

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	Vdc
Drain-Gate Voltage ($R_{GS} = 1\text{ M}\Omega$)	V_{DGR}	60	Vdc
Drain Current	I_D	± 115	mA
— Continuous $T_C = 25^\circ\text{C}$	I_D	± 75	
— Pulsed (2)	I_{DM}	± 800	
Gate-Source Voltage	V_{GS}	± 20	Vdc
— Continuous	V_{GSM}	± 40	Vpk
— Non-repetitive ($t_p \leq 50\text{ }\mu\text{s}$)			
Total Power Dissipation $T_C = 25^\circ\text{C}$	P_D	200	mW
$T_C = 100^\circ\text{C}$		80	
Derate above 25°C ambient		1.6	mW/ $^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board,* $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225	mW
		1.8	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate,** $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300	mW
		2.4	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

*FR-5 = $1.0 \times 0.75 \times 0.062\text{ in.}$

**Alumina = $0.4 \times 0.3 \times 0.025\text{ in}$ 99.5% alumina.

DEVICE MARKING

2N7002LT1 = 702

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 10\text{ }\mu\text{A}$)	$V_{(BR)DSS}$	60	—	—	Vdc
Zero Gate Voltage Drain Current ($V_{GS} = 0, V_{DS} = 60\text{ V}$) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DSS}	—	—	1.0 500	μAdc
Gate-Body Leakage Current Forward ($V_{GS} = 20\text{ Vdc}$)	I_{GSSF}	—	—	100	nAdc
Gate-Body Leakage Current Reverse ($V_{GS} = -20\text{ Vdc}$)	I_{GSSR}	—	—	-100	nAdc

(1) The Power Dissipation of the package may result in a lower continuous drain current.

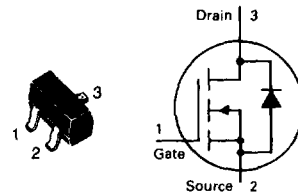
(2) Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

ON CHARACTERISTICS*

Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$)	$V_{GS(th)}$	1.0	—	2.5	Vdc
On-State Drain Current ($V_{DS} \geq 2.0 V_{DS(on)}, V_{GS} = 10\text{ V}$)	$I_{D(on)}$	500	—	—	mA
Static Drain-Source On-State Voltage ($V_{GS} = 10\text{ V}, I_D = 500\text{ mA}$) ($V_{GS} = 5.0\text{ V}, I_D = 50\text{ mA}$)	$V_{DS(on)}$	—	—	3.75 .375	Vdc
Static Drain-Source On-State Resistance ($V_{GS} = 10\text{ V}, I_D = 500\text{ mA}$) $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$ ($V_{GS} = 5.0\text{ V}, I_D = 50\text{ mA}$) $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$	$r_{DS(on)}$	—	—	7.5 13.5 7.5 13.5	Ohms
Forward Transconductance ($V_{DS} \geq 2.0 V_{DS(on)}, I_D = 200\text{ mA}$)	g_{FS}	80	—	—	mmhos

2N7002LT1★

CASE 318-07 STYLE 21
SOT-23 (TO-236AB)



TMOS FET TRANSISTOR

N-CHANNEL

★This is a Motorola
designated preferred device.

Refer to 2N7000 for graphs.

2N7002LT1**ELECTRICAL CHARACTERISTICS** (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS						
Input Capacitance ($V_{DS} = 25\text{ V}$, $V_{GS} = 0$, $f = 1.0\text{ MHz}$)		C_{iss}	—	—	50	pF
Output Capacitance ($V_{DS} = 25\text{ V}$, $V_{GS} = 0$, $f = 1.0\text{ MHz}$)		C_{oss}	—	—	25	pF
Reverse Transfer Capacitance ($V_{DS} = 25\text{ V}$, $V_{GS} = 0$, $f = 1.0\text{ MHz}$)		C_{rss}	—	—	5.0	pF
SWITCHING CHARACTERISTICS*						
Turn-On Delay Time	($V_{DD} = 25\text{ V}$, $I_D = 500\text{ mA}$, $R_G = 25\ \Omega$, $R_L = 50\ \Omega$)	$t_{d(on)}$	—	—	30	ns
Turn-Off Delay Time		$t_{d(off)}$	—	—	40	ns
BODY-DRAIN DIODE RATINGS						
Diode Forward On-Voltage ($I_S = 11.5\text{ mA}$, $V_{GS} = 0\text{ V}$)		V_{SD}	—	—	-1.5	V
Source Current Continuous (Body Diode)		I_S	—	—	-115	mA
Source Current Pulsed		I_{SM}	—	—	-800	mA

*Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.