

### 2N7002DCSM

### **MECHANICAL DATA**

Dimensions in mm (inches)

#### $1.40 \pm 0.15$ $2.29 \pm 0.20$ $1.65 \pm 0.13$ $(0.055 \pm 0.006)$ $(0.09 \pm 0.008)$ $2.54 \pm 0.13$ (0.10 ± 0.005) ----2 0.23 rad. -∙6 $1.27 \pm 0.13$ $A = 1.27 \pm 0.005$ $(0.05 \pm 0.005)$ $6.22 \pm 0.13$ $(0.245 \pm 0.005)$

# **DUAL N-CHANNEL ENHANCEMENT MODE** MOS TRANSISTOR

### **FEATURES**

- V<sub>(BR)DSS</sub> = 60V
- $RDS_{(ON)} = 7.5\Omega$
- $I_D = 0.115A$

## **CERAMIC** LCC2 PACKAGE (underside view)

PAD 1 - Drain 1 PAD 4 - Drain 2 PAD 2 - Gate 1 PAD 5 - Source 2 PAD 3 - Gate 2 PAD 6 - Source 1

## **ABSOLUTE MAXIMUM RATINGS** (T<sub>CASE</sub> = 25°C unless otherwise stated)

		PER SIDE	TOTAL DEVICE	
$\overline{V_{DS}}$	Drain – Source Voltage	60V		
$V_{GS}$	Gate – Source Voltage	±40V		
$I_{D}$	Drain Current	±0.115A		
$I_{DM}$	Pulsed Drain Current *	0.8A		
$P_{D}$	Power Dissipation	200mW	400mW	
	Derate Above 25°C	1.60mW/°C	2.0mW/°C	
$T_j$	Operating Junction Temperature Range	−55 to 150°C		
$T_{stg}$	Storage Temperature Range	−55 to 150°C		
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	625°C/W   250°C/W		

<sup>\*</sup> Pulse width limited by maximum junction temperature.

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Document Number 6171

Issue 1



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

	Parameter	Test Conditions		Min.	Тур.	Max.	Unit	
	STATIC CHARACTERISTICS					•		
V <sub>(BR)DSS</sub>	Gate – Source Breakdown Voltage	$V_{GS} = 0V$	I <sub>D</sub> = 10μA	60	70		V	
V <sub>GS(th)</sub>	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 0.25 \text{mA}$	1	2.15	2.5	V	
I <sub>GSS</sub>	Gate – Body Leakage Current	$V_{GS} = \pm 20 VV_{DS} = 0 V$				±100	nA	
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	$V_{DS} = 60V$	V <sub>GS</sub> = 0V			1	μА	
			T <sub>CASE</sub> = 125℃			500		
I <sub>D(on)*</sub>	On-State Drain Current	V <sub>DS</sub> ≥2V <sub>DS(Ot</sub>	<sub>V)</sub> V <sub>GS</sub> = 10V	500	1000		mA	
R <sub>DS(on)*</sub>	Drain – Source On Resistance	$V_{GS} = 5V$			5	7.5		
		$I_D = 50 \text{mA}$	T <sub>CASE</sub> = 125℃		9	13.5	$\Omega$	
		V <sub>GS</sub> = 10V			2.5	7.5	1 22	
		$I_{D} = 0.5A$	T <sub>CASE</sub> = 125℃		4.4	13.5		
V <sub>DS(on)*</sub>	Drain – Source On Voltage	$V_{GS} = 5V$	I <sub>D</sub> = 50mA		0.25	0.375		
		V <sub>GS</sub> = 10V			1.25	3.75	V	
		$I_{D} = 0.5A$	T <sub>CASE</sub> = 125℃		2.2	6.75		
g <sub>FS*</sub>	Forward Transconductance	$V_{DS} = 10V$	I <sub>D</sub> = 0.2A	80	170		ms	
g <sub>OS*</sub>	Common Source Output Conductance	$V_{DS} = 5V$	I <sub>D</sub> = 50mA		500		μs	
	DYNAMIC CHARACTERISTICS							
C <sub>iss</sub>	Input Capacitance	$V_{DS} = 25V$			16	50		
C <sub>oss</sub>	Output Capacitance	$V_{GS} = 0V$			11	25	pF	
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1MHz			2	5		
	SWITCHING CHARACTERISTICS	·					•	
t <sub>ON</sub>	Turn-On Time		$V_{GEN} = 10V$ $R_G = 25\Omega$		7	20	ns	
t <sub>OFF</sub>	Turn-Off Time	$I_D = 0.2A$	11G - 2012		7	20	1113	

<sup>\*</sup> Pulse Test: PW = 80  $\mu s$  ,  $\delta \leq$  1%

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