

# 3.25 – 5 WATT HYBRID

## DC-DC CONVERTERS



### 28 VOLTS DC INPUT

#### Features

- Rad Hard: TID > 100kRad(Si)
- 2:1 margin: Operates beyond 200kRad TID
- No SEE:LET > 82MeV\*cm<sup>2</sup>/mg
- Proton Resistant: No optocouplers used
- Completely self contained Thick Film Hybrid DC-DC Converter
- For 28 VDC input bus applications
- Built-in EMI input filter meets MIL-STD-461C requirements CE01, CE03, CS01, CS02 and CS06
- "Inhibit-not" function
- Short circuit protection
- Fully isolated input to output
- Single and dual outputs
- 200 kHz operation for low ripple and fast response time
- Full hermetic package, solder seal and seam welded; PC and Chassis mount options

#### Specifications

**INPUT:** 28 VDC nominal

Range: 16 to 50 VDC continuous  
18 to 50 VDC full power

Survives 80 V transients/MIL-STD-704A

#### ISOLATION:

Input to case: 500 VDC  
Input to output: 500 VDC  
Output to case: 100 VDC

#### ENVIRONMENT:

Storage temperature: -55°C to +150°C

Shock: 50 G's

Acceleration: 500 G's

Vibration: 30 G's

Grades EU, L, R & S:

Full Output Power at T<sub>case</sub> = +85°C

Linearly derates to zero at T<sub>case</sub> = +115°C

Grades LE, RE & SE:

Full Power Output at T<sub>case</sub> = +125°C

Linearly derates to zero at T<sub>case</sub> = +135°C

Grades L & LE:

TID up to 45kRad(Si)

No SEE up to 60MeV\*cm<sup>2</sup>/mg

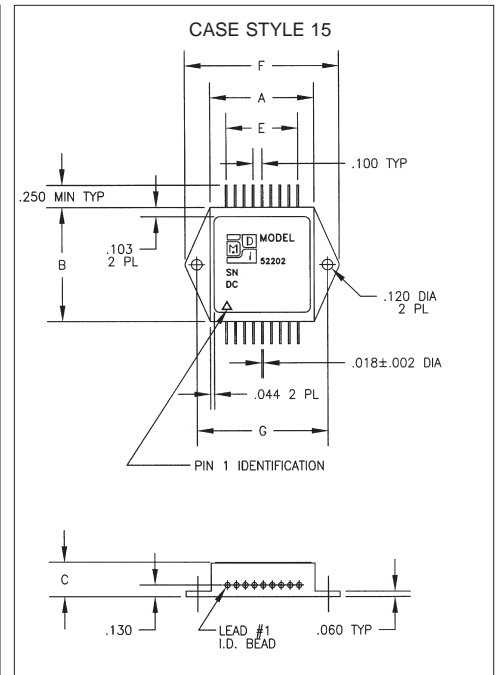
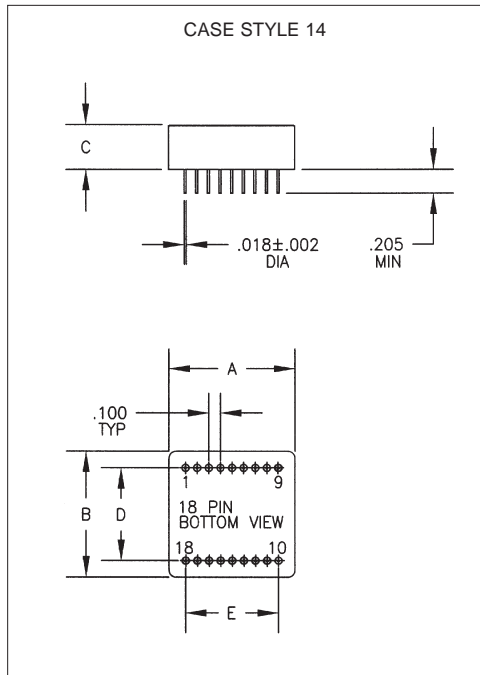
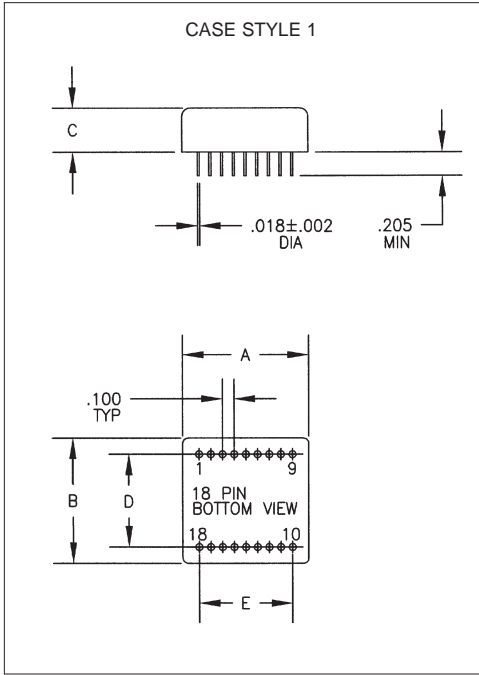
**WEIGHT:** 20 grams typical

## SERIES 53080

SINGLE OUTPUT DEVICES		53080-S02 (2W)			53080-S02.5 (2.5W)			53080-S03.3 (3.3W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	—	+1.9	+2.0	+2.1	+2.4	+2.5	+2.6	+3.2	+3.3	+3.4
Output current	V <sub>in min</sub> — V <sub>in max</sub>	—	—	1A	—	—	1A	—	—	1A
Efficiency	P <sub>out</sub> = max rated load	54%	57%	—	59%	62%	—	64%	67%	—
Line regulation	P <sub>out</sub> = max rated load V <sub>in min</sub> — V <sub>in max</sub>	—	10mV	30mV	—	10mV	30mV	—	10mV	30mV
Load regulation	P <sub>out</sub> = 10% to F.L.	—	10mV	30mV	—	10mV	30mV	—	10mV	30mV
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	25	50	—	30	60	—	30	65
SINGLE OUTPUT DEVICES		53080-S05 (5W)			53080-S05.2 (5W)			53080-S12 (5W)		
Output voltage	—	+4.9	+5.0	+5.1	+5.1	+5.2	+5.3	+11.9	+12.0	+12.1
Output current	V <sub>in min</sub> — V <sub>in max</sub>	—	—	1A	—	—	961mA	—	—	416mA
Efficiency	P <sub>out</sub> = max rated load	69%	72%	—	69%	72%	—	76%	80%	—
Line regulation	P <sub>out</sub> = max rated load V <sub>in min</sub> — V <sub>in max</sub>	—	10mV	50mV	—	10mV	50mV	—	20mV	100mV
Load regulation	P <sub>out</sub> = 10% to F.L.	—	10mV	50mV	—	10mV	50mV	—	20mV	100mV
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	40	85	—	40	85	—	60	150
SINGLE OUTPUT DEVICES		53080-S15 (5W)			53080-S28 (5W)					
Output voltage	—	+14.9	+15.0	+15.1	+27.8	+28.0	+28.2			
Output current	V <sub>in min</sub> — V <sub>in max</sub>	—	—	333mA	—	—	178mA			
Efficiency	P <sub>out</sub> = max rated load	77%	81%	—	76%	80%	—			
Line regulation	P <sub>out</sub> = max rated load V <sub>in min</sub> — V <sub>in max</sub>	—	25mV	125mV	—	50mV	250mV			
Load regulation	P <sub>out</sub> = 10% to F.L.	—	25mV	125mV	—	50mV	250mV			
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	75	180	—	150	350			
DUAL OUTPUT DEVICES		53080-D05 (5W)			53080-D12 (5W)			53080-D15 (5W)		
Output voltage	+I <sub>out</sub> = -I <sub>out</sub>	+4.9	+5.0	+5.1	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1
Output current*	V <sub>in min</sub> — V <sub>in max</sub>	±35mA	—	±500mA	±15mA	—	±208mA	±12mA	—	±166mA
Efficiency	P <sub>out</sub> = max rated load	71%	74%	—	76%	80%	—	77%	81%	—
Line regulation	P <sub>out</sub> = max rated load V <sub>in min</sub> — V <sub>in max</sub>	—	±10mV	±50mV	—	±20mV	±100mV	—	±25mV	±125mV
Load regulation†	P <sub>out</sub> = 10% to F.L.	—	±10mV	±50mV	—	±20mV	±100mV	—	±25mV	±125mV
Output ripple	F.L. BW 2 MHz mV <sub>pp</sub>	—	40	85	—	60	150	—	75	180
Notes: *Up to 90% full power available from either output if rated output power is not exceeded; †balanced load conditions.										
Model No.	Case Style	Pin Count	Mounting							
53080	1	18	Solder Sealed Flangeless PCB Mount							
53080 D	14	18	Seam Weld Flangeless PCB Mount							
53080 TF	15	18	Seam Weld Chassis Mount with Flange							



## PROTON RAD HARD 100K+<sup>®</sup> TECHNOLOGY



### Case Dimensions

Units: inches | millimeters

TOLERANCES: Drawings in Inches All dimensions ±0.01 except F = max, C = +0.01/-0.020 For Custom Packages, Contact Factory

Case Style	A	B	C	D	E	F	G
1	1.080   27.432	1.080   27.432	0.380   9.625	0.800   20.320	0.800   20.320	—   —	—   —
14 D	1.090   27.686	1.090   27.686	0.380   9.625	0.800   20.320	0.800   20.320	—   —	—   —
15 TF	1.160   29.464	1.283   32.588	0.380   9.625	—   —	0.800   20.320	1.754   44.552	1.460   37.084

Note: Case style 1 reserved for EU grade converters.

### Pin Outs

#### 53080-SXX output < 24 VDC

Pin 1 + Input	Pin 10 N/C
Pin 2 + Input	Pin 11 N/C
Pin 3 N/C	Pin 12 N/C
Pin 4 Case	Pin 13 N/C
Pin 5 N/C	Pin 14 N/C
Pin 6 Main Out Ret	Pin 15 Inhibit Not
Pin 7 Main Out Ret	Pin 16 N/C
Pin 8 N/C	Pin 17 Input Ret
Pin 9 Main Output	Pin 18 Input Ret

#### 53080-SXX output ≥ 24 VDC

Pin 1 + Input	Pin 10 N/C
Pin 2 + Input	Pin 11 N/C
Pin 3 N/C	Pin 12 N/C
Pin 4 Case	Pin 13 N/C
Pin 5 Main Out Ret	Pin 14 N/C
Pin 6 N/C	Pin 15 Inhibit Not
Pin 7 N/C	Pin 16 N/C
Pin 8 Main Output	Pin 17 Input Ret
Pin 9 N/C	Pin 18 Input Ret

#### 53080-DXX

Pin 1 + Input	Pin 10 N/C
Pin 2 + Input	Pin 11 N/C
Pin 3 N/C	Pin 12 N/C
Pin 4 Case	Pin 13 N/C
Pin 5 - Dual Output	Pin 14 N/C
Pin 6 Output Com	Pin 15 Inhibit Not
Pin 7 Output Com	Pin 16 N/C
Pin 8 + Dual Output	Pin 17 Input Ret
Pin 9 N/C	Pin 18 Input Ret

Specifications subject to change.

#### GRADE LEVELS:

Please specify **GRADE LEVEL** for your application. EU grade units will be shipped if no option is specified.

EU Engineering Units  
 L 45 K, +85°C military/aerospace  
 LE 45 K, +125°C military/aerospace

R 100 K+™, +85°C military/aerospace  
 RE 100 K+™, +125°C military/aerospace  
 S 100 K+™, +85°C space  
 SE 100 K+™, +125°C space

