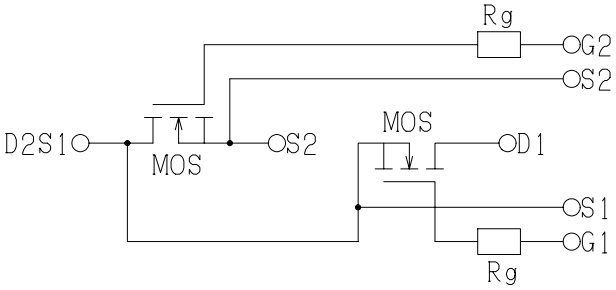
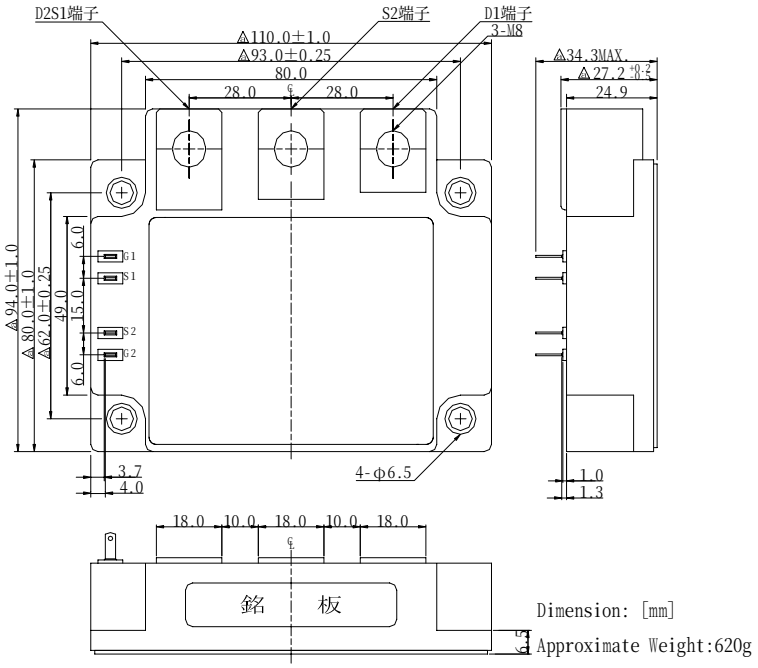
MOSFET Module-Dual　500 A, 100V　PDM5001

□ 回路図 : *CIRCUIT*



□ 外形寸法図 : *OUTLINE DRAWING*



□ 最大定格 : *MAXIMUM RATINGS* (T_C=25℃)

Item		Symbol	Test Condition	Rated Value	Unit
ドレイン・ソース間電圧 Drain-Source Voltage		V_{DSS}	V_{GS}=0V	100	V
ゲート・ソース間電圧 Gate-Source Voltage		V_{GSS}		±20	V
ドレイン電流 Drain Current		I_D	Duty=50%	500	A
			DC 端子温度=80℃	390	
パルスドレイン電流 Pulsed Drain Current		I_{DM}		1,000	A
全損失 Total Power Dissipation		P_D		1,250	W
動作接合温度 Junction Temperature Range		T_j		−40〜+150	℃
保存温度 Storage Temperature Range		T_{stg}		−40〜+125	℃
絶縁耐圧 Isolation Voltage		V_{ISO}	Terminal to Base AC,1minute	2,000	$V_{(RMS)}$
締め付けトルク Mounting Torque	Module Base to Heatsink	F_{tor}		3	N・m
	Busbar to Main Terminal			3	

□ MOS−FET電気的特性 :*MOS-FET ELECTRICAL CHARACTERISTICS* (T_C=25℃)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
ドレイン遮断電流 Zero Gate Voltage Drain Current		I_{DSS}	V_{DS}= 100V, V_{GS}= 0V	−	−	1.0	mA
ゲート漏れ電流 Gate-Source Leakage Current		I_{GSS}	V_{GS}= ±20V, V_{DS}= 0V	−	−	0.5	mA
ゲートしきい値電圧 Gate-Source Threshold Voltage		$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=16mA	1.0	−	2.5	V
ドレイン・ソース間オン抵抗(MOSFET部) Drain-Source On-Resistance		$R_{DS(on)}$	V_{GS}=10V, I_D=500A	−	0.5	0.56	mΩ
ドレイン・ソース間オン電圧 Drain-Source On-Voltage		$V_{DS(on)}$	V_{GS}=10V, I_D=500A (端子間)	-	0.25 (0.55)	0.30 (0.62)	V
順伝達コンダクタンス Forward Transconductance		Gfs	V_{DS}=15V, I_D=500A		135		S
入力容量 Input Capacitance		Ciss	V_{GS}=0V V_{DS}=10V f=1MHz	−	155	−	nF
出力容量 Output Capacitance		Coss		−	12	−	nF
帰還容量 Reverse Transfer Capacitance		Crss		−	5.3	−	nF
スイッチング時間 Switching Time	上昇時間 Rise Time	t_r	V_{DD}=50V I_D=250A R_G=1.0Ω V_{GS}=-5V,+10V	−	350	−	ns
	ターンオン遅延時間 Turn-on Delay Time	$t_{d(on)}$		−	150	−	
	下降時間 Fall Time	t_f		−	60	−	
	ターンオフ遅延時間 Turn-off Delay Time	$t_{d(off)}$		−	450	−	

□内蔵逆方向ダイオードの定格と特性 : *Source-Drain DIODE RATINGS & CHARACTERISTICS* (T_C=25℃)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
ソース電流 Continuous Source Current	I_S	Duty=50%	−	−	500	A
		DC 端子温度=80℃	−	−	390	A
パルスソース電流 Pulsed Source Current	I_{SM}		−	−	1,000	A
ダイオード順電圧 Diode Forward Voltage	V_{SD}	I_S=500A	−	0.85	−	V
逆回復時間 Reverse Recovery Time	t_{rr}	I_S=500A, -dis/dt=1000A/μs	−	70	−	ns

□ 熱的特性 : *THERMAL CHARACTERISTICS*

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
接合・ケース間熱抵抗 Thermal Impedance, Junction to Case	Rth(j-c)	MOS-FET	−	−	0.10	℃/W

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Fig.1- Output Characteristics (Typical)

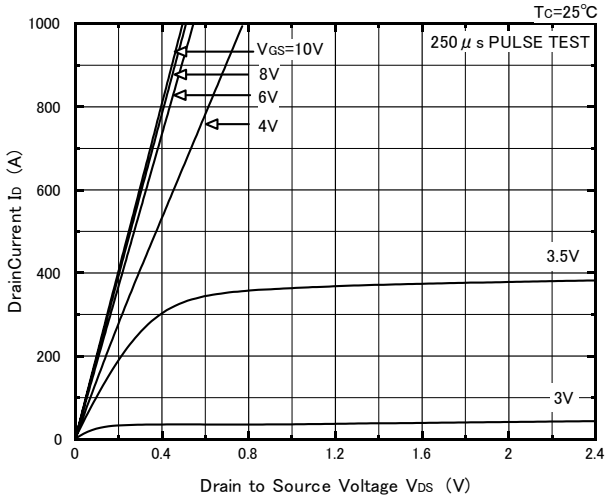

Fig.2- Drain to Source On Voltage vs. Gate to Source Voltage (Typical)

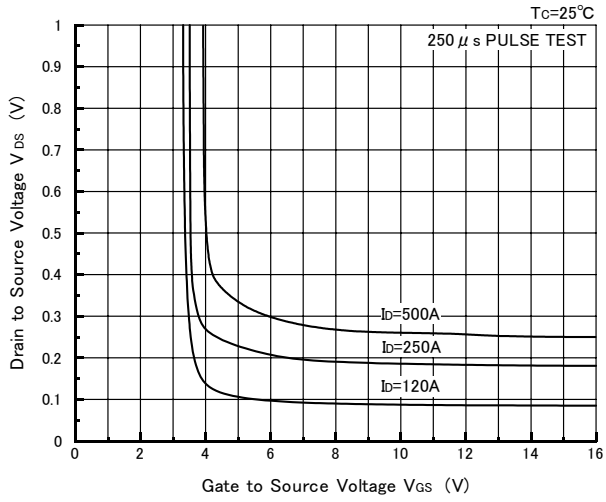

Fig.3- Drain to Source On Voltage vs. Junction Temperature (Typical)

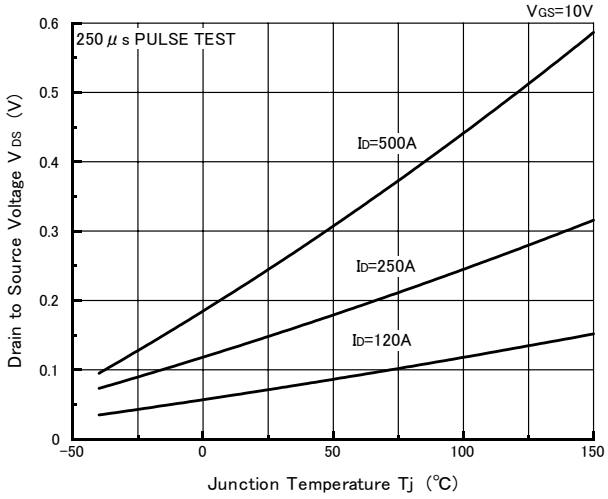

Fig.4- Capacitance vs. Drain to Source Voltage (Typical)

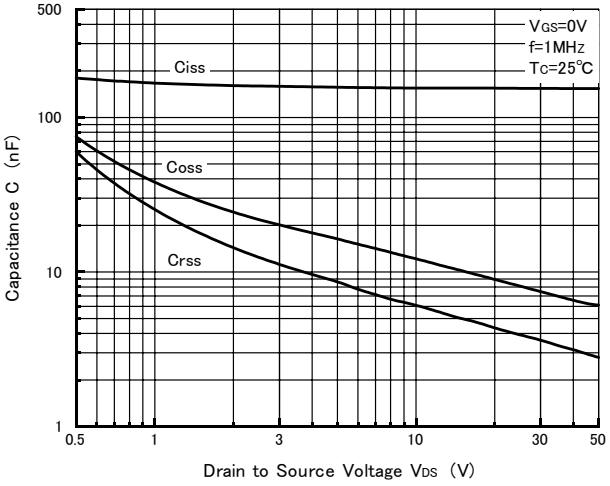

Fig.5- Gate Charge vs. Gate to Source Voltage (Typical)

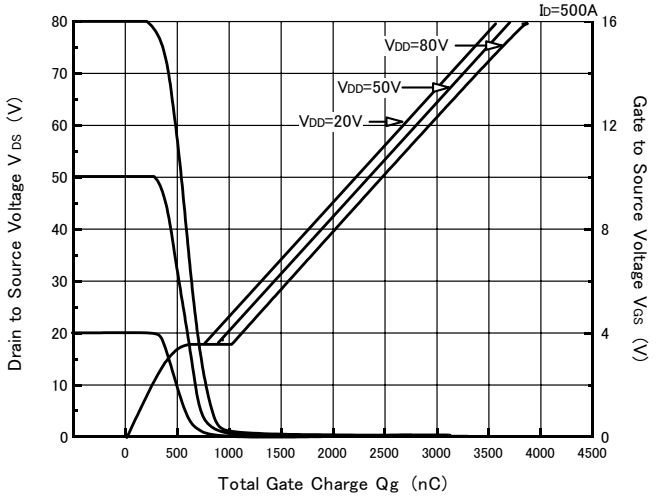

Fig.6- Series Gate Impedance vs. Switching Time (Typical)

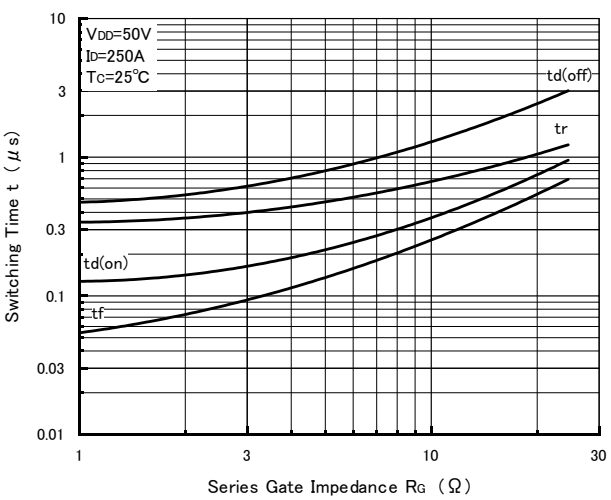

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Fig.7- Drain Current vs. Switching Time (Typical)

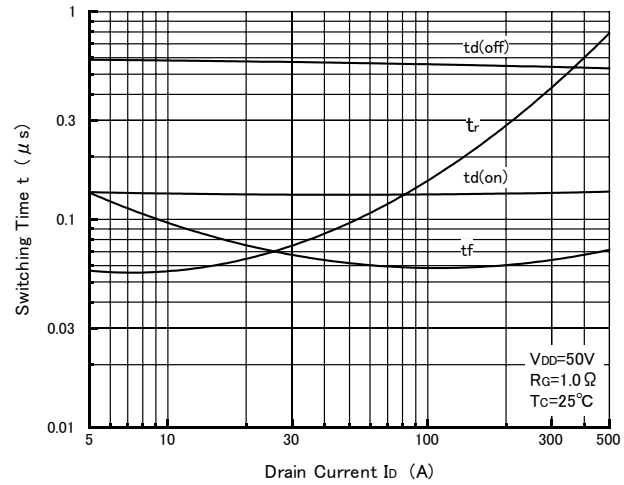

Fig.8- Source to Drain Diode Forward Characteristics (Typical)

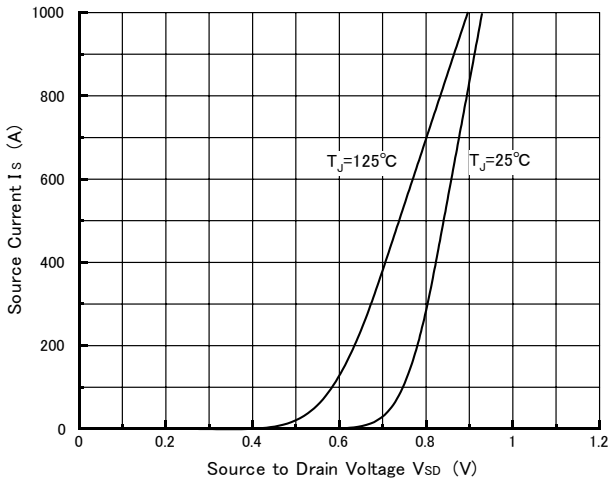

Fig.9- Reverse Recovery Characteristics (Typical)

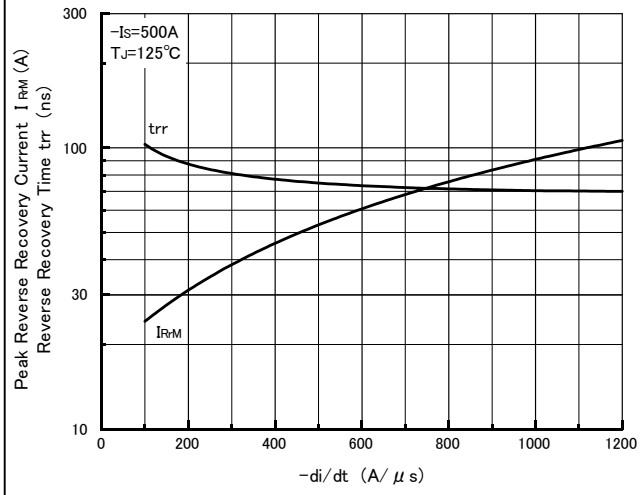

Fig.10- Maximun Transient Thermal Impedance