Nihon Inter Electronics Corporation

MOSFET MODULE Dual 75A /500V PDM755HA

FEATURES

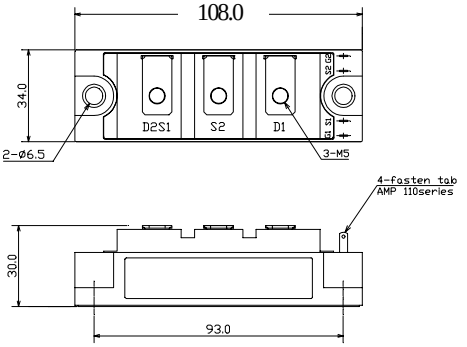
* Dual MOS FETs Cascaded Circuit
* Prevented Body Diodes of MOSFETs by SBDs, and Ultra Fast Recovery Diodes Connected in Parallel
* 300KHz High Speed Switching Possible

TYPICAL APPLICATIONS

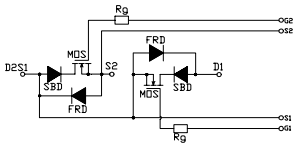
* Power Supply for the Communications and the Induction Heating

OUTLINE DRAWING

Dimension(mm)



Circuit



Approximate Weight : 220g

MAXMUM RATINGS

Ratings		Symbol	PDM755HA	Unit
Drain-Source Voltage (V_{GS}=0V)		V_{DSS}	500	V
Gate - Source Voltage		V_{GSS}	+/- 20	V
Continuous Drain Current	Duty=50%	I_D	75 (Tc=25°C)	A
	D.C.		53 (Tc=25°C)	
Pulsed Drain Current		I_{DM}	150 Tc=25°C)	A
Total Power Dissipation		P_D	500 Tc=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 (@Tc=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=5mA	2.0	2.9	4.0	V
Gate-Source Leakage Current	I_{GSS}	V_{GS}=+/- 20V,V_{DS}=0V	-	-	10	μA
Static Drain-Source On-Resistance	$r_{DS(on)}$	V_{GS}=10V, I_D=35A	-	55	65	m-ohm
Drain-Source On-Voltage	$V_{DS(on)}$	V_{GS}=10V, I_D=35A	-	2.4	2.9	V
Forward Transconductance	g_{fs}	V_{DS}=15V, I_D=35A	-	75	-	S
Input Capacitance	C_{ies}	V_{DS}=25V,V_{GS}=0V,f=1MHz	-	16	-	nF
Output Capacitance	C_{oss}		-	1.8	-	nF
Reverse Transfer Capacitance	C_{rss}		-	0.4	-	nF
Turn-On Delay Time	$t_{d(on)}$	V_{DD}= 1/2V_{DSS}	-	180	-	ns
Rise Time	t_r	I_D=35A	-	70	-	
Turn-Off Delay Time	$t_{d(off)}$	V_{GS}= -5V, +10V	-	390	-	
Fall Time	t_f	R_G= 5 ohm	-	50	-	

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

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	D.C.	-	-	53	A
Pulsed Source Current	I_{SM}	-	-	-	150	A
Diode Forward Voltage	V_{SD}	I_S=75A	-	-	1.8	V
Reverse Recovery Time	t_{rr}	I_S=75A, -dis/dt=100A/μs	-	70	-	ns
Reverse Recovery	Q_r		-	0.15	-	μC

THERMAL CHARACTERISTICS

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	MOS FET	-	-	0.25	°C/W
		Diode	-	-	2.0	
Thermal Resistance, Case to Heatsink	$R_{th(c-f)}$	Mounting surface flat, smooth, and greased	-	-	0.1	

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PDM755HA

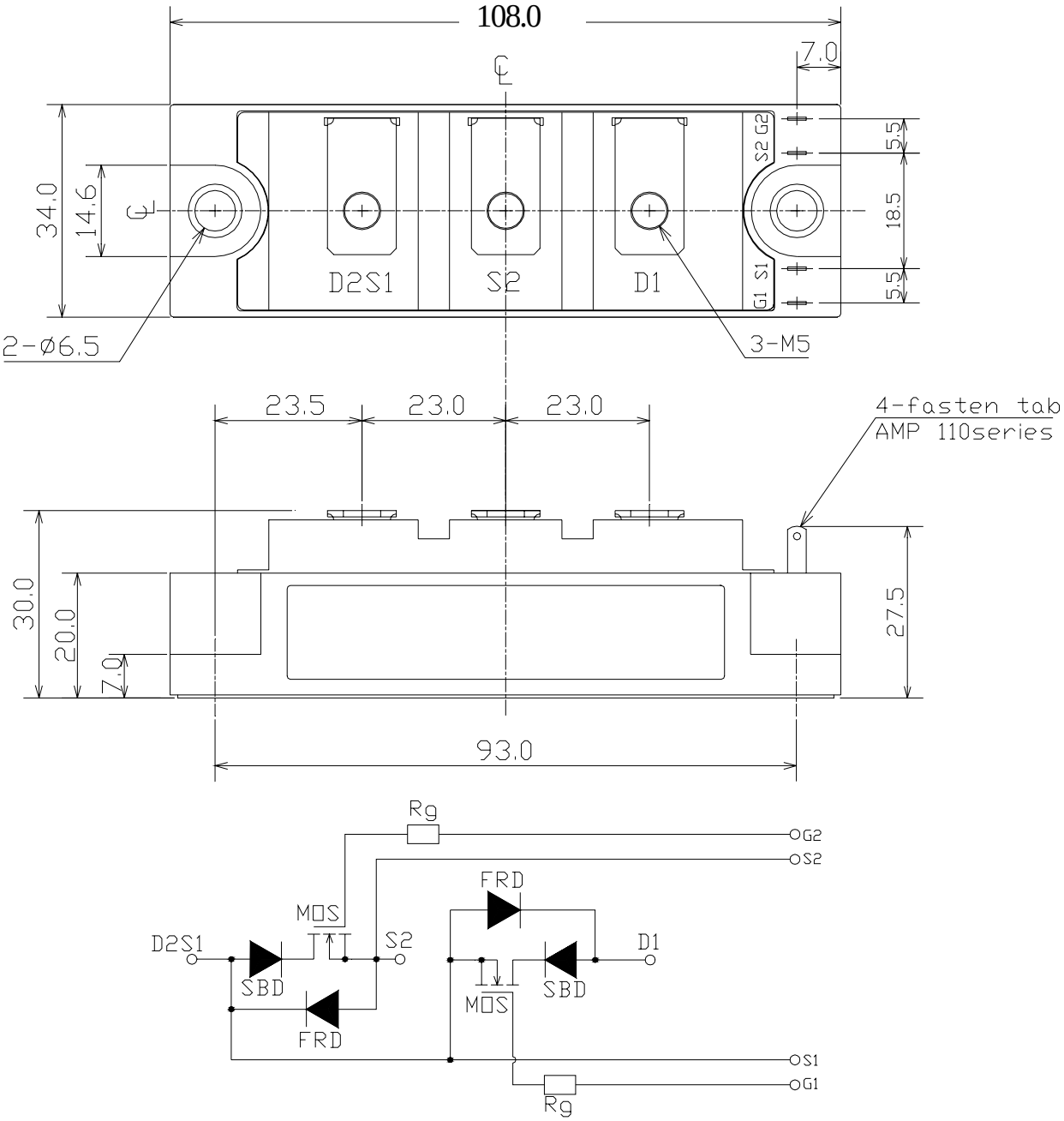

Fig. 1 Typical Output Characteristics

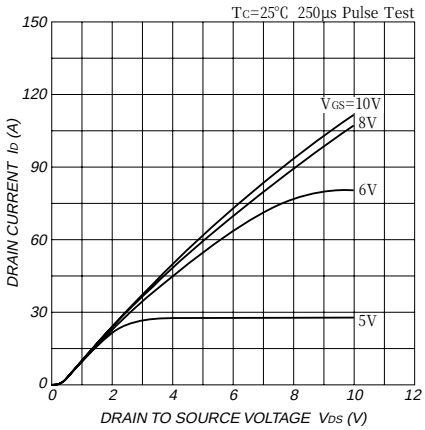

Fig. 2 Typical Drain-Source On-Voltage Vs. Gate-Source Voltage

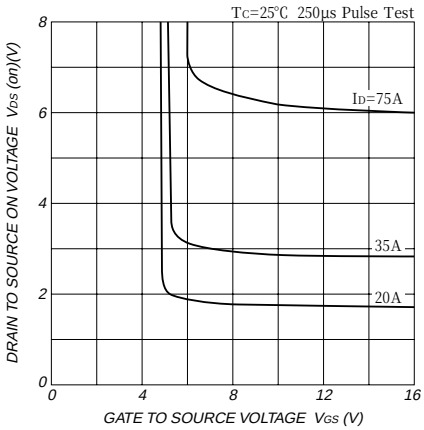

Fig. 3 Typical Drain-Source On Voltage Vs. Junction Temperature

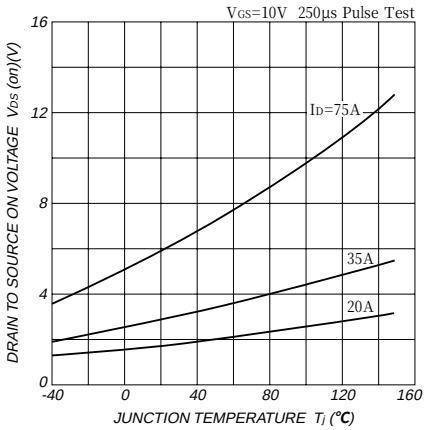

Fig. 4 Typical Capacitance Vs. Drain-Source Voltage

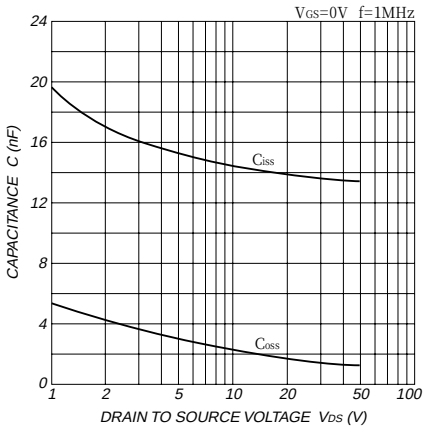

Fig. 5 Typical Gate Charge Vs. Gate-Source Voltage

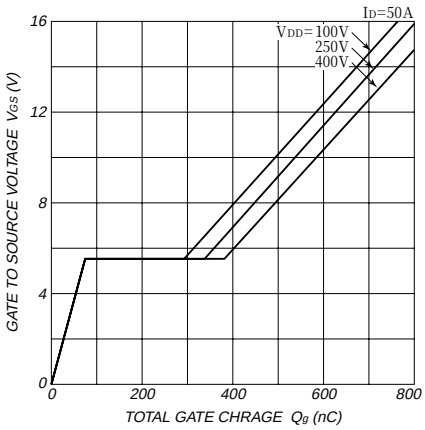

Fig. 6 Typical Switching Time Vs. Series Gate impedance

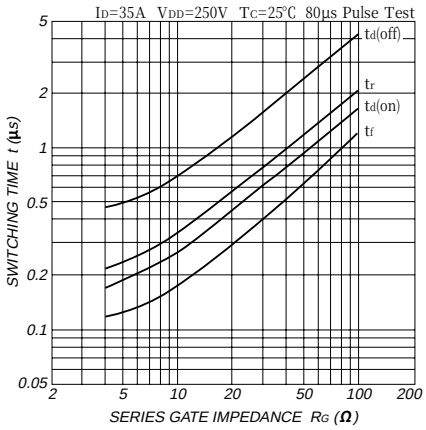

Fig. 7 Typical Switching Time Vs. Drain Current

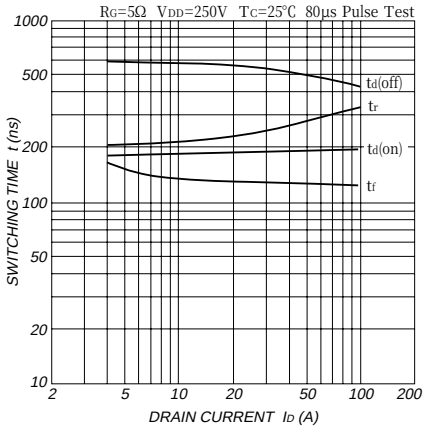

Fig. 8 Typical Source-Drain Diode Forward Characteristics

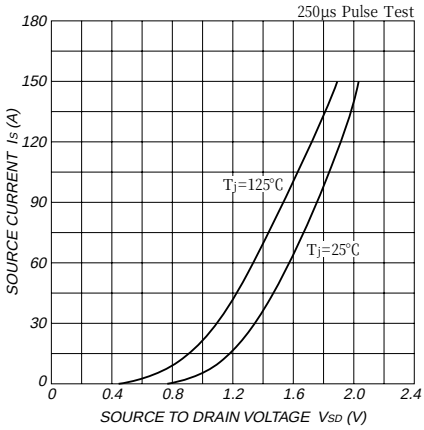

Fig. 9 Typical Reverse Recovery Characteristics

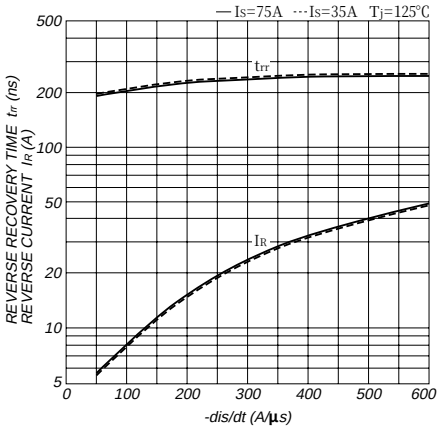

Fig. 10 Maximum Safe Operating Area

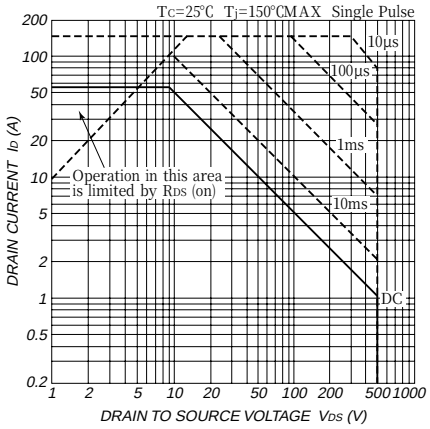

Fig. 11-1 Normalized Transient Thermal impedance(MOSFET)

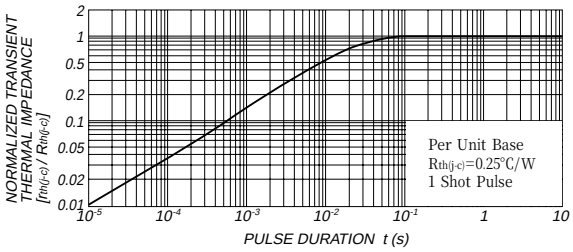

Fig. 11-2 Normalized Transient Thermal impedance(DIODE)