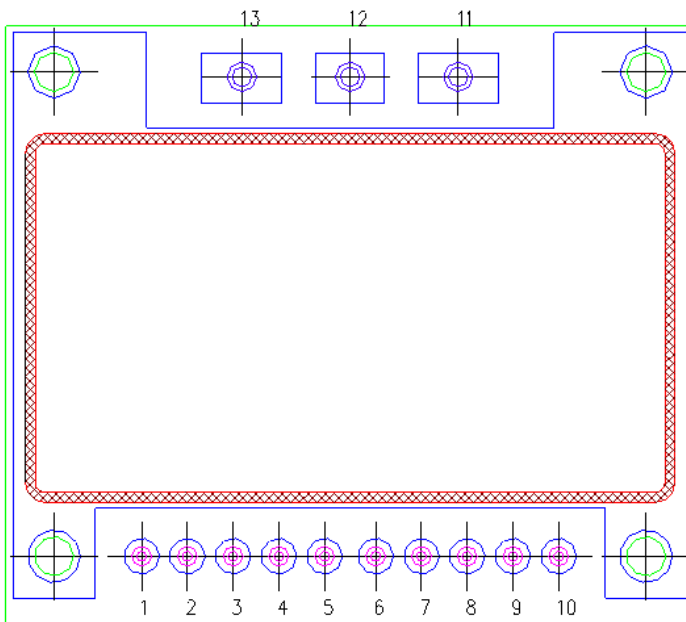
SIDE VIEW



PINOUT

PIN NUMBER	PIN NAME	DESIGNATION
1	D_HS	High side transistor drain (through R _{DINT} 1MΩ resistor)
2	G_HS	High side transistor gate
3	S_HS	High side transistor source
4	SNS_P_HS	High side current sensor (R _{SINT} 16,7mΩ)
5	SNS_N_HS	
6	D_LS	Low side transistor drain (through R _{DINT} 1MΩ resistor)
7	G_LS	Low side transistor gate
8	S_LS	Low side transistor source
9	SNS_P_LS	Low side current sensor (R _{SINT} 16,7mΩ)
10	SNS_N_LS	
11	-VHV	Negative DC line
12	U	Output
13	+VHV	Positive DC line

PIN LAYOUT

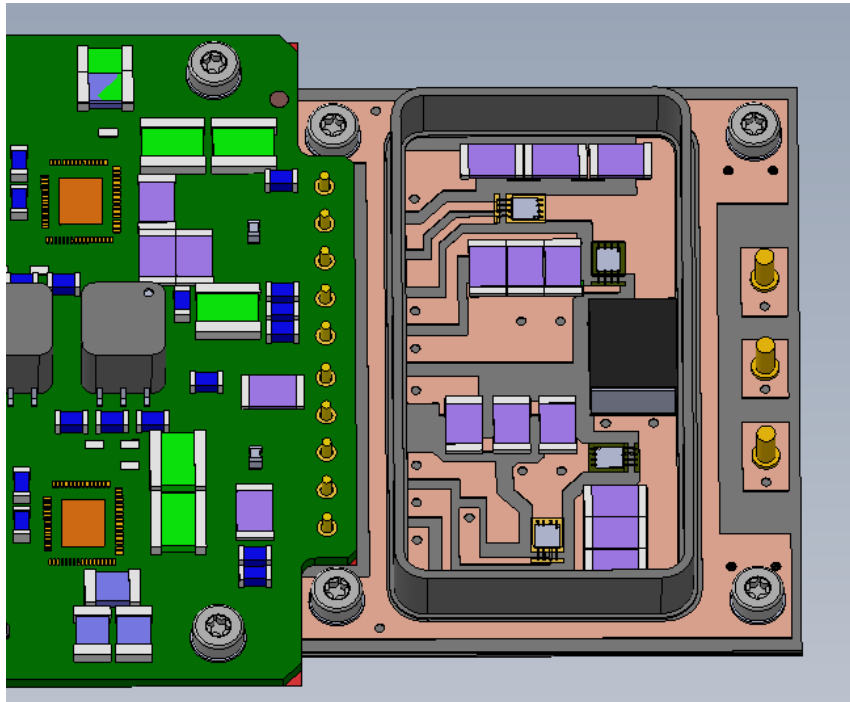


RECOMMENDED PCB LAYOUT & MOUNTING

PCB LAYOUT

Signal Range	Cu to Cu gap	Thickness	Isulation Lines	Plated Thru Hole	General mechanical clearances
Driver's input	250μm	35μm	600V 1200V	2.5mm	+/-0.1mm
Power output	3mm	300μm	600V 1200V	3.5mm	+/-0.1mm

EXAMPLE OF ON-BOARD MOUNTING



SOLDERING RECOMMANDATION

Hand Soldering is recommended. All solder should be compatible with the metalization finish noted on the mechanical characteristics paragraph. Solder tip temperature should be above 300°C and pre-heating is recommended for high melting point alloys. Module hermeticity allows deeping-like cleaning process.

ORDERING INFORMATION

POWR	-	YYYY	-	XXXX	-	XXXX	-	XX	-	A
Category		Topology		Output current		Supply voltage		Declination		Rev.
Power Converter		X 2: Half Bridge Rectifier YYY SiC: Silicon Carbide		020A: 20 Amps		600V: 600Volts 1200: 1200Volts		01: SJT 250°C		A

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