

# N-CHANNEL POWER MOSFET

## SML2005SMD1

- Low  $R_{DS(on)}$  MOSFET Transistor.
- Hermetic Ceramic Surface Mount Package
- Ideally suited for Power Supply, Motor Controls and Amplifier Applications
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise stated)

V <sub>DS</sub>	Drain – Source Voltage		200V
V <sub>GS</sub>	Gate – Source Voltage		±20V
I <sub>D</sub>	Continuous Drain Current	$T_C = 25^\circ\text{C}$	48A
I <sub>D</sub>	Continuous Drain Current	$T_C = 100^\circ\text{C}$	30A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>		160A
P <sub>D</sub>	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	208W
		Derate Above 25°C	1.67W/°C
T <sub>J</sub>	Junction Temperature Range		-55 to +150°C
T <sub>stg</sub>	Storage Temperature Range		-55 to +150°C

### THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R <sub>θJC</sub>	Thermal Resistance, Junction To Case	0.6	°C/W

#### Notes

- (1) Repetitive Rating: Pulse width limited by maximum junction temperature  
 (2) Pulse Width ≤ 300us, δ ≤ 2%

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

Symbols	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	200			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = 250μA		0.28		V/°C
R <sub>DS(on)</sub> <sup>(2)</sup>	Static Drain-Source On-State Resistance	V <sub>GS</sub> = 10V I <sub>D</sub> = 24A		0.05	0.06	Ω
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250μA	2.5		5	V
g <sub>fs</sub> <sup>(2)</sup>	Forward Transconductance	V <sub>DS</sub> ≥ 50V I <sub>DS</sub> = 24A		32		S(Ω)
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0 V <sub>DS</sub> = 200V			1.0	μA
		V <sub>GS</sub> = 0 V <sub>DS</sub> = 160V T <sub>J</sub> = 125°C			10	
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	

## DYNAMIC CHARACTERISTICS

C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0		3610	5000	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V		110	900	
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1.0MHz		150	190	
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 10V		105	130	nC
Q <sub>gs</sub>	Gate-Source Charge	I <sub>D</sub> = 48A		24		
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>DS</sub> = 160V		53		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> = 100V		10	170	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> = 48A		250	870	
t <sub>d(off)</sub>	Turn-Off Delay Time			100	450	
t <sub>f</sub>	Fall Time	R <sub>G</sub> = 25Ω		190	390	

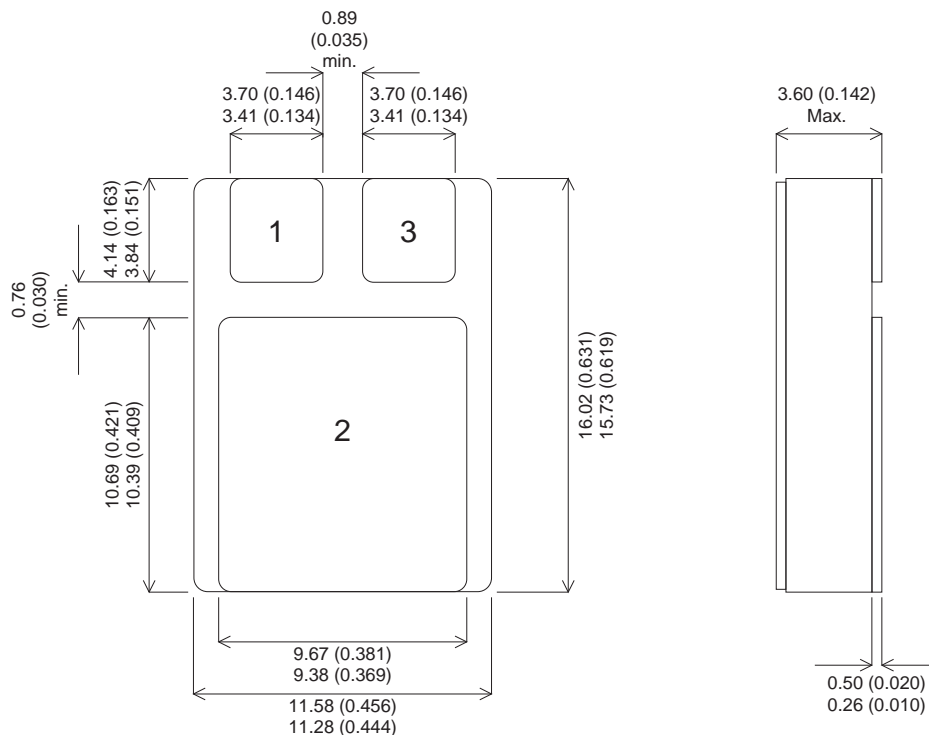
## SOURCE-DRAIN DIODE CHARACTERISTICS

I <sub>S</sub>	Continuous Source Current				48	A
I <sub>SM</sub> <sup>(1)</sup>	Pulse Source Current				160	
V <sub>SD</sub> <sup>(2)</sup>	Diode Forward Voltage	V <sub>GS</sub> = 0 I <sub>S</sub> = 48A			1.5	V
t <sub>rr</sub> <sup>(2)</sup>	Reverse Recovery Time	V <sub>GS</sub> = 0 I <sub>S</sub> = 48A		200		ns
Q <sub>rr</sub> <sup>(2)</sup>	Reverse Recovery Charge	di/dt = 100A/μs		3		μC

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## MECHANICAL DATA

Dimensions in mm (inches)



## SMD1 (TO-276AB)

### Underside View

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