

2N7002T

2N7002T N-Channel MOSFET

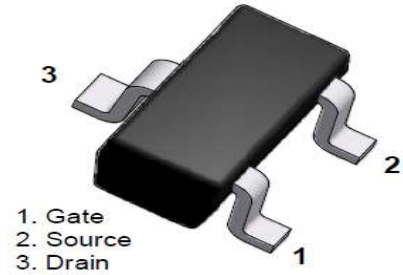
General description

N-Channel MOSFET

FEATURES

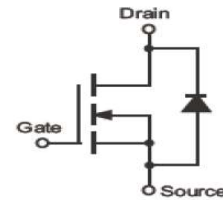
- Low On-resistance
- Low Gate Threshold Voltage
- Low Input capacitance
- RoHS Compliant
- Green EMC
- Matte Tin(Sn) Lead Finish
- Weight: approx. 0.002g

Green Product



SOT-523

Electrical Symbol:



Device Marking Code:



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Continuous Gate-Source Voltage	$\pm 20\text{V}$	V
I_D	Continuous Drain Current	115	mA
P_D	Power Dissipation	150	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	833	$^\circ\text{C/W}$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ\text{C}$
T_J	Operating Junction Temperature	+150	$^\circ\text{C}$

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

Off Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}, I_D=10\mu\text{A}$	60			Volts
I_{GSS}	Gate-Body Leakage	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 1	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			100	nA

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On Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
$V_{th(GS)}$	Gate-Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1		2.5	Volts
$I_{D(ON)}$	On-state Drain Current	$V_{GS} = 10V, V_{DS} = 7V$	500			mA
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS} = 10V, I_D = 500mA$			7.5	Ω
		$V_{GS} = 5V, I_D = 50mA$			7.5	Ω
g_{fs}	Forward Trans Conductance	$V_{DS} = 10V, I_D = 200mA$	80		500	ms
$V_{DS(on)}$	Drain-Source On-Voltage	$V_{GS} = 10V, I_D = 500mA$			3.75	V
		$V_{GS} = 5V, I_D = 50mA$			0.375	V
V_{SD}	Diode Forward Voltage	$I_S = 250mA, V_{GS} = 0V$			1	V

Dynamic Characteristics

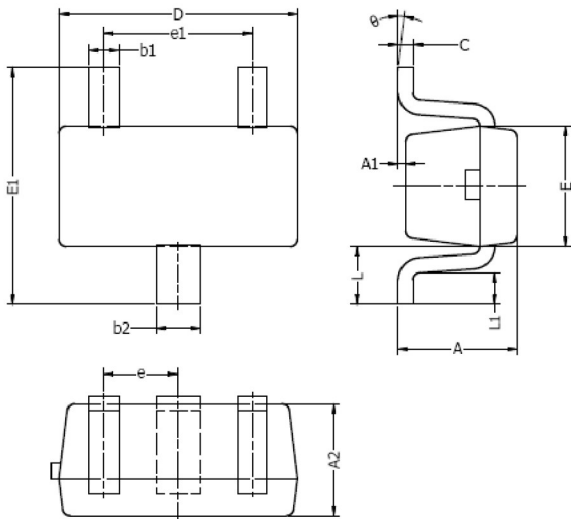
Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
C_{iss}	Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$	--	--	50	pF
C_{oss}	Output Capacitance		--	--	25	pF
C_{rss}	Reverse Transfer Capacitance		--	--	5.0	pF

Switching Characteristics

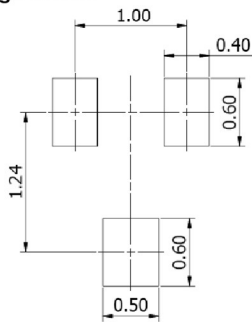
Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
$t_{D(on)}$	Turn-on Time	$V_{DD} = 10V, R_L = 20\Omega,$	--	5.6	--	nS
$t_{D(off)}$	Turn-off Time	$I_D = 500mA, V_{GEN} = 10V,$ $R_G = 10\Omega$	--	25	--	nS

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SOT-523 Package Outline



Typical Soldering Pattern:



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
θ	0°	8°	0°	8°

Note :

1. Above package outline conforms to JEITA EAIJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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