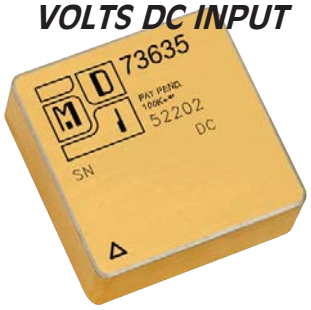
PROGRAMMABLE INRUSH LIMITER HYBRID MODULE

PROTON RAD HARD 100K+® TECHNOLOGY

28, 50, 70, 100, 120 VOLTS DC INPUT



Series *3635	
MODEL	INPUT VOLTAGE
53635	28 VDC (18 - 50 VDC)
73635	50 VDC (30 - 75 VDC)
83635	70 VDC (55 - 90 VDC)
93635	100 VDC (80 - 120 VDC)
33635	120 VDC (86 - 158 VDC)

Series Features

- Rad Hard: TID > 100kRad(Si)
- 2:1 margin: Operates beyond 200kRad TID
- No SEE:LET > 82MeV*cm^2/mg
- Proton Resistant: No optocouplers used
- Overall inrush limiter for downstream converters
- Effectively controls the power input and manages peak inrush current when series connected ahead of downstream DC-DC converters.
- Sequences the inhibit of downstream DC-DC converters until their inputs are fully charged and the power bus has achieved steady state range.
- Programmable current limit permits customizing the output ramp to user preference and system requirements.
- Precision constant current output, stable with temperature, bus voltage and radiation
- Undervoltage Lockout
- Thermal mass for output FET to integrate turn on thermal pulse
- Serves single or multiple converters.

*Specifications *3635*

INPUT VOLTAGE RANGE:

See Table: 1

Input inhibit not pin open circuit voltage: 5 VDC

Input inhibit pin short circuit current: 100 microamperes

Output inhibit pin open circuit voltage withstand 60 VDC

Output inhibit pin short circuit current withstand: 10 mA

CASE TEMPERATURE RANGE:

Storage: -65°C to 150°C

Operating: -55°C to 85°C (RE)

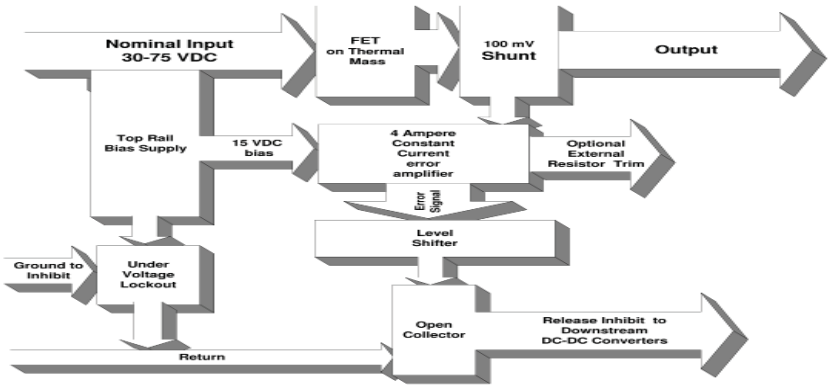
Operating: -55°C to 125°C (SE)

WEIGHT: 45 grams maximum

Model Number	Application Bus Voltage	Application Input Voltage Range	Maximum Recommended Input Voltage	Absolute Maximum Input Range	Current Limit	Undervoltage Lockout	Initial On Time	Leakage Current at Max Recommended Input Voltage	Volt Drop at Rated Current	Quiescent Current at Nominal Input
	Vdc	Vdc	Vdc	Vdc	A	V	uSec	uA	V	mA
33635	120	86-158	158	-0.6-250	1.5	80	500	20	1	2.5
93635	100	80-120	120	-0.6-200	1.5	75	500	20	1	2.5
83635	70	55-90	120	-0.6-200	1.5	50	350	20	1	2.5
73635	50	30-75	75	-0.6-100	4	25	250	200	0.5	3.5
53635	28	18-50	75	-0.6-100	4	15	250	200	0.5	3.5

TABLE 1: Inrush Limiter Ratings and Static Characteristics 25°C

- Application Bus Voltage in the commonly available satellite bus voltage ranges. These ratings harmonize with the input voltage ranges for MDI 5000, 7000, 8000 and 9000 series converters Model 33635 designed for International Space Station and Orion MPCV applications
- Maximum Recommended Input Voltage is the maximum factory recommendation considering single event radiation effects
- Absolute Maximum Input Range - No damage
- Current Limit - Maximum limit current
- Undervoltage Lockout - minimum nominal value
- Initial On Time - Typical values, via Inhibit Input release
- Leakage Current at Max Recommended Input Voltage OFF State - Typical values
- Volt Drop - Maximum values at limit current
- Quiescent Current at Nominal Input - Typical values, input inhibited



*3635 Theory of Operation

A nominal 15VDC bias voltage is developed relative to the positive input rail.

This bias voltage powers a constant current error amplifier. The input signal for the error amp is derived from a precision shunt on the output of the inrush limiter. The limit is factory set to 4 amperes, but a provision is afforded the user to adjust it via an external trim resistor. The current gain of the amplifier is largely invariant over line, load, temperature, radiation and life.

An undervoltage lockout is provided so that the output will not start until the lower limit of input voltage is reached. This ensures that the bus is within operating range before downstream converters begin drawing current. A slight hysteresis is built in to prevent chatter.

An inhibit interlock is provided for downstream converters so that they remain inhibited OFF until the inrush to their input capacitors is completed. This reduces current surges and minimizes dissipation in the inrush limiter FET, itself fully saturated before downstream converts begin active switching. The error signal of the constant current amplifier is level shifted to ground as the FET achieves saturation, releasing the clamp on the open collector inhibit output transistor.

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		
R	100K+® +85°C Military/Aerospace	S	100K+® +85°C Space
RE	100K+® +125°C Military/Aerospace	SE	100K+® +125°C Space

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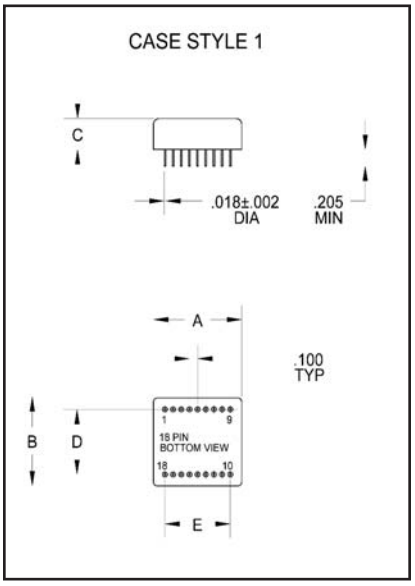
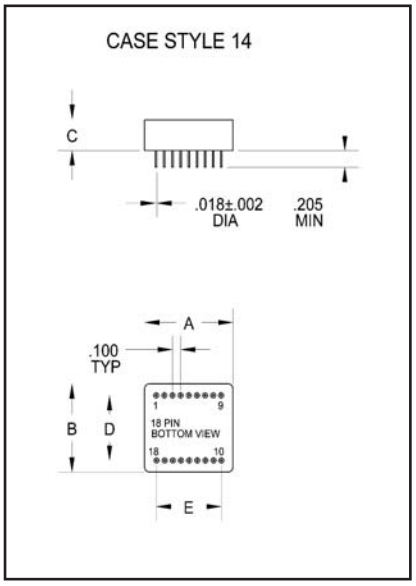
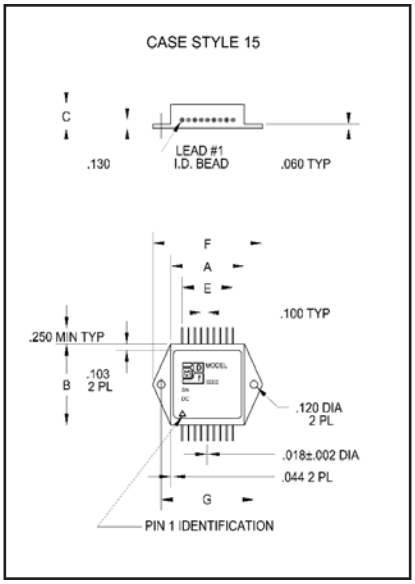
PROGRAMMABLE INRUSH LIMITER HYBRID MODULE







Model No.	Case Style	Pin Count	Mounting
*3635	1	18	Solder Sealed Flangeless PCB Mount
*3635 D	14	18	Seam Weld Flangeless PCB Mount
*3635 TF	15	18	Seam Weld Chassis Mount with Flange

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	
1	1.080 | 27.432	1.080 | 27.432	0.380 | 9.652	0.800 | 20.320	0.800 | 20.320	— | —	— | —	
14 D	1.090 | 27.686	1.090 | 27.686	0.380 | 9.652	0.800 | 20.320	0.800 | 20.320	— | —	— | —	
15 TF	1.160 | 29.464	1.283 | 32.588	0.380 | 9.652	— | —	0.800 | 20.320	1.754 | 44.552	1.460 | 37.084	

Pin Out Chart					
Pin 1	N/C	Pin 7	N/C	Pin 13	N/C
Pin 2	N/C	Pin 8	Input Inhibt Not	Pin 14	Output
Pin 3	N/C	Pin 9	Inhibit Common Rtn.	Pin 15	Output
Pin 4	Case	Pin 10	Output Inhibit Not	Pin 16	N/C
Pin 5	N/C	Pin 11	N/C	Pin 17	Input
Pin 6	N/C	Pin 12	Rext	Pin 18	Input