SEME LAB

SML1004R2GXN

4TH GENERATION MOSFET

N–CHANNEL ENHANCEMENT MODE HIGH VOLTAGE ISOLATED POWER MOSFETS

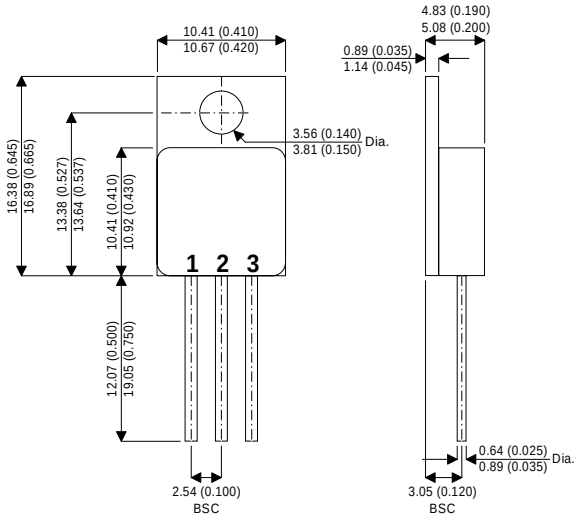
V_{DSS} 1000V

$I_{D(cont)}$ 3.0A

$R_{DS(on)}$ 4.20Ω

TO–257 Package Outline.

Dimensions in mm (inches)



Pin 1 Gate **Pin 2 Drain** **Pin 3 Source** **Pinout same as TO–220 Package.**

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{DSS}	Drain – Source Voltage	1000	V
I_D	Continuous Drain Current	3.0	A
I_{DM}	Pulsed Drain Current [1]	12	A
V_{GS}	Gate – Source Voltage	±30	V
P_D	Total Power Dissipation @ T_{case} = 25°C	100	W
	Linear Derating Factor	0.8	W / °C
T_J , T_{STG}	Operating and Storage Junction Temperature Range	–55 to 150	°C
T_L	Lead Temperature : 0.063″ from Case for 10 Sec.	300	

STATIC ELECTRICAL RATINGS (T_{case} = 25°C unless otherwise stated)

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain – Source Breakdown Voltage	V_{GS} = 0V , I_D = 250μA	1000			V
$I_{D(ON)}$	On State Drain Current [2]	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max V_{GS} = 10V	3.0			A
$R_{DS(ON)}$	Drain – Source On State Resistance [2]	V_{GS} =10V , I_D = 0.5 I_D [Cont.]			4.20	Ω
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0V)	V_{DS} = V_{DSS}			250	μA
		V_{DS} = 0.8V_{DSS} , T_C = 125°C			1000	
I_{GSS}	Gate – Source Leakage Current	V_{GS} = ±30V , V_{DS} = 0V			±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS} , I_D = 1.0mA	2		4	V

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.
2) Pulse Test: Pulse Width < 380μS , Duty Cycle < 2%

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DYNAMIC CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
C_{DC}	Drain to Case Capacitance	f = 1MHz		8	12	pF
C_{iss}	Input Capacitance	V_{GS} = 0V		805	950	pF
C_{oss}	Output Capacitance	V_{DS} = 25V		115	160	
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		37	60	
Q_g	Total Gate Charge[3]	V_{GS} = 10V		35	55	nC
Q_{gs}	Gate – Source Charge	V_{DD} = 0.5 V_{DSS}		4.3	7	
Q_{gd}	Gate – Drain ("Miller") Charge	I_D = I_D [Cont.] @ 25°C		18	27	
$t_{d(on)}$	Turn–on Delay Time	V_{GS} = 15V		10	20	ns
t_r	Rise Time	V_{DD} = 0.5 V_{DSS}		12	24	
$t_{d(off)}$	Turn-off Delay Time	I_D = I_D [Cont.] @ 25°C		33	50	
t_f	Fall Time	R_G = 1.8Ω		16	32	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current (Body Diode)				3.0	A
I_{SM}	Pulsed Source Current[1](Body Diode)				12	
V_{SD}	Diode Forward Voltage[2]	V_{GS} = 0V , I_S = – I_D [Cont.]			1.3	V
t_{rr}	Reverse Recovery Time	I_S = – I_D [Cont.]	150	290	580	ns
Q_{rr}	Reverse Recovery Charge	dI_S / dt = 100A/μs	0.8	1.65	3.3	μC

SAFE OPERATING AREA CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
SOA1	Safe Operating Area , t = 1 Sec	V_{DS} = 0.4V_{DSS} , I_{DS} = P_D / 0.4V_{DSS}	100			W
SOA2	Safe Operating Area , t = 1 Sec	V_{DS} = P_D / I_D [Cont.] , I_{DS} = I_D [Cont.]	100			
I_{LM}	Inductive Current Clamped		12			A

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			1.20	°C/W
$R_{\theta JA}$	Junction to Ambient			80	

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.
2) Pulse Test: Pulse Width < 380μS , Duty Cycle < 2%
3) See MIL–STD–750 Method 3471

CAUTION — Electrostatic Sensitive Devices. Anti-Static Procedures Must Be Followed.