

# MOSFET MODULE Single 800A/150V

# PHM8001

## OUTLINE DRAWING

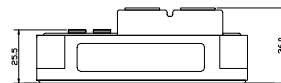
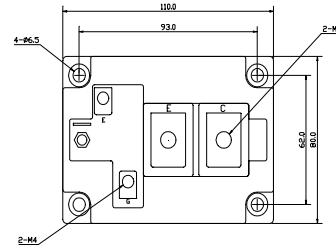
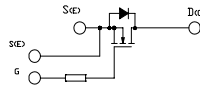
### FEATURES

- \* Trench Gate MOS FET Module
- \* Super Low Rds(ON) 1.4 milliohms(@800A)
- \* With Fast Recovery Source-Drain Diode

### TYPICAL APPLICATIONS

- \* Chopper Control For FORKLIFTS

### Circuit



Approximate Weight : 650g

### MAXMUM RATINGS

Ratings		Symbol	PHM8001		Unit
Drain-Source Voltage (V <sub>GS</sub> =0V)		V <sub>DSS</sub>	150		V
Gate - Source Voltage		V <sub>GSS</sub>	+/- 20		V
Continuous Drain Current	Duty=50%	I <sub>D</sub>	800 (T <sub>C</sub> =25°C)		A
	D.C.		640 (T <sub>C</sub> =25°C)		
Pulsed Drain Current		I <sub>DM</sub>	1,600 T <sub>C</sub> =25°C		A
Total Power Dissipation		P <sub>D</sub>	2,650 T <sub>C</sub> =25°C		W
Operating Junction Temperature Range		T <sub>JW</sub>	-40 to +150		°C
Storage Temperature Range		T <sub>stg</sub>	-40 to +125		°C
Isolation Voltage (Terminals to Base AC, 1 min.)		V <sub>ISO</sub>	2,500		V
Mounting Torque	Module Base to Heatsink	F <sub>TOR</sub>	3.0		N•m
	Gate Terminals		M4	1.4	
	Bus Bar to Main Terminals		M8	10.5	

### ELECTRICAL CHARACTERISTICS (@T<sub>C</sub>=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =V <sub>DSS</sub> , V <sub>GS</sub> =0V	-	-	4.8	mA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =+/- 20V, V <sub>DS</sub> =0V	-	-	4.8	μA
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =16mA	1.0	2.0	3.2	V
Static Drain-Source On-Resistance	r <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =800A	-	1.15	1.4	m-ohm
Drain-Source On-Voltage	V <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =800A	-	1.10	1.25	V
Forward Transconductance	g <sub>s</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =800A	-	-	-	S
Input Capacitance	C <sub>ies</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz	-	165	-	nF
Output Capacitance	C <sub>oss</sub>		-	20	-	nF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	20	-	nF
Rise Time	t <sub>r</sub>	V <sub>DD</sub> = 80V	-	500	-	ns
Turn-On Delay Time	t <sub>d(on)</sub>	I <sub>D</sub> =400A	-	880	-	
Fall Time	t <sub>f</sub>	V <sub>GS</sub> = -5V, +10V	-	180	-	
Turn-Off Delay Time	t <sub>d(off)</sub>	R <sub>G</sub> = 0.75 ohm	-	1,300	-	

### FREE WHEELING DIODES RATINGS & CHARACTERISTICS (T<sub>C</sub>=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Continuous Source Current	I <sub>S</sub>	Duty=50%	-	-	800	A
		D.C. (Terminal Temperature=80°C)	-	-	650	
Pulsed Source Current	I <sub>SM</sub>	-	-	-	1,600	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =800A	-	1.10	1.76	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =800A, -dis/dt=1,600A/μs	-	130	-	ns

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction to Case	R <sub>th(j-c)</sub>		-	-	0.047	°C/W
Thermal Resistance, Case to Heatsink	R <sub>th(c-h)</sub>	Mounting surface flat, smooth, and greased	-	-	0.035	°C/W

**PHM8001** OUTLINE DRAWING (Dimensions in mm)

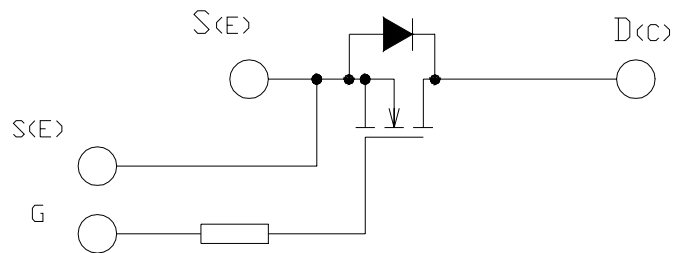
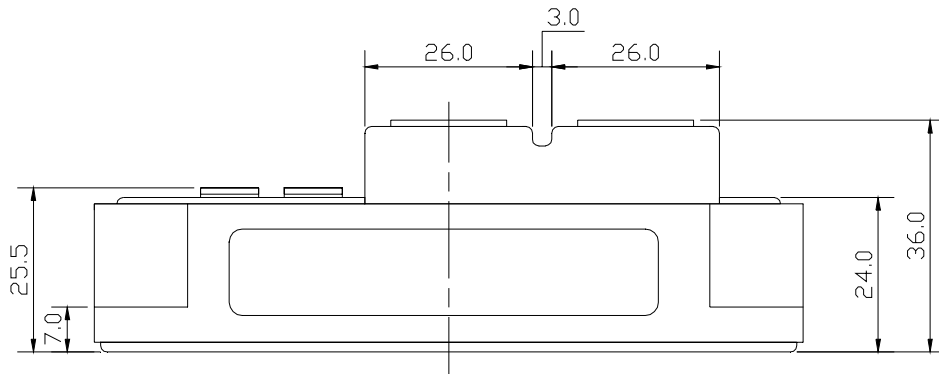
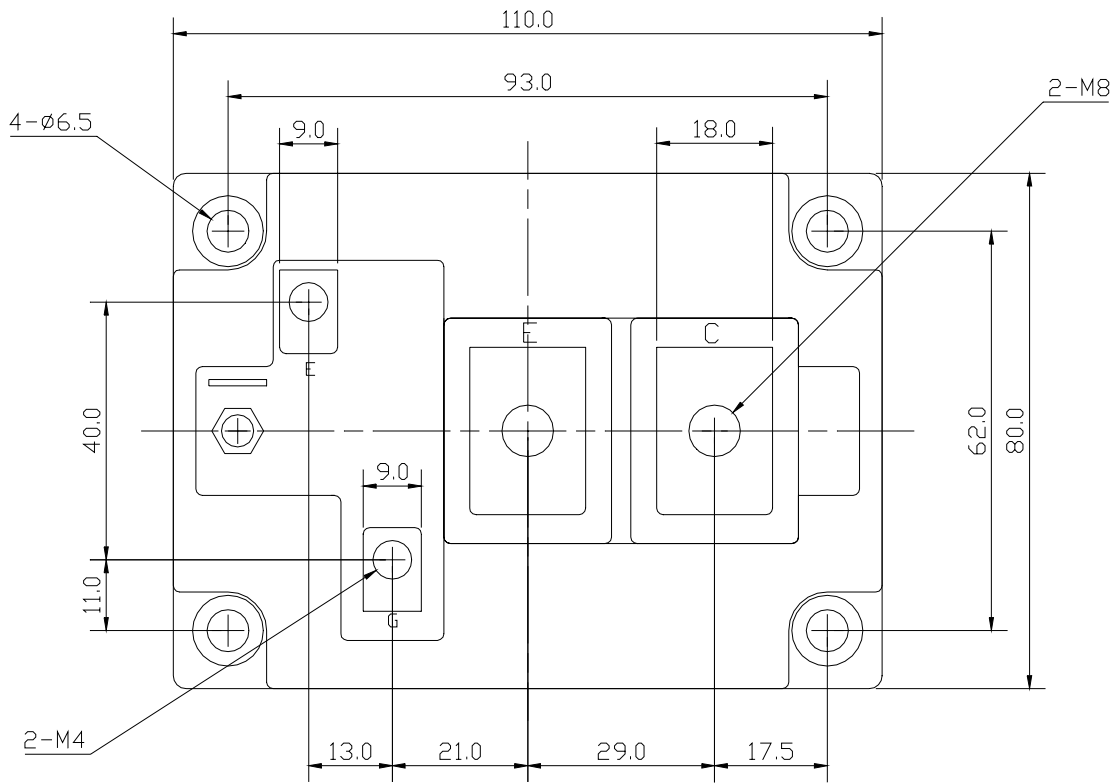


Fig.1- Output Characteristics (Typical)

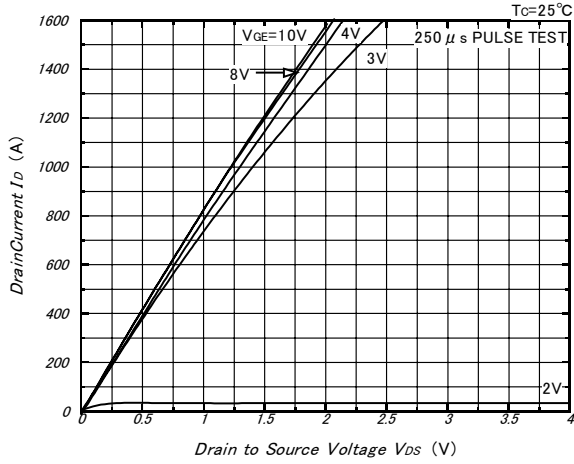


Fig.2- Drain to Source On Voltage vs. Gate to Source Voltage (Typical)

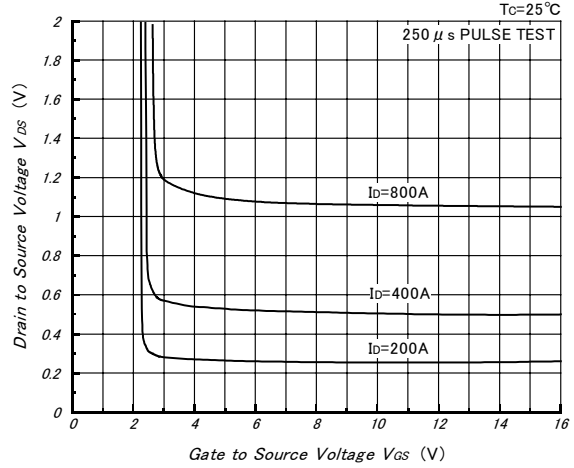


Fig.3- Drain to Source On Voltage vs. Junction Temperature (Typical)

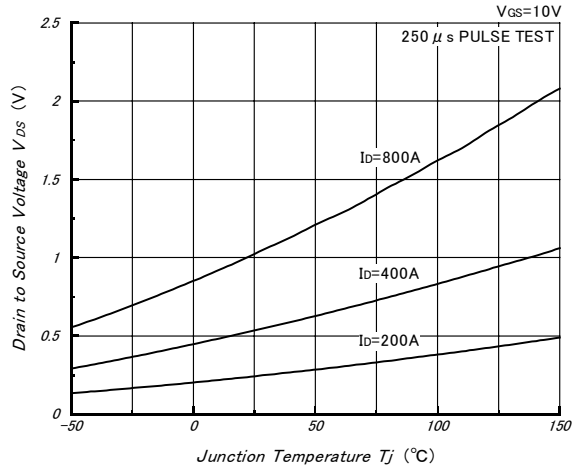


Fig.4- Capacitance vs. Drain to Source Voltage (Typical)

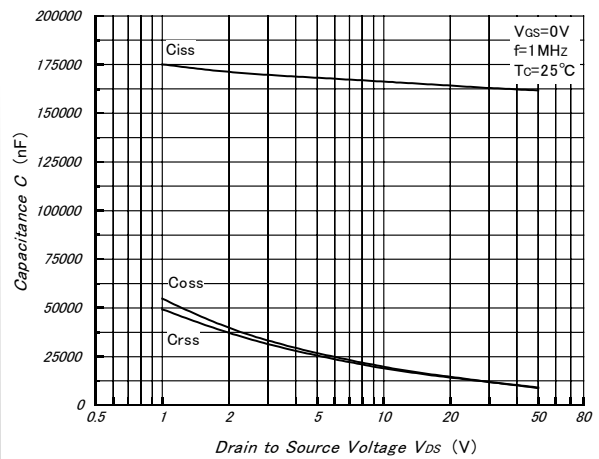


Fig.5- Gate Charge vs. Gate to Source Voltage (Typical)

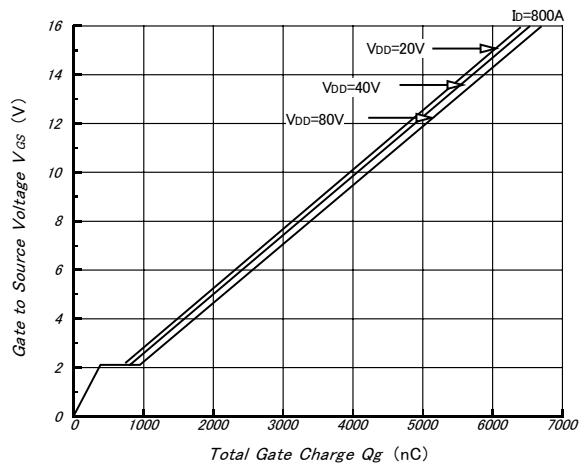


Fig.6- Series Gate Impedance vs. Switching Time (Typical)

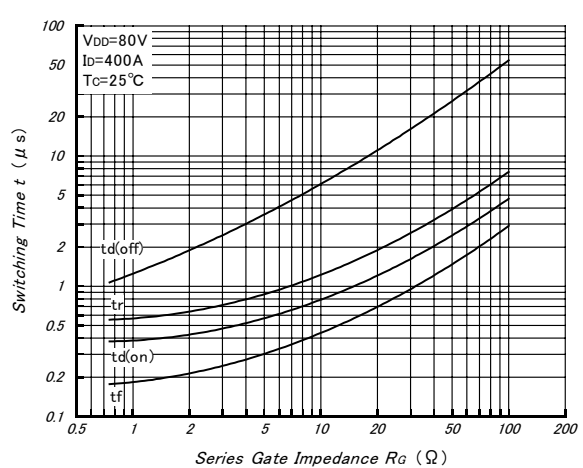


Fig.7- Drain Current vs. Switching Time (Typical)

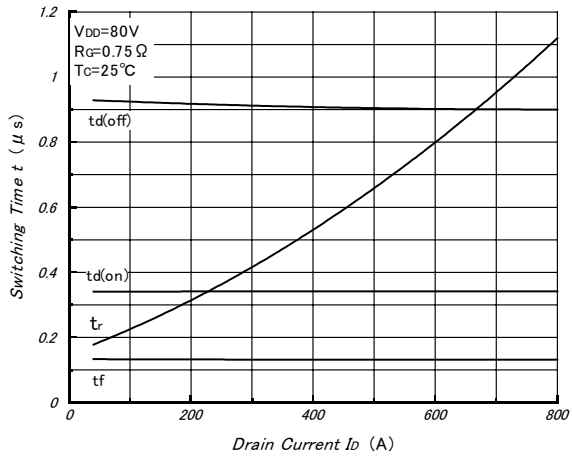


Fig.8- Source to Drain Diode Forward Characteristics (Typical)

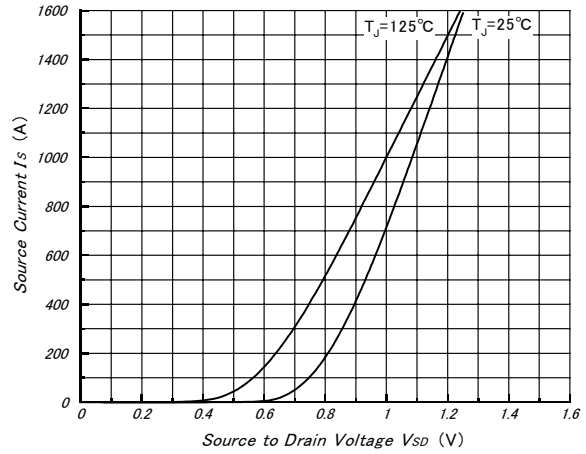


Fig.9- Reverse Recovery Characteristics (Typical)

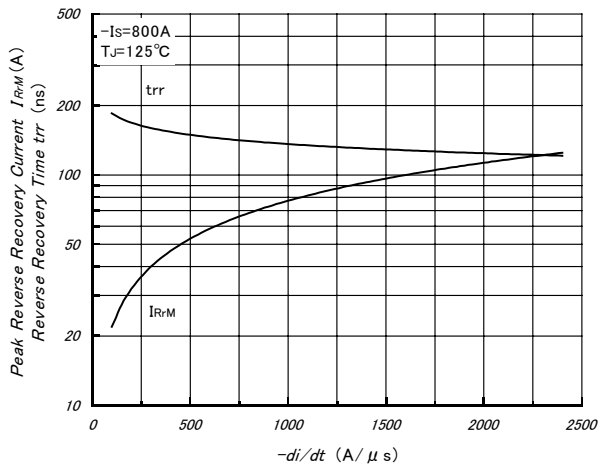


Fig.10- Maximun Transient Thermal Impedance

