

MOSFET MODULE Dual 30A 450V/500V

PD4M441L / PD4M440L

FEATURES

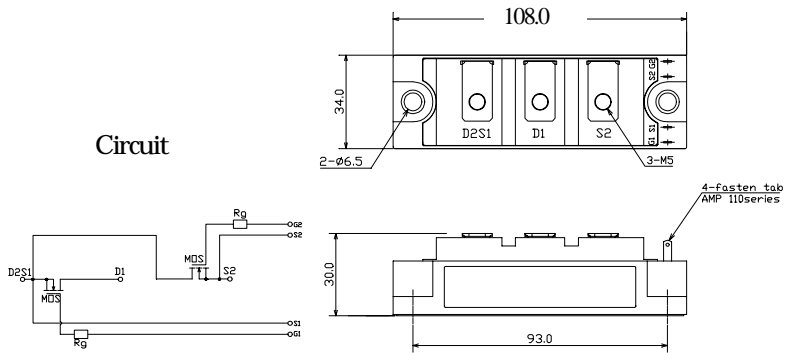
- * Dual MOS FETs Cascaded Circuit
- * Low On-Resistance and Switching Dissipation

TYPICAL APPLICATIONS

- * Power Supply for the Communications and the Induction Heating

OUTLINE DRAWING

Dimension(mm)



Approximate Weight : 220g

MAXMUM RATINGS

Ratings		Symbol	PD4M441L	PD4M440L	Unit
Drain-Source Voltage (V _{GS} =0V)		V _{DSS}	450	500	V
Gate - Source Voltage		V _{GSS}	+/- 20		V
Continuous Drain Current	Duty=50%	I _D	30 (T _C =25°C)		A
	D.C.		21 (T _C =25°C)		
Pulsed Drain Current		I _{DM}	60 T _C =25°C		A
Total Power Dissipation		P _D	230 T _C =25°C		W
Operating Junction Temperature Range		T _{JW}	-40 to +150		°C
Storage Temperature Range		T _{stg}	-40 to +125		°C
Isolation Voltage (Terminals to Base AC, 1 min.)		V _{ISO}	2000		V
Mounting Torque	Module Base to Heatsink	F _{TOR}	3.0		N•m
	Bus Bar to Main Terminals		2.0		

ELECTRICAL CHARACTERISTICS (@T_C=25°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	-	-	1.0	mA
		T _J =125°C, V _{DS} =V _{DSS} , V _{GS} =0V	-	-	4.0	
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =1mA	2.0	3.2	4.0	V
Gate-Source Leakage Current	I _{GSS}	V _{GS} =+/- 20V, V _{DS} =0V	-	-	1.0	μA
Static Drain-Source On-Resistance	r _{DS(on)}	V _{GS} =10V, I _D =15A	-	190	210	m-ohm
Forward Transconductance	g _{fs}	V _{DS} =15V, I _D =15A	-	27	-	S
Input Capacitance	C _{ies}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	5.2	-	nF
Output Capacitance	C _{oss}		-	1.1	-	nF
Reverse Transfer Capacitance	C _{rss}		-	0.18	-	nF
Turn-On Delay Time	t _{d(on)}	V _{DD} = 1/2V _{DSS}	-	100	-	ns
Rise Time	t _r	I _D =15A	-	60	-	
Turn-Off Delay Time	t _{d(off)}	V _{GS} = -5V, +10V	-	180	-	
Fall Time	t _f	R _C = 7ohm	-	50	-	

FREE WHEELING DIODES RATINGS & CHARACTERISTICS (T_C=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Continuous Source Current	I _S	D.C.	-	-	21	A
Pulsed Source Current	I _{SM}	-	-	-	60	A
Diode Forward Voltage	V _{SD}	I _S =30A	-	-	2.0	V
Reverse Recovery Time	t _{rr}	I _S =30A, -dis/dt=100A/μs	-	750	-	ns
Reverse Recovery	Q _r		-	17	-	μC

THERMAL CHARACTERISTICS

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction to Case	R _{th(j-c)}	MOS FET	-	-	0.56	°C/W
		Diode	-	-	0.56	
Thermal Resistance, Case to Heatsink	R _{th(c-h)}	Mounting surface flat, smooth, and greased	-	-	0.1	°C/W

PD4M44xL

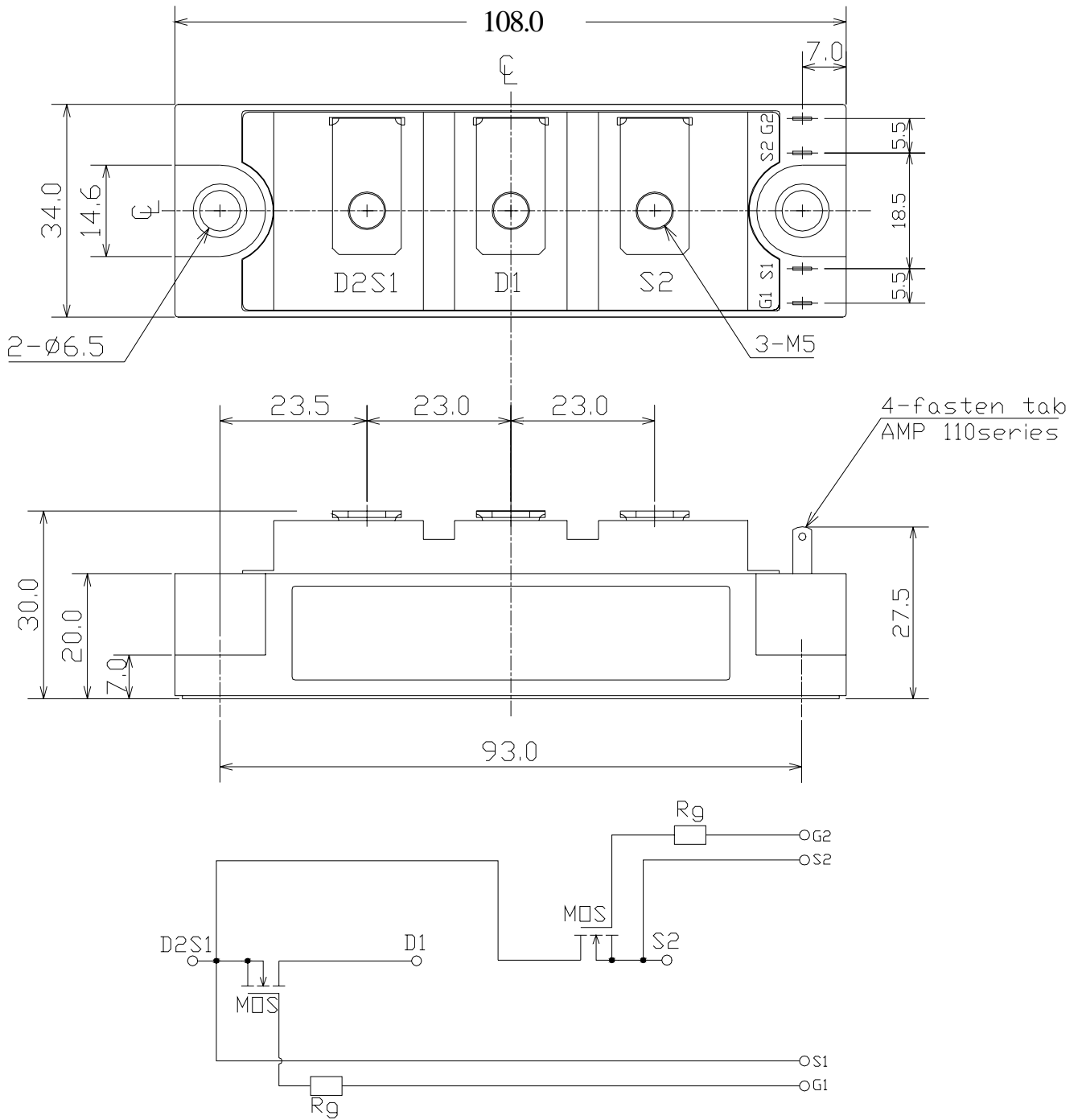


Fig.1- Output Characteristics (Typical)

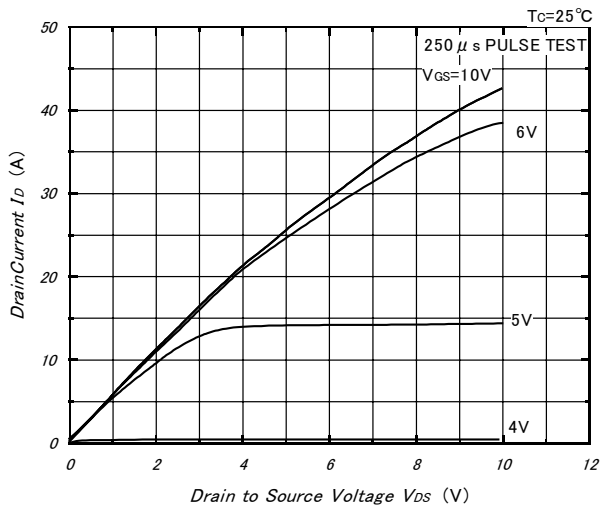


Fig.2- Drain to Source On Voltage vs. Gate to Source Voltage (Typical)

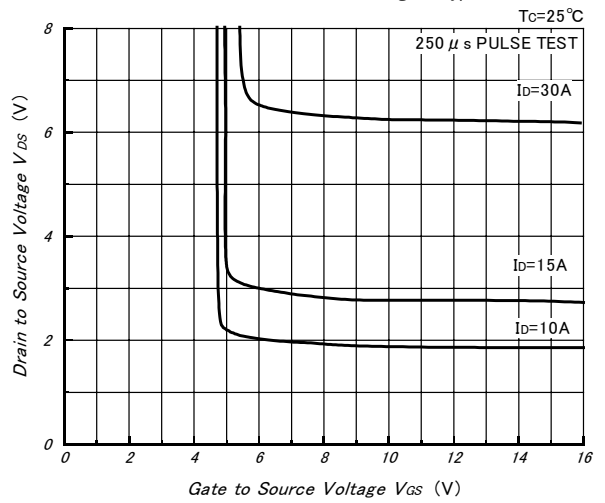


Fig.3- Drain to Source On Voltage vs. Junction Temperature (Typical)

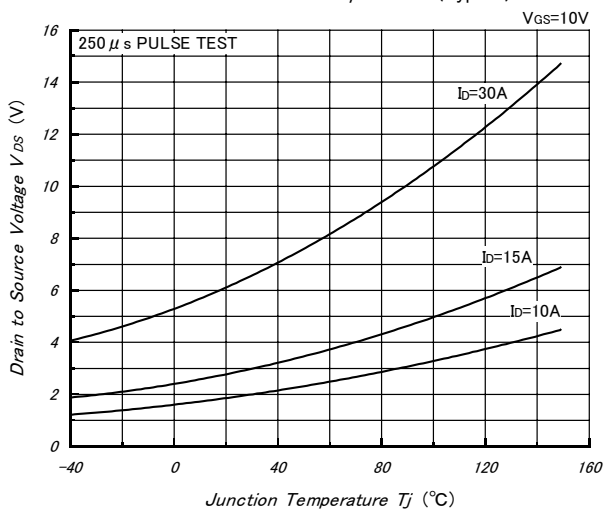


Fig.4- Capacitance vs. Drain to Source Voltage (Typical)

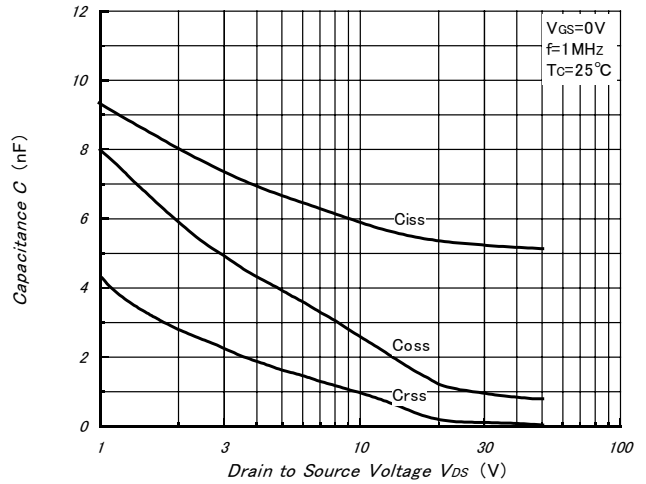


Fig.5- Gate Charge vs. Gate to Source Voltage (Typical)

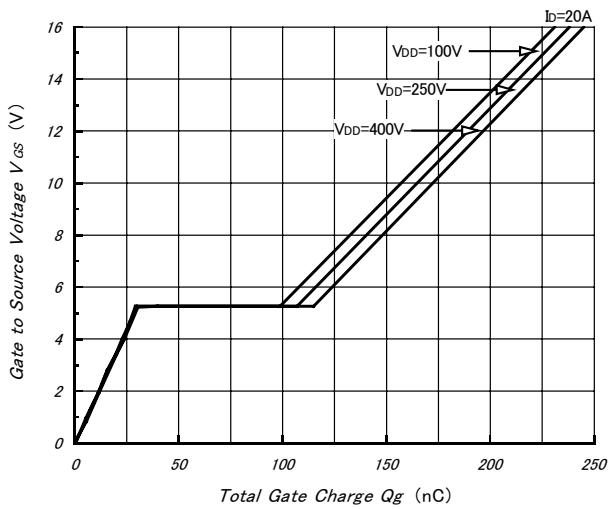


Fig.6- Series Gate Impedance vs. Switching Time (Typical)

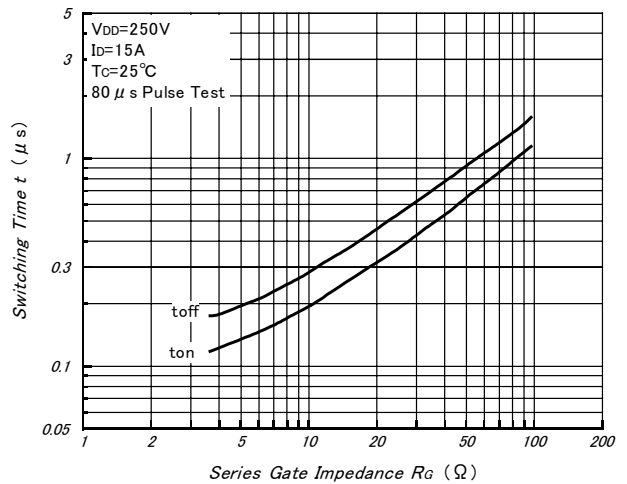


Fig.7- Drain Current vs. Switching Time (Typical)

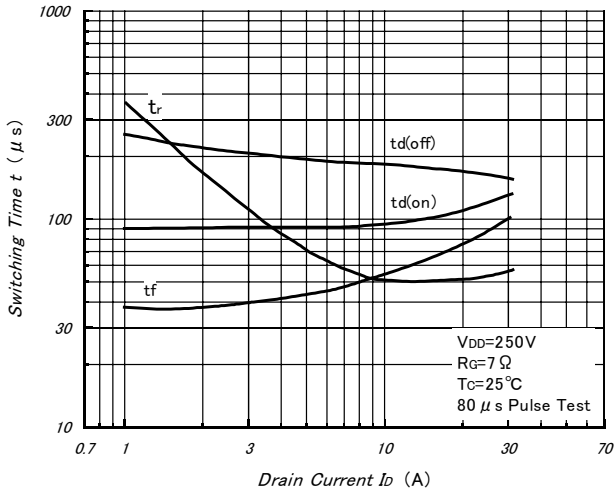


Fig.8- Source to Drain Diode Forward Characteristics (Typical)

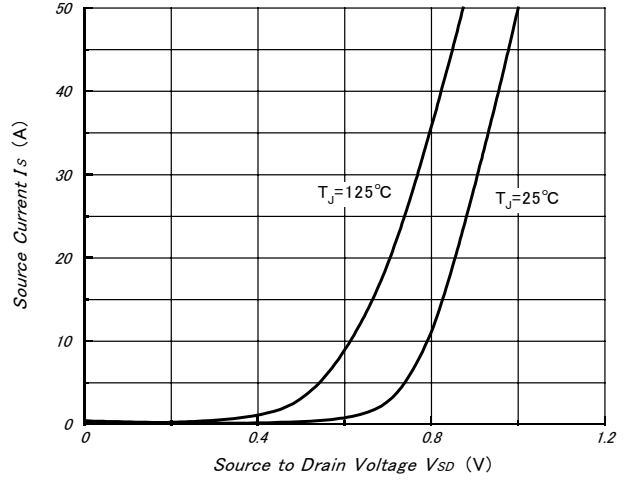


Fig.9- Reverse Recovery Characteristics (Typical)

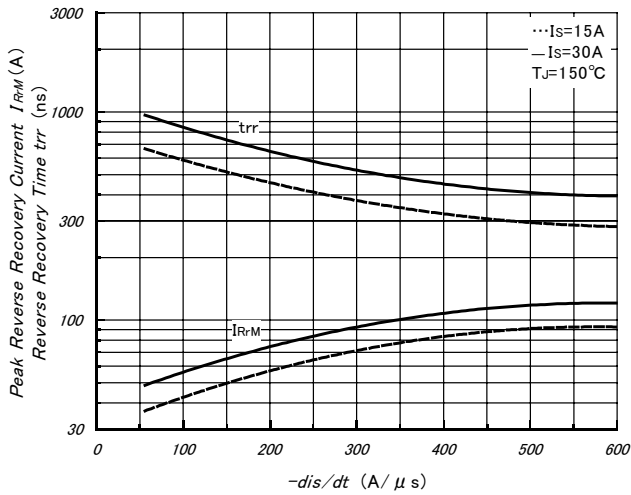


Fig.10- Maximum Safe Operating Area

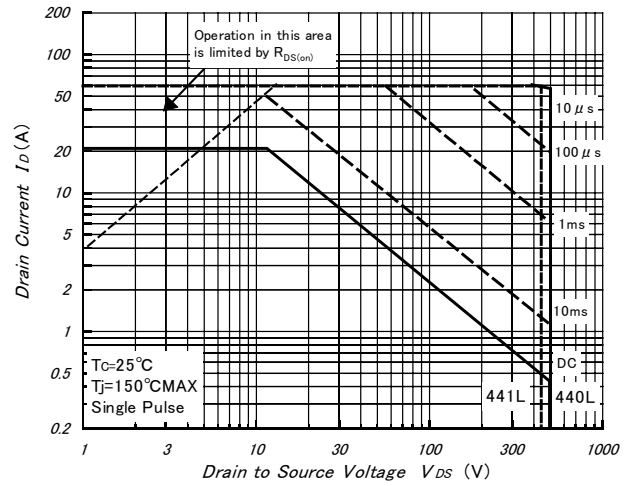


Fig.11- Normalized Transient Thermal Impedance (MOSFET)

