深圳市登辰易科技有限公司

Small Signal MOSFET
115 mAmps, 60 Volts N–Channel SOT–23

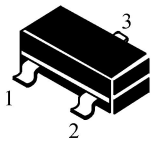
2N7002LT1G

●FEATURES

1)We declare that the material of product compliant with RoHS requirements and Halogen Free.
2)ESD Protected:1000V
3)S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

SOT—23

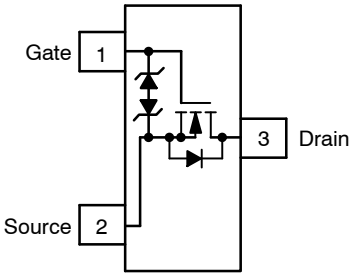
1. BASE
2. EMITTER
3. COLLECTOR



●DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
2N7002LT1G	702	3000/Tape&Reel

Simplified Schematic



(Top View)

●MAXIMUM RATINGS(Ta = 25° C)

Rating	Symbol	Value	Unit
Drain–Source Voltage	V_{DSS}	60	Vdc
Drain–Gate Voltage (R_{GS} = 1.0 MΩ)	V_{DGR}	60	Vdc
Drain Current – Continuous T_C = 25°C (Note 1.) T_C = 100°C (Note 1.) – Pulsed (Note 2.)	 I_D I_D I_{DM}	 ±115 ±75 ±800	mAdc
Gate–Source Voltage – Continuous – Non–repetitive (tp≤ 50μs)	 V_{GS} V_{GSM}	 ±20 ±40	 Vdc Vpk

●THERMAL CHARACTERISTICS

Characteristic	Symbo	Max	Unit
Total Device Dissipation FR–5 (Note 3.) T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate,(Note 4.) T_A = 25° C Derate above 25°C	P_D	 300 2.4	 mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	°C

1. The Power Dissipation of the package may result in a lower continuous
2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
3. FR–5 = 1.0 x 0.75 x 0.062 in.
4. Alumina = 0.4 x 0.3 x 0.025 in 99.5% alumina.

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●ELECTRICAL CHARACTERISTICS (Ta= 25℃)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Drain–Source Breakdown Voltage (V_{GS} = 0, I_D = 10μAdc)	$V_{(BR)DSS}$	60	–	–	Vdc
Zero Gate Voltage Drain Current (V_{GS} = 0, V_{DS} = 60 Vdc) T_J = 25° C	I_{DSS}	–	–	1.0	μAdc
T_J = 125° C		–	–	500	
Gate–Body Leakage Current, Forward (V_{GS} = 20 Vdc)	I_{GSSF}	–	–	1	μAdc
Gate–Body Leakage Current, Reverse (V_{GS} = – 20 Vdc)	I_{GSSR}	–	–	-1	μAdc
ON CHARACTERISTICS (Note 2.)					
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 250μAdc)	$V_{GS(th)}$	1	1.6	2	Vdc
On–State Drain Current (V_{DS} ⩾ 2.0 $V_{DS(on)}$, V_{GS} = 10 Vdc)	$I_{D(on)}$	500	–	–	mA
Static Drain–Source On–State Voltage (V_{GS} = 10 Vdc, I_D = 500 mAdc)	$V_{DS(on)}$	–	–	3.75	Vdc
(V_{GS} = 5.0 Vdc, I_D = 50 mAdc)		–	–	0.375	
Static Drain–Source On–State Resistance					
(V_{GS} = 10 V, I_D = 500 mAdc) T_C = 25° C	$r_{DS(on)}$	–	1.4	7.5	Ohms
T_C = 125° C		–	–	13.5	
(V_{GS} = 5.0 Vdc, I_D = 50 mAdc) T_C = 25° C		–	1.8	7.5	
T_C = 125° C		–	–	13.5	
(V_{DS} ⩾ 2.0 $V_{DS(on)}$, I_D = 200 mAdc)	g_{FS}	80	–	–	mmhos
DYNAMIC CHARACTERISTICS					
Input Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)	C_{iss}	–	17	50	pF
Output Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)	C_{oss}	–	10	25	pF
Reverse Transfer Capacitance (V_{DS} = 25 Vdc, VGS = 0, f = 1.0 MHz)	C_{rss}	–	2.5	5.0	pF
SWITCHING CHARACTERISTICS (Note 2.)					
Turn–On Delay Time (V_{DD} = 25 Vdc , I_D =500 mAdc, R_G = 25 Ω, R_L = 50 Ω, V_{gen} = 10V)	td(on)	–	7	20	ns
Turn–Off Delay Time	td(off)	–	11	40	ns
BODY–DRAIN DIODE RATINGS					
Diode Forward On–Voltage (I_S = 115 mAdc, V_{GS} = 0V)	V_{SD}	–	–	–1.5	Vdc
Source Current Continuous (Body Diode)	I_S	–	–	–115	mAdc
Source Current Pulsed	I_{SM}	–	–	–800	mAdc

2. Pulse Test: Pulse Width ⩽ 300 μs, Duty Cycle ⩽ 2.0%.

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ELECTRICAL CHARACTERISTIC CURVES

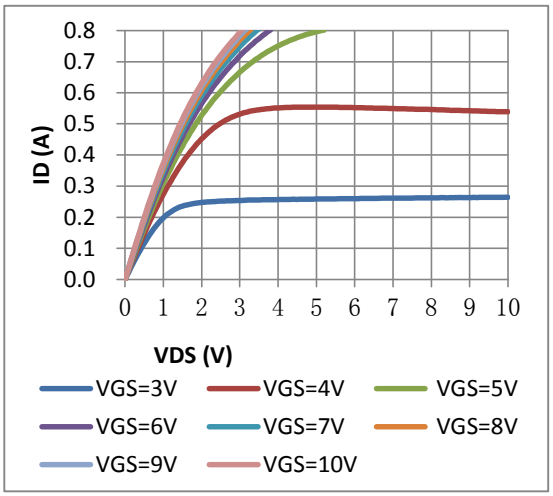

FIG1. On-Region Characteristi‹

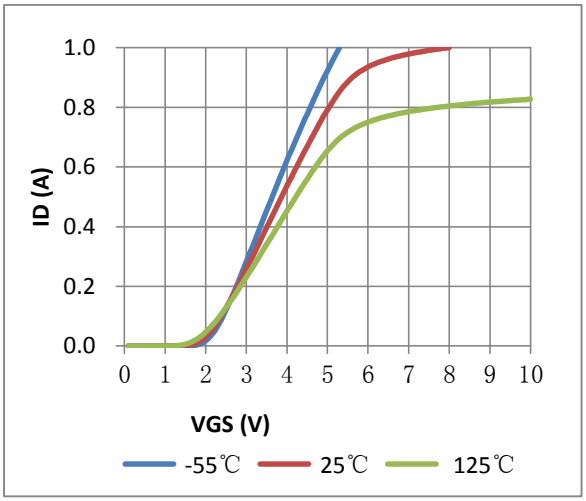

FIG2. Transfer Characteristics

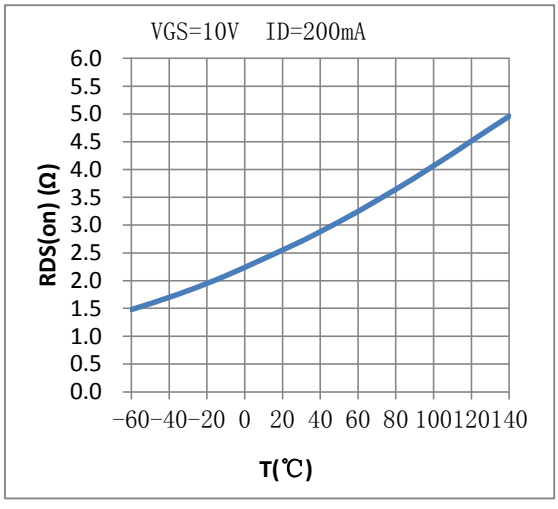

FIG. 3 Temperature vs Static Drain- Source On-Resistance

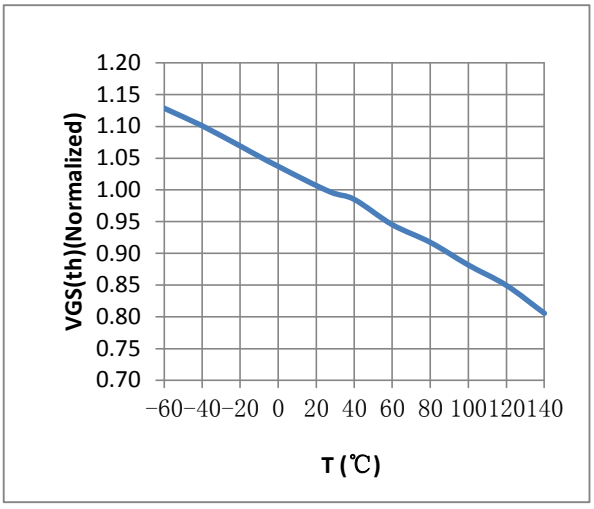

FIG. 4 **Temperature vs Gate Threshold**

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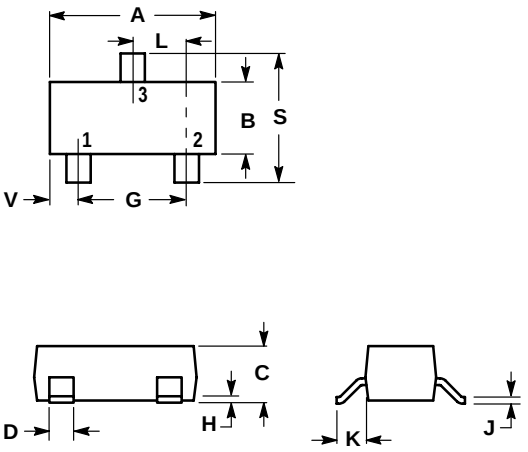
Dimension Outline:



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

Soldering Footprint: