

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_{DS}	Drain – Source Voltage		200V
V_{GS}	Gate – Source Voltage		$\pm 20\text{V}$
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	48A
I_D	Continuous Drain Current	$T_C = 100^\circ\text{C}$	30A
I_{DM}	Pulsed Drain Current ⁽¹⁾		160A
P_D	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	208W
		Derate Above 25°C	1.67W/ $^\circ\text{C}$
T_J	Junction Temperature Range		-55 to $+150^\circ\text{C}$
T_{stg}	Storage Temperature Range		-55 to $+150^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	0.6	$^\circ\text{C/W}$

Notes

- (1) Repetitive Rating: Pulse width limited by maximum junction temperature
 (2) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 I _D = 250μA	200			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = 250μA		0.28		V/°C
R _{DS(on)} ⁽²⁾	Static Drain-Source On-State Resistance	V _{GS} = 10V I _D = 24A		0.05	0.06	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} I _D = 250μA	2.5		5	V
g _{fs} ⁽²⁾	Forward Transconductance	V _{DS} ≥ 50V I _{DS} = 24A		32		S(Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0 V _{DS} = 200V			1.0	μA
		V _{GS} = 0 V _{DS} = 160V T _J = 125°C			10	
I _{GSS}	Forward Gate-Source Leakage	V _{GS} = 20V			100	nA
I _{GSS}	Reverse Gate-Source Leakage	V _{GS} = -20V			-100	

DYNAMIC CHARACTERISTICS

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

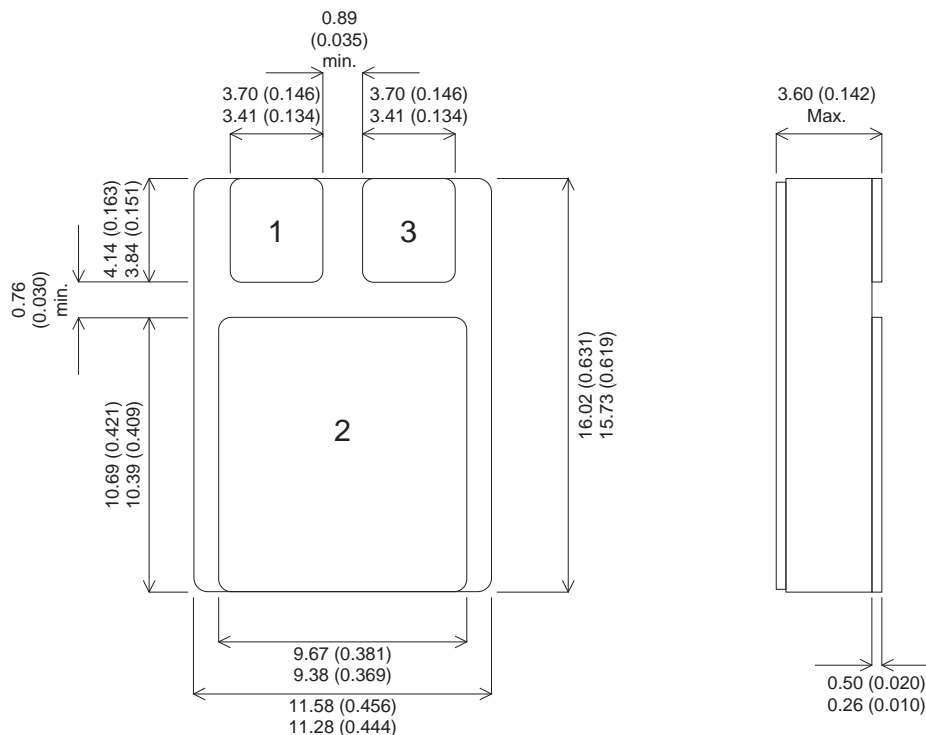
SOURCE-DRAIN DIODE CHARACTERISTICS

I _S	Continuous Source Current				48	A
I _{SM} ⁽¹⁾	Pulse Source Current				160	
V _{SD} ⁽²⁾	Diode Forward Voltage	V _{GS} = 0 I _S = 48A			1.5	V
t _{rr} ⁽²⁾	Reverse Recovery Time	V _{GS} = 0 I _S = 48A		200		ns
Q _{rr} ⁽²⁾	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