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SM 800 with Power Sink Option

2 Quadrant operation: Source and Sink

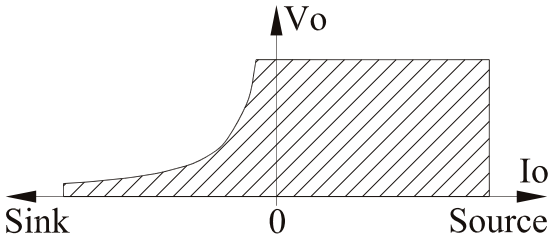
order code: SM 7.5-80 - P245
SM 18-50 - P246
SM 70-AR-24 - P247
SM 400-AR-4 - P248

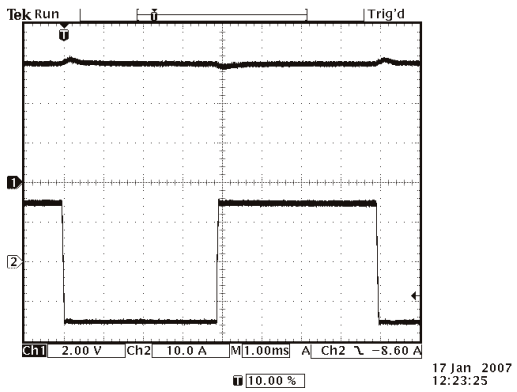
SM70-AR-24

The power sink option permits the power supply to absorb bursts of power fed back to the unit. An internal module senses the status of power supply and sinks current across the output terminals, thus maintaining a constant output voltage.

The Power Sink Option allows a faster response when the power supply is step programmed to a lower voltage at small load conditions.

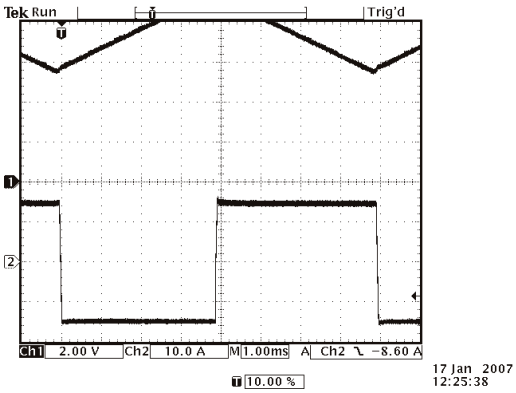
- Can absorb 140 W peak power
- Maintains output voltage setting regardless output power is positive or negative (source and sink)
- Ideal solution for supplying electric motors with PWM-speed control. These systems often return power to the power supply during a braking action
- Ideal solution for ATE systems requiring fast down programming at no load conditions
- Generation Automotive waveforms (fast)





SM18-50 **with** Power Sink Option
Current – 15 A means the load delivers 15 A to the power supply (sink operation)

Upper trace: output voltage
Lower trace: output current
(current switching from +15 A to –15 A at Vo=6 V)

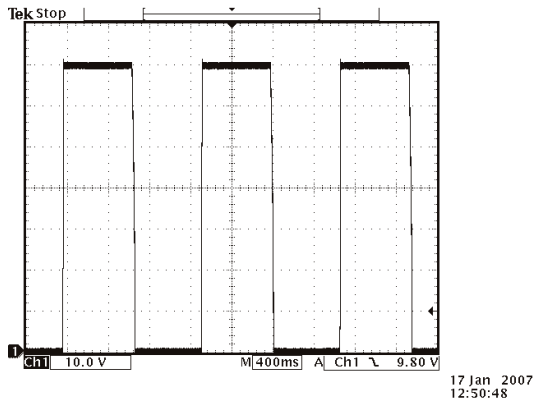


SM18-50 **without** Power Sink Option
*The output voltage is out of control when the output current is **negative***

Upper trace: output voltage
Lower trace: output current
(current switching from +15 A to –15 A at Vo=6 V)

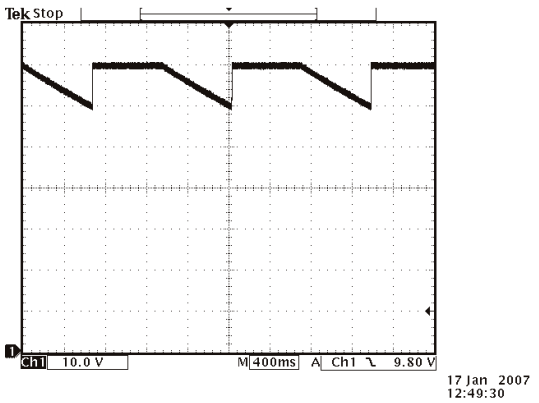
Power Sink Specifications	SM7.5-80 ***option P245***	SM18-50 ***option P246***	SM70-AR-24 ***option P247***	SM400-AR-4 ***option P248***
Sink Power Rating max. peak power (electronically limited) max. continuous power ($T_{amb.}$ = 25 °C) max. continuous power ($T_{amb.}$ = 50 °C)	140 W 140 W 110 W			
Max. duration Sink Peak Power P_{sink} = 140 W, $T_{amb.}$ = 25 °C	continuous			
Duty Cycle for use at Peak Power P_{sink} = 140 W, $T_{amb.}$ = 25 °C	100%			
Max. Sink Current (V_o >= 2 V and P <= 140 W)	Limited at 36 A	Limited at 36 A	Limited at 25 A	Limited at 5 A
Protection	Electronic Power Limit (140 W) limits the current. The temperature of the power sink is fan controlled and the circuit shuts down in case of thermal overload.			
Recovery time / Deviation Vo = 6 V, I_o: +30 A → –10 A recovery within 100 mV / deviation:	di/dt=–0.7 A/µs 200 µs/0.15 V	di/dt=–0.7 A/µs 400 µs/0.25 V	-	-
Vo = 15 V, I_o: +20 A → –4 A recovery within 100 mV / deviation:	-	di/dt=–0.5 A/µs 700 µs/0.20 V	di/dt=–0.5 A/µs 700 µs/0.85 V	-
Vo = 24 V, I_o: +15 A → –2 A recovery within 100 mV / deviation:	-	-	di/dt=–0.4 A/µs 800 µs/0.75 V	-
Vo = 60 V, I_o: +9 A → –1 A recovery within 100 mV / deviation:	-	-	di/dt=–0.3 A/µs 4.0 ms/0.65 V	-
Vo = 150 V, I_o: +3 A → –0.5 A recovery within 1.0 V / deviation:	-	-	-	di/dt=–0.1 A/µs 800 µs/4.0 V
Vo = 350 V, I_o: +1 A → –0.1 A recovery within 1.0 V / deviation:	-	-	-	di/dt=–0.05 A/µs 2.0 ms/2.7 V
(load current switches from positive to negative)	*note: values are typical*	*note: values are typical*	*note: values are typical*	*note: values are typical*
Programming Down Speed Fall time at **no load** (90 - 10%) Fall time at no load *without Power Sink*	(7.5→0 V) 6.5 ms 5 s	(18→0 V) 17 ms 6 s	(70→0 V) 25 ms 4 s	(400→0 V) 19 ms 4.5 s
Unit with Fast Programming Option Fall time at **no load** (90 - 10%) Fall time at no load *without Power Sink*	***P245+P250*** *specifications not yet available*	***P246+P251*** *specifications not yet available*	***P247+P252*** 1 ms 760 ms	***P248+P253*** *specifications not yet available*

Notes: • *The maximum sink current at higher voltages will not be the maximum specified current due to the power limit. For example at 30 V the maximum sink current will only be 4.7 A (30 V x 4.7 A = 140 W = maximum power).*
• *A higher sink current than the maximum current will cause the output voltage to rise.*



SM70-AR-24 **with** Power Sink Option
fast discharge of output capacitors by the power sink circuit

trace: output voltage
Voltage Programming Speed at NO LOAD



SM70-R-24 **without** Power Sink Option
slow response time during voltage step down, time needed to discharge the output capacitors

trace: output voltage
Voltage Programming Speed at NO LOAD