

# MOSFET MODULE Single 800A/150V

# PHM8001

## OUTLINE DRAWING

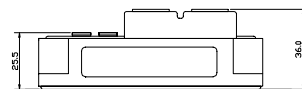
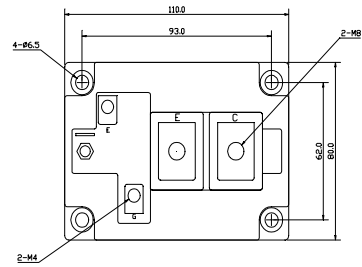
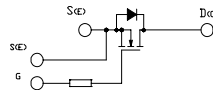
### FEATURES

- \* 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 ( $V_{GS}=0V$ )		$V_{DSS}$	150		V
Gate - Source Voltage		$V_{GSS}$	+/- 20		V
Continuous Drain Current	Duty=50%	$I_D$	800 ( $T_C=25^\circ C$ )		A
	D.C.		640 ( $T_C=25^\circ C$ )		
Pulsed Drain Current		$I_{DM}$	1,600 ( $T_C=25^\circ C$ )		A
Total Power Dissipation		$P_D$	2,650 ( $T_C=25^\circ C$ )		W
Operating Junction Temperature Range		$T_{jw}$	-40 to +150		$^\circ C$
Storage Temperature Range		$T_{stg}$	-40 to +125		$^\circ C$
Isolation Voltage (Terminals to Base AC, 1 min.)		$V_{ISO}$	2,500		V
Mounting Torque	Module Base to Heatsink	$F_{TOR}$	3.0		N•m
	Gate Terminals		M4	1.4	
	Bus Bar to Main Terminals		M8	10.5	

### ELECTRICAL CHARACTERISTICS (@ $T_C=25^\circ C$ unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=V_{DSS}, V_{GS}=0V$	-	-	4.8	mA
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	4.8	$\mu A$
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=16mA$	1.0	2.0	3.2	V
Static Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS}=10V, I_D=800A$	-	1.15	1.4	m-ohm
Drain-Source On-Voltage	$V_{DS(on)}$	$V_{GS}=10V, I_D=800A$	-	1.10	1.25	V
Forward Transconductance	$g_{fs}$	$V_{DS}=15V, I_D=800A$	-	-	-	S
Input Capacitance	$C_{ies}$	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	-	165	-	nF
Output Capacitance	$C_{oss}$		-	20	-	nF
Reverse Transfer Capacitance	$C_{rss}$		-	20	-	nF
Rise Time	$t_r$	$V_{DD}=80V$	-	500	-	ns
Turn-On Delay Time	$t_{d(on)}$	$I_D=400A$	-	880	-	
Fall Time	$t_f$	$V_{GS}=-5V, +10V$	-	180	-	
Turn-Off Delay Time	$t_{d(off)}$	$R_G=0.75\ ohm$	-	1,300	-	

### FREE WHEELING DIODES RATINGS & CHARACTERISTICS ( $T_C=25^\circ C$ )

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Continuous Source Current	$I_S$	Duty=50%	-	-	800	A
		D.C. (Terminal Temperature=80 $^\circ C$ )	-	-	650	
Pulsed Source Current	$I_{SM}$	-	-	-	1,600	A
Diode Forward Voltage	$V_{SD}$	$I_S=800A$	-	1.10	1.76	V
Reverse Recovery Time	$t_{rr}$	$I_S=800A, -dis/dt=1,600A/\mu s$	-	130	-	ns

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	-	-	-	0.047	$^\circ C/W$
Thermal Resistance, Case to Heatsink	$R_{th(c-h)}$	Mounting surface flat, smooth, and greased	-	-	0.035	

PHM8001 OUTLINE DRAWING (Dimensions in mm)

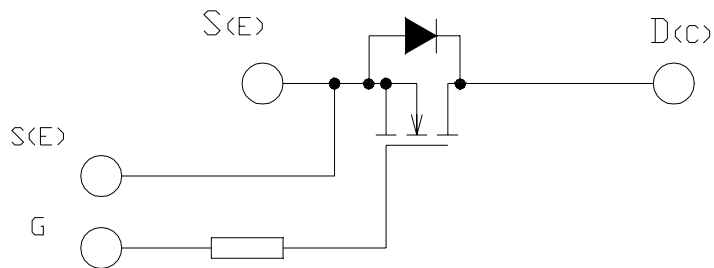
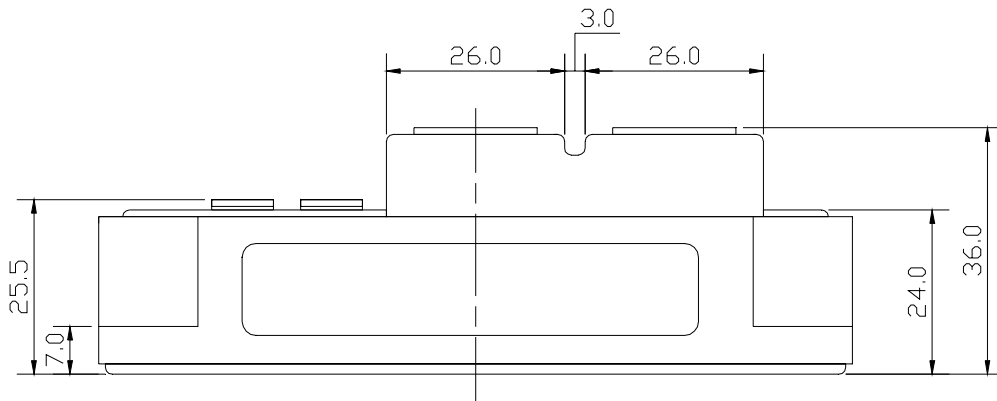
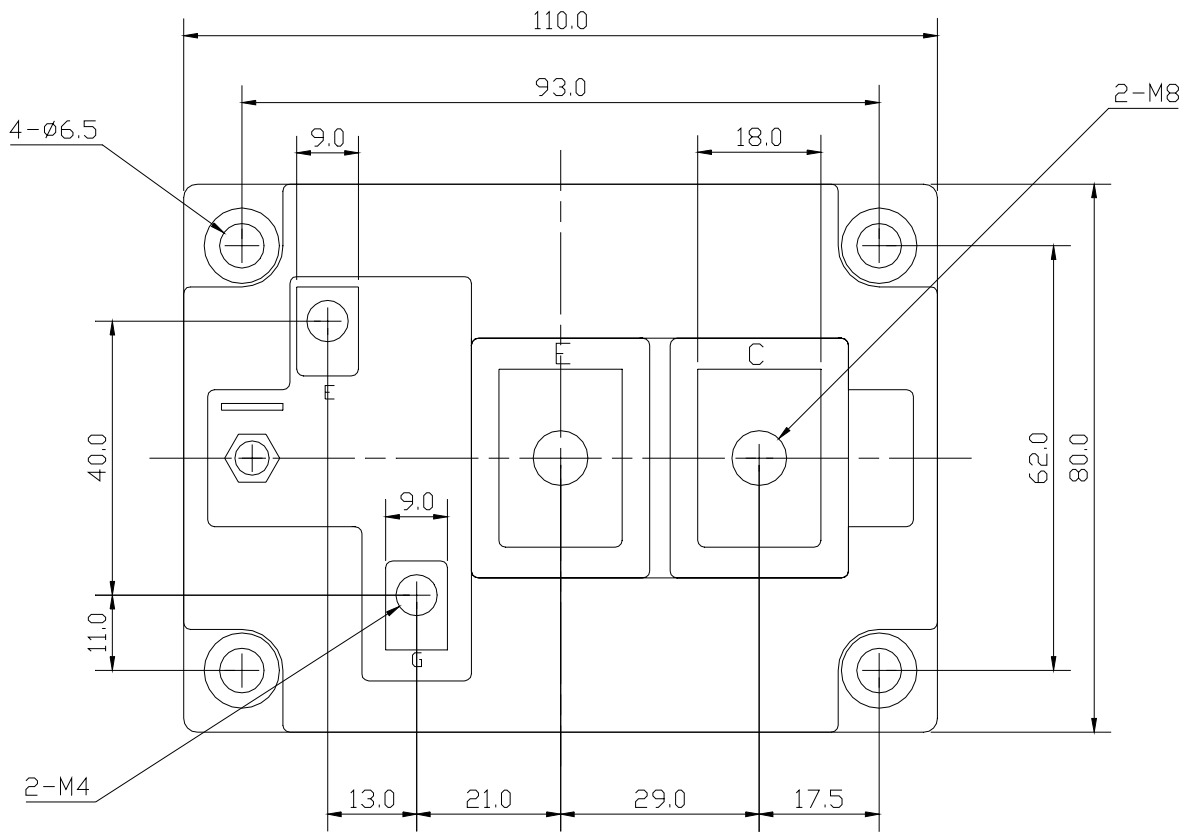


Fig.1- Output Characteristics (Typical)

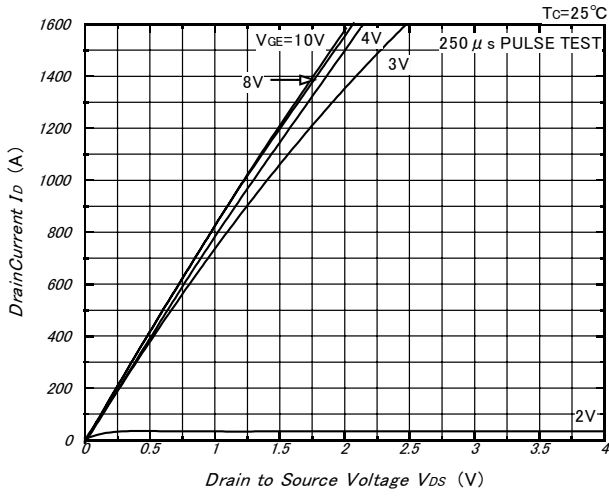


Fig.2- Drain to Source On Voltage vs. Gate to Source Voltage (Typical)

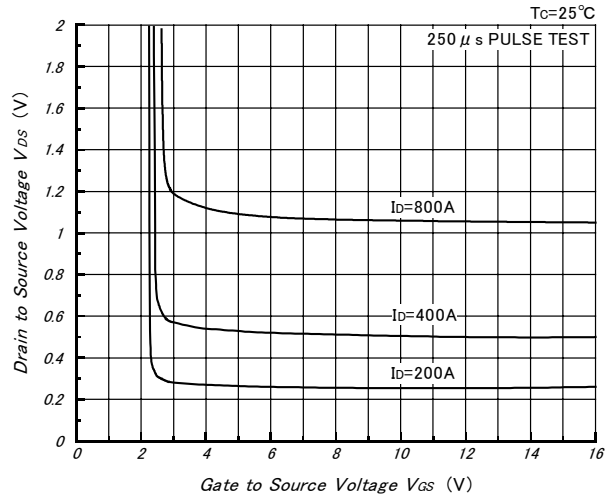


Fig.3- Drain to Source On Voltage vs. Junction Temperature (Typical)

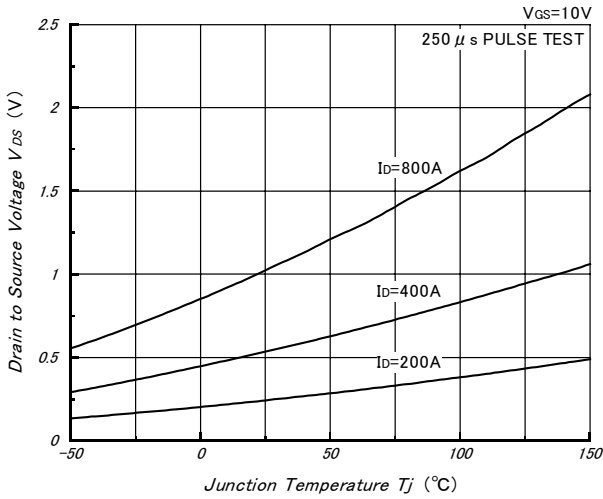


Fig.4- Capacitance vs. Drain to Source Voltage (Typical)

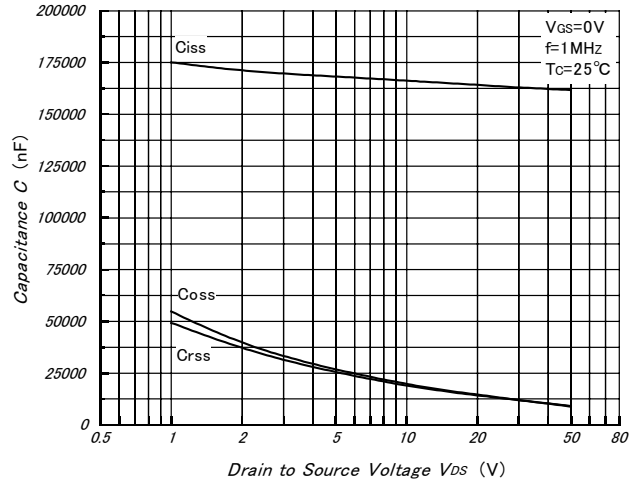


Fig.5- Gate Charge vs. Gate to Source Voltage (Typical)

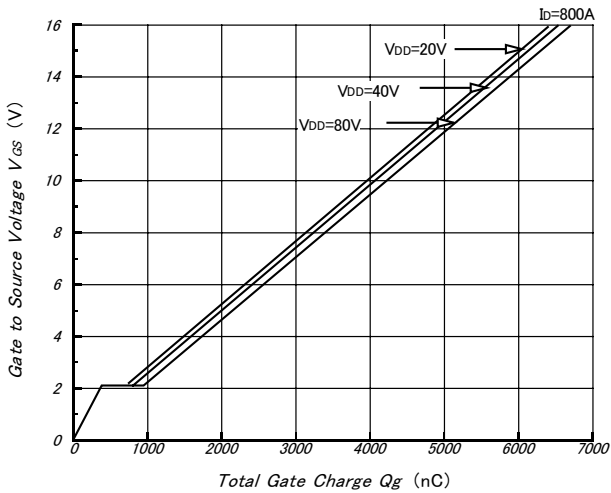


Fig.6- Series Gate Impedance vs. Switching Time (Typical)

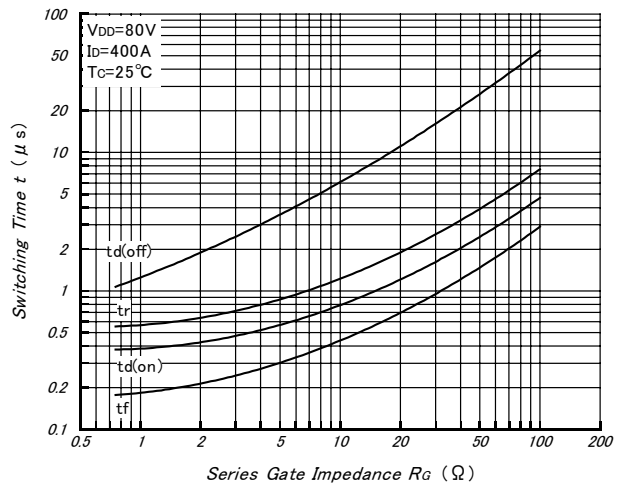


Fig.7- Drain Current vs. Switching Time (Typical)

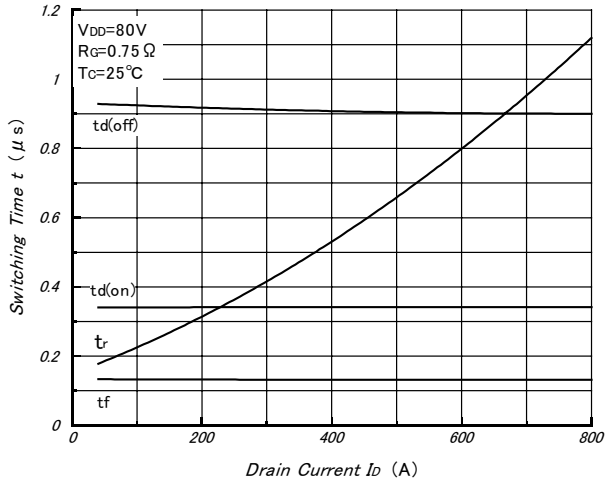


Fig.8- Source to Drain Diode Forward Characteristics (Typical)

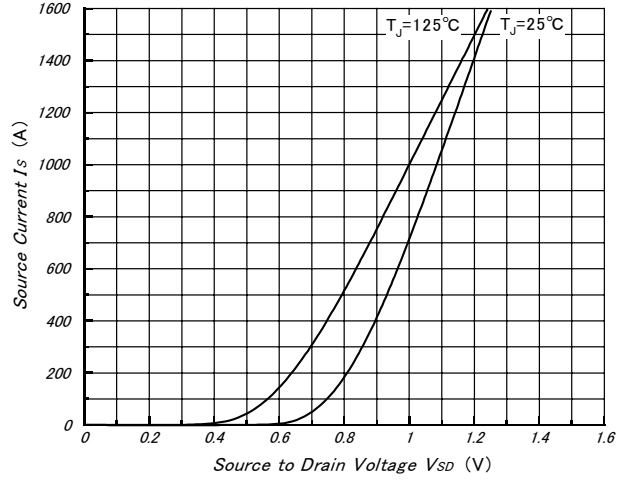


Fig.9- Reverse Recovery Characteristics (Typical)

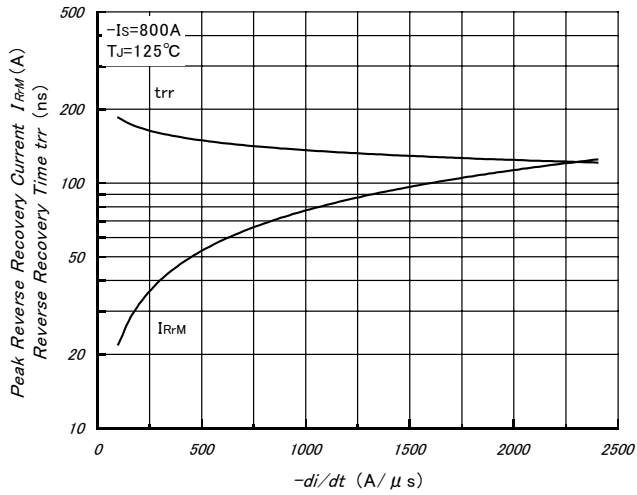


Fig.10- Maximum Transient Thermal Impedance

