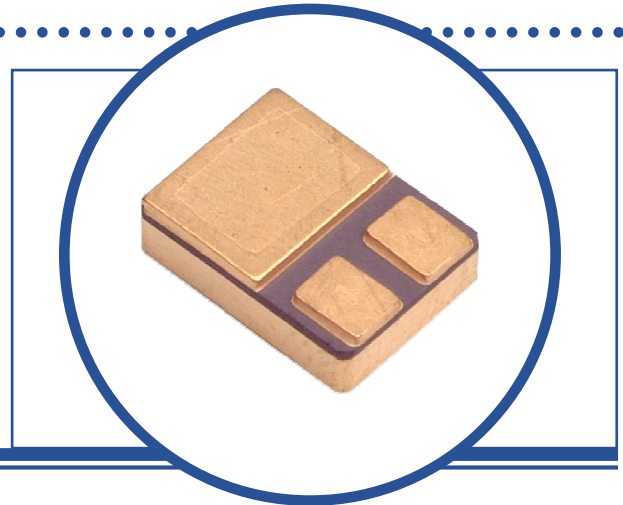


# P-CHANNEL POWER MOSFET

## 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>θJPCB</sub>	Thermal Resistance, Junction To PCB	6.25	°C/W

Notes:

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

# P-CHANNEL POWER MOSFET SML6609ASMD05

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25°C unless otherwise stated)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0 I <sub>D</sub> = -250μA	-30			V
$\frac{\Delta BV_{DSS}}{\Delta T_j}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = -250μA		-0.022		V/°C
R <sub>DS(on)</sub> <sup>1</sup>	Static Drain-Source On-State Resistance	V <sub>GS</sub> = -10V I <sub>D</sub> = -7A T <sub>j</sub> = 125°C			0.04	Ω
		V <sub>GS</sub> = -7.5V I <sub>D</sub> = -5.5A			0.54	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = -250μA	-2.5		-4.5	V
$\frac{\Delta V_{GS(th)}}{\Delta T_j}$	Temperature Coefficient of Gate Threshold Voltage	Reference to 25°C I <sub>D</sub> = -250μA		-0.004		V/°C
g <sub>fs</sub> <sup>1</sup>	Forward Transconductance	V <sub>DS</sub> = -10V I <sub>D</sub> = -7A		14.5		S(Ω)
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>GS</sub> = 0 V <sub>DS</sub> = -24V			-3.0	μA
I <sub>GSS</sub>	Forward Gate-Source Leakage	V <sub>GS</sub> = -20V			-100	nA
I <sub>GSS</sub>	Reverse Gate-Source Leakage	V <sub>GS</sub> = 20V			100	
I <sub>D(on)</sub>	On-State Drain Current	V <sub>GS</sub> = -10V V <sub>DS</sub> = -5V	-20			A

## DYNAMIC CHARACTERISTICS

C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0		1975		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = -25V		315		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1.0MHz		160		
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = -10V		46		nC
Q <sub>gs</sub>	Gate-Source Charge	I <sub>D</sub> = -7.2A		19		
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>DS</sub> = -15V		11		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> = -15V		20		ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> = -1.0A		28		
t <sub>d(off)</sub>	Turn-Off Delay Time	R <sub>G</sub> = 6Ω		39		
t <sub>f</sub>	Fall Time	V <sub>GS</sub> = -10V		27		

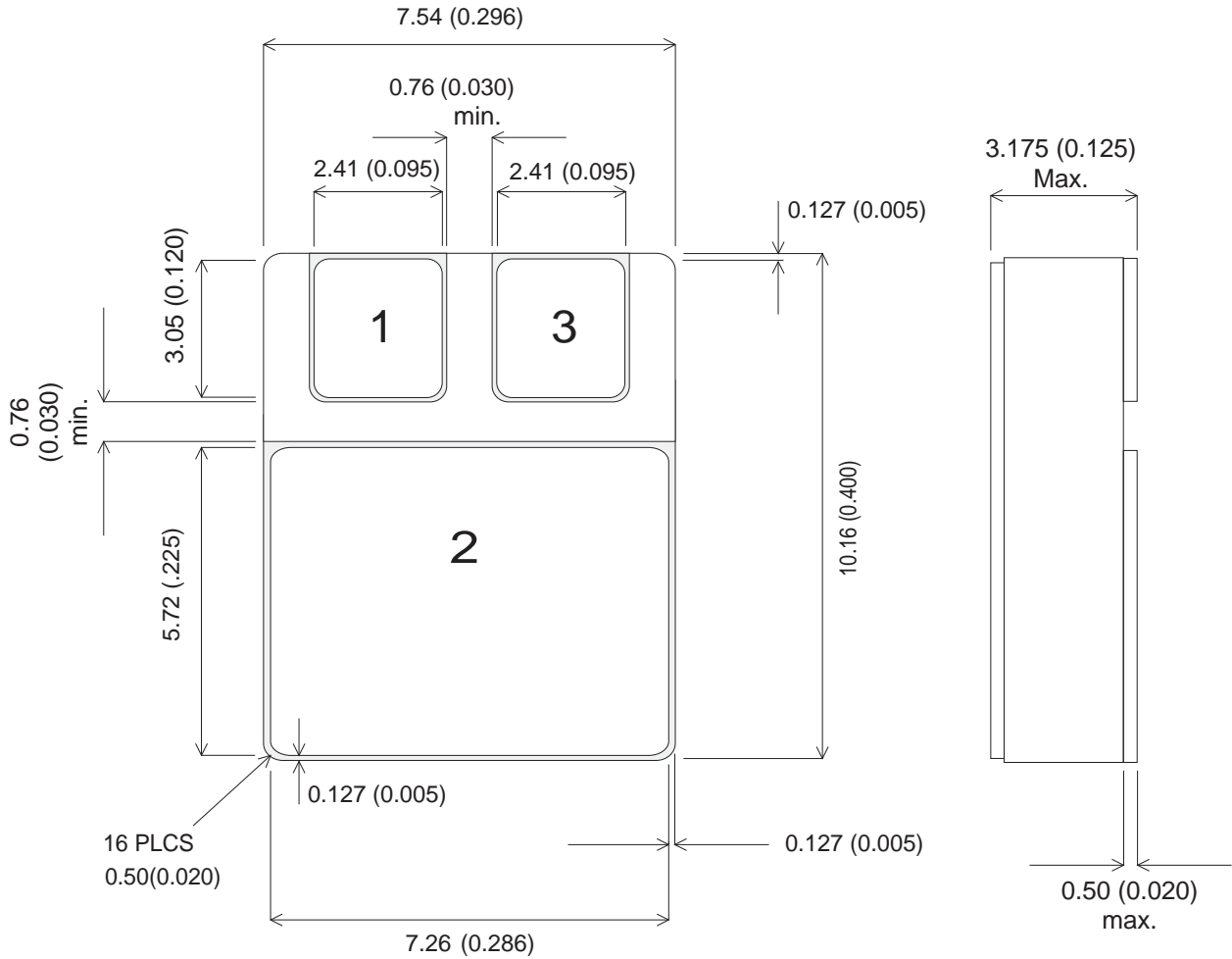
## SOURCE – DRAIN DIODE CHARACTERISTICS

I <sub>S</sub>	Continuous Source Current				-2.1	A
V <sub>SD</sub> <sup>1</sup>	Diode Forward Voltage	I <sub>S</sub> = -2.1A	V <sub>GS</sub> = 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