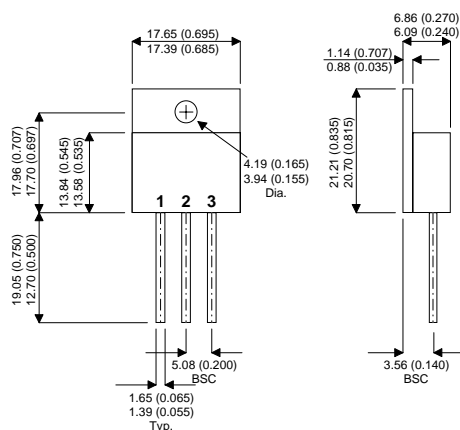


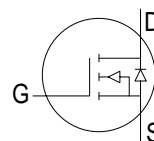
TO-258 Package Outline.  
Dimensions in mm (Inches)



Pin 1 – Drain      Pin 2 – Source      Pin 3 – Gate

## 4TH GENERATION MOSFET

**N-CHANNEL  
ENHANCEMENT MODE  
HIGH VOLTAGE  
POWER MOSFETS**



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

Parameter	SML		Unit
	901RHN	1001RHN	
$V_{DSS}$ Drain – Source Voltage	900	1000	V
$I_D$ Continuous Drain Current	10		A
$I_{DM}$ Pulsed Drain Current <sup>1</sup>	40		A
$V_{GS}$ Gate – Source Voltage	±30		V
$P_D$ Total Power Dissipation @ $T_{case} = 25^{\circ}C$	250		W
Derate above $25^{\circ}C$	2		W/ $^{\circ}C$
$T_J, T_{STJ}$ Operating and Storage Junction Temperature Range	-55 to +150 $^{\circ}C$		$^{\circ}C$
$T_L$ Lead Temperature (0.063" from Case for 10 Sec.)	300		$^{\circ}C$

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

Characteristic / Test Conditions / Part Number			Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0V$ <b>SML1001RHN</b>	1000			V
		$I_D = 250\mu A$ <b>SML901RHN</b>	900			
$I_{DSS}$	Zero Gate Voltage Drain Current ( $V_{GS} = 0V$ )	$V_{DS} = V_{DSS}$			250	$\mu A$
		$V_{DS} = 0.8V_{DSS}$ $T_C = 125^{\circ}C$			1000	
$I_{GSS}$	Gate – Source Leakage Current	$V_{GS} = \pm 30V$ $V_{DS} = 0V$			±100	nA
$I_{D(ON)}$	On State Drain Current <sup>2</sup>	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max $V_{GS} = 10V$	10			A
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 1.0mA$	2		4	V
$R_{DS(ON)}$	Static Drain – Source On State Resistance <sup>2</sup>	$V_{GS} = 10V, I_D = 0.5 I_D$ [Cont.]			1.00	$\Omega$

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

## DYNAMIC CHARACTERISTICS

	Characteristic	Test Conditions.	Min.	Typ.	Max.	Unit
$C_{iss}$	Input capacitance	$V_{GS} = 0V$		2460	2950	pF
$C_{oss}$	Output capacitance	$V_{DS} = 25V$		360	500	
$C_{rss}$	Reverse transfer capacitance	$f = 1MHz$		105	160	
$Q_g$	Total Gate Charge <sup>3</sup>	$V_{GS} = 10V$		90	130	nC
$Q_{gs}$	Gate – Source Charge	$I_D = I_D [Cont.]$		9.3	14	
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DD} = 0.5 V_{DSS}$		47	70	
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = 0.5 V_{DSS}$		15	30	ns
$t_r$	Rise Time	$I_D = I_D [Cont.]$		16	32	
$t_{d(off)}$	Turn-off Delay Time	$V_{GS} = 15V$		64	95	
$t_f$	Fall Time	$R_G = 1.8\Omega$		24	48	

## SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic / Test Conditions.	Part Number	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current (Body Diode)				10	A
$I_{SM}$	Pulsed Source Current <sup>1</sup> (Body Diode)				40	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS} = 0V$ $I_S = -I_D [Cont.]$			1.3	V
$t_{rr}$	Reverse Recovery Time	$I_S = -I_D [Cont.]$ $di_S / dt = 100A/\mu s$	320	636	1200	ns
$Q_{rr}$	Reverse Recovery Charge		2.2	4.5	9	$\mu C$

## SAFE OPERATING AREA CHARACTERISTICS

	Characteristic / Test Conditions / Part Number	Min.	Typ.	Max.	Unit
SOA1	Safe Operating Area $V_{DS} = 0.4 V_{DSS}$ , $I_{DS} = P_D / 0.4 V_{DSS}$ , $t = 1$ Sec	250			W
SOA2	Safe Operating Area $I_{DS} = I_{DS} [Cont.]$ , $V_{DS} = P_D / I_D [Cont.]$ , $t = 1$ Sec	250			
$I_{LM}$	Inductive Current Clamped	40			A

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

	Characteristic / Test Conditions.	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.50	$^\circ C/W$
	Junction to Ambient			40	$^\circ C/W$

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