

**MM158**

*PRELIMINARY*

**DISCHARGE: 200 A**  
**CHARGE: 50 A**  
**SHORT: 400A**

**Features**

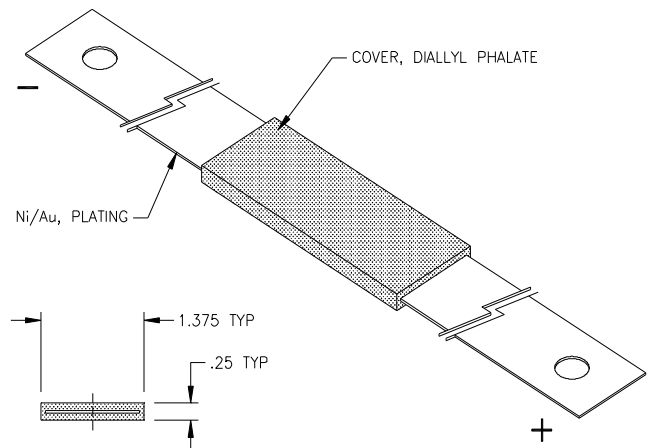
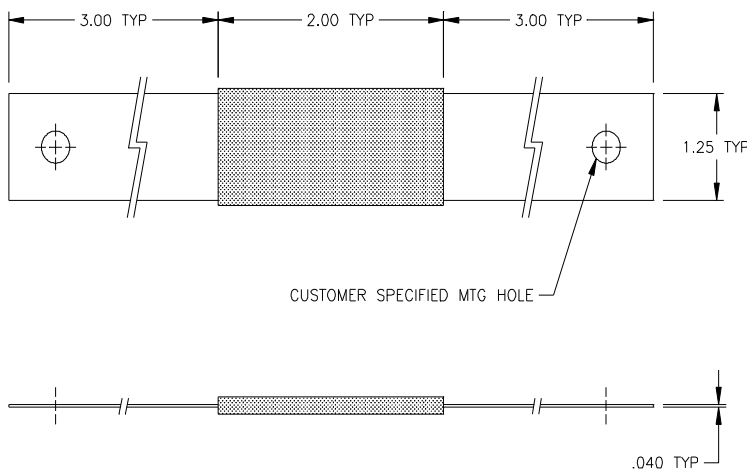
- Designed for use with NiH battery cells on spacecraft
- Thermally activated non-dissipative permanent battery bypass
- Charge/discharge diodes are replaced by a permanent low resistance short to bypass cell after open failure
- Compact, rugged construction offers weight and cost savings
- Can modify leads, available in different lengths
- Radiation tolerant to 300 Mrad total dose
- Discrete diodes screened and qualified per Microsemi PS11.50
- Multiple shorting points for redundant short activation

**BATTERY CELL BYPASS/SHORTING MODULE**

**Maximum Ratings @ 25°C (unless otherwise specified)**

PART NUMBER	SYMBOL	MAX.	UNIT
Discharge Current	ID	200	Amps
Charge Current	IC	50	Amps
Non-Rep Peak Surge Current (discharge)	IDSM	1000	Amps
Non-Repetitive Peak Surge Current (charge)	ICSM	350	Amps
Operating and Storage Junction Temperature Range	Tj Tstg	-55 to +175	°C
Thermal resistance, junction to lead, discharge, measured at lead adjacent to cover	RθjLD	0.5	°C/W
Thermal resistance, junction to lead, charge, measured at lead adjacent to cover	RθjLC	1.0	°C/W

**Mechanical Outline**



## Electrical Parameters, DISCHARGE circuit @ 25°C (unless otherwise specified)

DESCRIPTION	SYMBOL	CONDITIONS	MIN	TYP.	MAX	UNIT
Forward Voltage, note 1	VD1	IF= 10 A		780	830	mV
Forward Voltage, note 1	VD2	IF= 50 A		845	900	mV
Forward Voltage, note 1	VD3	IF= 100 A		875	940	mV
Forward Voltage, note 1	VD4	IF= 200 A		905	975	mV
Forward Voltage, note 1	VD5	IF= 400 A		1100		mV
Forward Voltage, note 1	VD6	IF= 200 A, TA= -55°C		985	1070	mV
Forward Voltage, note 1	VD7	IF= 200 A, TA= 125°C		790	865	mV

note: see MSARS200S200L data sheet for individual characteristics

## Electrical Parameters, CHARGE circuit @ 25°C (unless otherwise specified)

DESCRIPTION	SYMBOL	CONDITIONS	MIN	TYP.	MAX	UNIT
Forward Voltage, note 1	VC1	IF= 10 mA	-	1.72	-	V
Forward Voltage, note 1	VC2	IF= 50 mA	-	1.9	-	V
Forward Voltage, note 1	VC3	IF= 100 mA	1.85	2.0	2.1	V
Forward Voltage, note 1	VC4	IF= 500 mA	-	2.15	-	V
Forward Voltage, note 1	VC5	IF= 5 A		2.43	2.52	V
Forward Voltage, note 1	VC6	IF= 10 A		2.5	2.65	V
Forward Voltage, note 1	VC7	IF= 25 A		2.6	2.8	V
Forward Voltage, note 1	VC8	IF= 50 A		2.75	2.95	V
Forward Voltage, note 1	VC9	IF= 25 A, TA= -55°C		2.9	-	V
Forward Voltage, note 1	VC10	IF= 25 A, TA= 125°C		2.3		V

note: see MSARS50S20Y data sheet for individual characteristics

## Electrical Parameters, after cell fails open @ full temperature range

DESCRIPTION	SYMBOL	CONDITIONS	MIN	TYP.	MAX	UNIT
Shorted Current	Ishort	t=dc	400			A
Shorted Current (pulse)	IPshort	t=300ms	1000			A
Resistance	Rshort	End to end of leads		250	300	uΩ
Shorted Cycling	Cshort	Discharge=250A Charge=50A t=2 hrs min	50,000			cycles
Shorting Time	tshort	at full load			TBD	secs

### Notes

(1) Pulse test, t ≤ 300 ms, duty cycle ≤ 2%