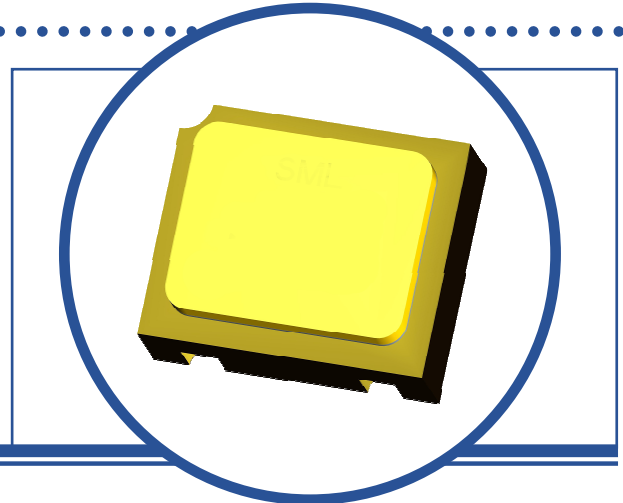


# N-CHANNEL ENHANCEMENT MODE MOSFET

## 2N7002CSM

- $V_{DSS} = 60V$ ,  $I_D = 115mA$ ,  $R_{DS(ON)} = 7.5\Omega$
- Fast Switching
- Low Threshold Voltage
- Integral Source-Drain Body Diode
- Hermetic Ceramic Surface Mount Package (SOT-23 compatible)
- High Reliability Screening Options Available



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ unless otherwise stated)

$V_{DS}$	Drain – Source Voltage		60V
$V_{GS}$	Gate – Source Voltage		$\pm 40V$
$I_D$	Continuous Drain Current	$T_C = 25^\circ C$	115mA
$I_D$	Continuous Drain Current	$T_C = 100^\circ C$	75mA
$I_{DM}$	Pulsed Drain Current <sup>(1)</sup>		800mA
$P_T$	Total Power Dissipation at	$T_A \leq 25^\circ C$	350mW
		De-rate $T_C > 25^\circ C$	2.8mW/ $^\circ C$
$T_J$	Operating Temperature Range		-55 to +150 $^\circ C$
$T_{stg}$	Storage Temperature Range		-55 to +150 $^\circ C$

### THERMAL PROPERTIES

Symbols	Parameters	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	357	$^\circ C/W$

#### Notes

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

# N-CHANNEL ENHANCEMENT MODE MOSFET 2N7002CSM

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 10\mu\text{A}$	60			V
$V_{GS(th)}$	Gate Threshold Voltage	$I_D = 250\mu\text{A}$ $V_{DS} \geq V_{GS}$	1.0		2.5	V
		$I_D = 1.0\text{mA}$ $T_A = -55^\circ\text{C}$			2.5	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 20\text{V}$ $V_{DS} = 0\text{V}$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 60\text{V}$			1.0	$\mu\text{A}$
		$T_A = 125^\circ\text{C}$			500	
$V_{DS(on)}^{(2)}$	Static Drain-Source On-State Voltage	$V_{GS} = 5\text{V}$ $I_D = 50\text{mA}$			1.5	V
		$V_{GS} = 10\text{V}$ $I_D = 0.5\text{A}$			3.75	
$R_{DS(on)}^{(2)}$	Static Drain-Source On-State Resistance	$V_{GS} = 5\text{V}$ $I_D = 50\text{mA}$			7.5	$\Omega$
		$T_A = 125^\circ\text{C}$			13.5	
		$V_{GS} = 10\text{V}$ $I_D = 0.5\text{A}$			7.5	
		$T_A = 125^\circ\text{C}$			13.5	
$g_{fs}^{(2)}$	Forward Transconductance	$V_{DS} = 10\text{V}$ $I_D = 0.2\text{A}$	80			$\text{m}\Omega$
$V_{SD}^{(2)}$	Body Diode Forward Voltage	$V_{GS} = 0$ $I_S = 0.2\text{A}$	0.7		1.2	V

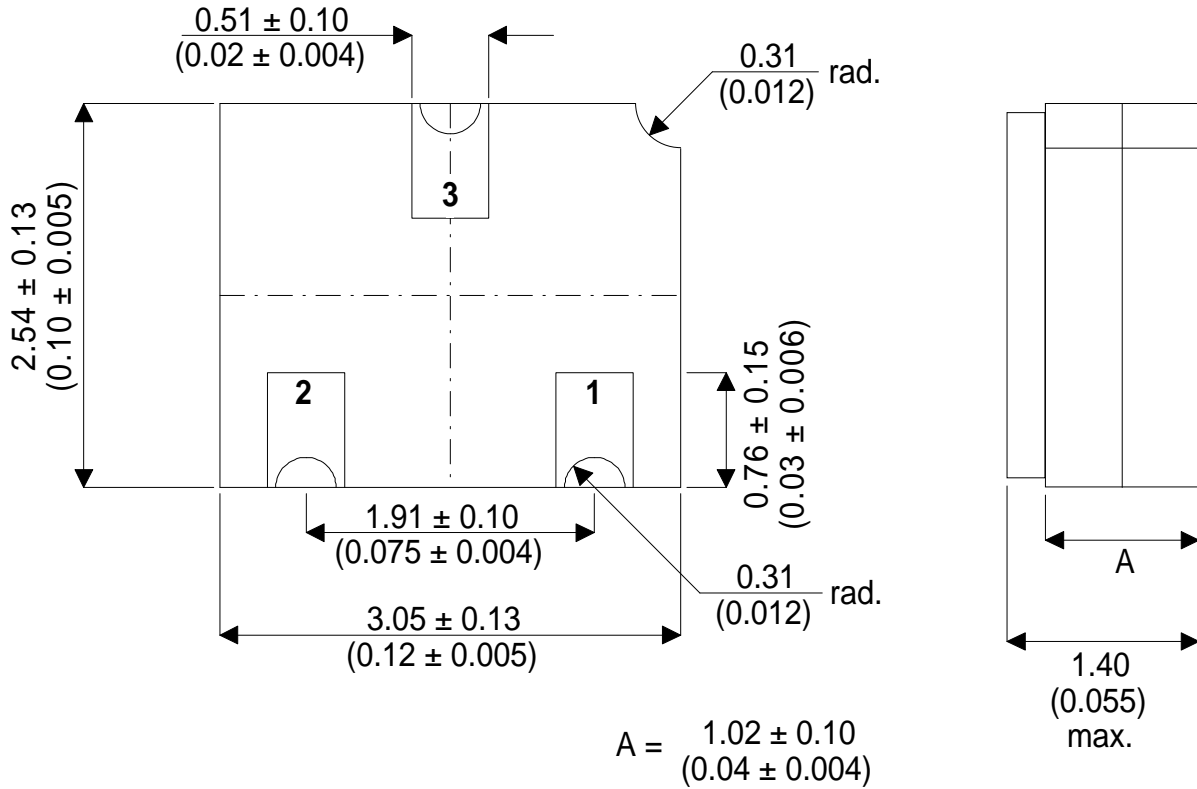
## DYNAMIC CHARACTERISTICS

$C_{iss}$	Input Capacitance	$V_{GS} = 0$			50	$\text{pF}$
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$			25	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1.0\text{MHz}$			5	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 30\text{V}$			20	ns
$t_{d(off)}$	Turn-Off Delay Time	$I_D = 0.2\text{A}$ $R_G = 50\Omega$			20	

# N-CHANNEL ENHANCEMENT MODE MOSFET 2N7002CSM

## MECHANICAL DATA

Dimensions in mm (inches)



### LCC1 (SOT-23 Ceramic) Underside View

<b>Pad 1</b>	<b>Pad 2</b>	<b>Pad 3</b>
Gate	Source	Drain