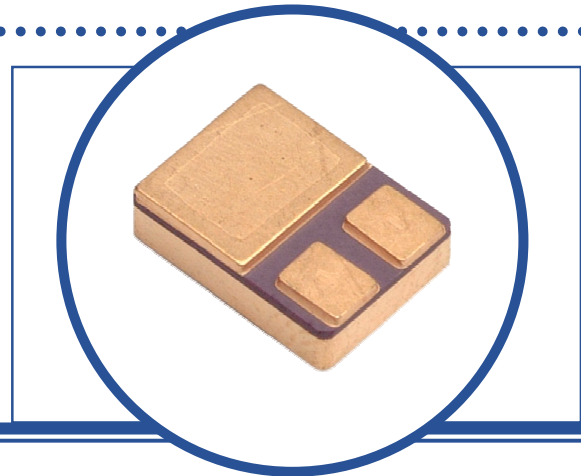


# P-CHANNEL POWER MOSFET

## SML6609ASMD05

- Electrically Isolated and Hermetically Sealed Surface Mount Package
- Ultra Low On State Resistance
- Fast Switching
- Low Gate Charge
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C unless otherwise stated)

V <sub>DS</sub>	Drain – Source Voltage	-30V
V <sub>GS</sub>	Gate – Source Voltage	±20V
I <sub>D</sub>	Continuous Drain Current @ T <sub>case</sub> = 25°C	-6.3A
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	-40A
P <sub>D</sub>	Total Power Dissipation @ T <sub>case</sub> = 25°C	20W
	Linear De-rating Factor @ T <sub>case</sub> ≥ 25°C	0.45W/°C
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage Temperature Range	-55°C to +150°C

### THERMAL CHARACTERISTICS

Symbol	Parameters	Max	Units
R <sub>θJC</sub>	Thermal Resistance, Junction To Case	1.8	°C/W
R <sub>θPCB</sub>	Thermal Resistance, Junction To PCB	6.25	°C/W

Notes:

- 1) Pulse width ≤ 300 μs; Duty Cycle ≤ 2%

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = -250\mu A$	-30			V
$\frac{\Delta BV_{DSS}}{\Delta T_j}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}C$ $I_D = -250\mu A$		-0.022		$V/^{\circ}C$
$R_{DS(on)}$ <sup>1</sup>	Static Drain-Source On-State Resistance	$V_{GS} = -10V$ $I_D = -7A$			0.04	$\Omega$
		$T_j = 125^{\circ}C$			0.54	
		$V_{GS} = -7.5V$ $I_D = -5.5A$			0.06	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = -250\mu A$	-2.5		-4.5	V
$\frac{\Delta V_{GS(th)}}{\Delta T_j}$	Temperature Coefficient of Gate Threshold Voltage	Reference to $25^{\circ}C$ $I_D = -250\mu A$		-0.004		$V/^{\circ}C$
$g_{fs}$ <sup>1</sup>	Forward Transconductance	$V_{DS} = -10V$ $I_D = -7A$		14.5		S( $\Omega$ )
$I_{DSS}$	Drain-Source Leakage Current	$V_{GS} = 0$ $V_{DS} = -24V$			-3.0	$\mu A$
$I_{GSS}$	Forward Gate-Source Leakage	$V_{GS} = -20V$			-100	nA
$I_{GSS}$	Reverse Gate-Source Leakage	$V_{GS} = 20V$			100	
$I_D(on)$	On-State Drain Current	$V_{GS} = -10V$ $V_{DS} = -5V$	-20			A

## DYNAMIC CHARACTERISTICS

$C_{iss}$	Input Capacitance	$V_{GS} = 0$		1975		pF
$C_{oss}$	Output Capacitance	$V_{DS} = -25V$		315		
$C_{rss}$	Reverse Transfer Capacitance	$f = 1.0MHz$		160		
$Q_g$	Total Gate Charge	$V_{GS} = -10V$		46		nC
$Q_{gs}$	Gate-Source Charge	$I_D = -7.2A$		19		
$Q_{gd}$	Gate-Drain Charge	$V_{DS} = -15V$		11		
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = -15V$		20		ns
$t_r$	Rise Time	$I_D = -1.0A$		28		
$t_{d(off)}$	Turn-Off Delay Time	$R_G = 6\Omega$		39		
$t_f$	Fall Time	$V_{GS} = -10V$		27		

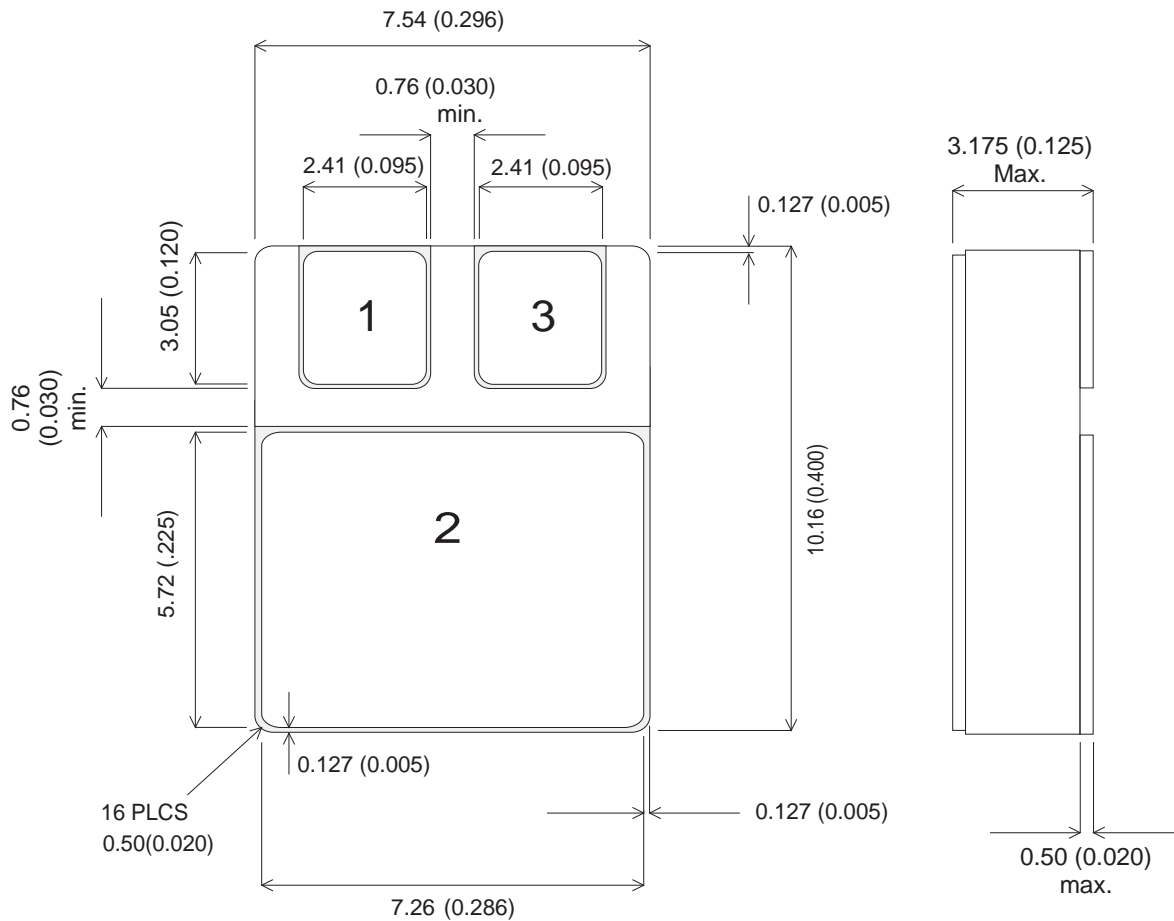
## SOURCE – DRAIN DIODE CHARACTERISTICS

$I_S$	Continuous Source Current				-2.1	A
$V_{SD}^1$	Diode Forward Voltage	$I_S = -2.1A$ $V_{GS} = 0$			-1.2	V

# P-CHANNEL POWER MOSFET SML6609ASMD05

## MECHANICAL DATA

Dimensions in mm (inches)



### SMD05 (TO-276AA) (Underside View)

Pad 1 - Source      Pad 2 - Drain      Pad 3 - Gate