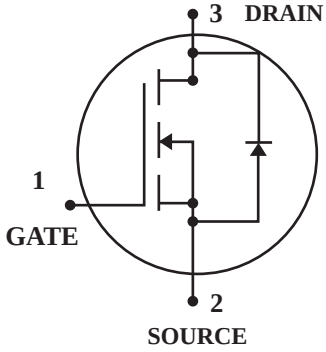
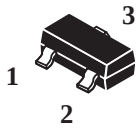
WEITRON

2N7002

Small Signal MOSFET
N-Channel

Pb Lead(Pb)-Free





SOT-23

Maximum Ratings (T_A=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	60	V
Drain Gate Voltage(RGS = 1.0MΩ)	V_{DGR}	60	V
Drain Current Continuous TC = 25°C (Note 1.) TC= 100°C (Note 1.) Pulsed (Note2.)	I_D I_D I_{DM}	±115 ±75 ±800	mA
Gate Source Voltage Con tinuous Non–repe titive (tp≤ 50μs)	V_{GS} V_{GSM}	±20 ±40	V V

Thermal Characteristics (T_A=25°C Unless Otherwise Specified)

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board (Note3.) TA=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,(Note4.)TA =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 Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{stg}	-55 to +150	°C

Note : 1.The Power Dissipation of thepackage may result in a lower continuous drain current.
2.PulseTest: Pulse Width ≤ 300μs, 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.

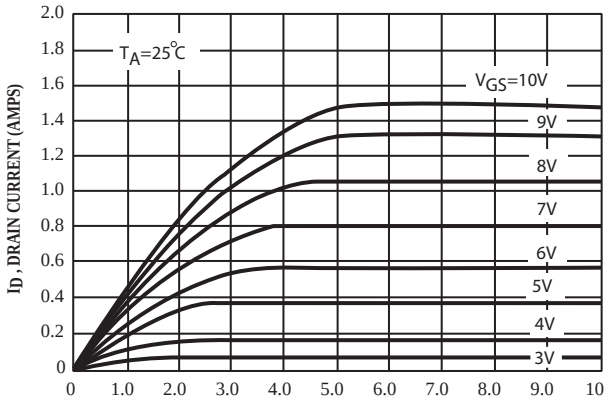
Device Marking

2N7002 = 702

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

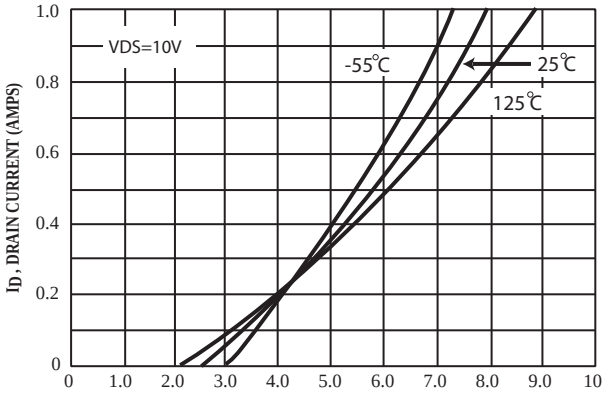
Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain–Source Breakdown Voltage V_{GS} = 0, I_D = 10μA		$V_{(BR)DSS}$	60	–	–	V
Zero Gate Voltage Drain Current V_{GS} = 0, V_{DS} = 6V	T_J = 25°C T_J = 125 °C	I_{DSS}	– –	– –	1.0 500	μA
Gate–Body Leakage Current Forward V_{GS} = 20V		I_{GSSF}	–	–	100	nA
Gate–Body Leakage Current, Reverse V_{GS} = –20 V		I_{GSSR}	–	–	-100	nA
ON CHARACTERISTICS (Note 2.)						
Gate Threshold Voltage V_{DS} = V_{GS}, I_D =250μA		$V_{GS(th)}$	1.0	1.6	2	V
On–State Drain Current V_{DS} ≥ 2.0 $V_{DS(on)}$, V_{GS} = 10V		$I_{D(on)}$	500	–	–	mA
Static Drain–Source On–State Voltage V_{GS} = 10 V , I_D = 500 mA V_{GS} = 5.0 V , I_D = 50 mA		$V_{DS(on)}$	– –	– –	3.75 0.375	V
Static Drain–Source On–State Resistance V_{GS} = 10 V, I_D = 500 mA V_{GS} = 5.0 V, I_D = 50 mA	T_C = 25°C T_C = 125 °C T_C = 25°C T_C = 125 °C	$r_{DS(on)}$	– – – –	1.4 – 1.8 –	7.5 13.5 7.5 13.5	Ω
Forward Transconductance V_{DS} ≥ 2.0 $V_{DS(on)}$, I_D = 200 mA		g_{FS}	80	–	–	mS
DYNAMIC CHARACTERISTICS						
Input Capacitance V_{DS} = 25 V, 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 V, V_{GS} = 0, f = 1.0 MHz		C_{rss}	–	2.5	5.0	pF
SWITCHING CHARACTERISTICS (Note 2.)						
Turn–On Delay Time	V_{DD} = 25 V , I_D ≅ 500 mA , R_G = 25 Ω, R_L = 50 Ω, V_{gen} = 10 V	$t_{d(on)}$	–	7	20	ns
Turn–Off Delay Time		$t_{d(off)}$	–	11	40	ns
BODY–DRAIN DIODE RATINGS						
Diode Forward On–Voltage I_S = 115 mA , V_{GS} = 0 V		V_{SD}	–	–	–1.5	V
Source Current Continuous Body Diode		I_S	–	–	–115	mA
Source Current Pulsed		I_{SM}	–	–	–800	mA

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



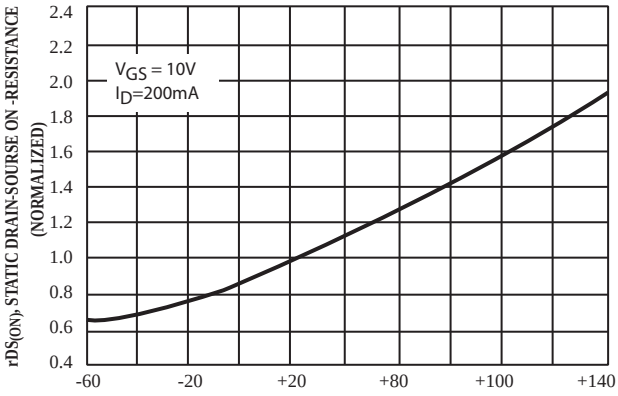
V_{DS}, DRAIN SOURSE VOLTAGE (VOLTS)

FIG.1 Ohmic Region



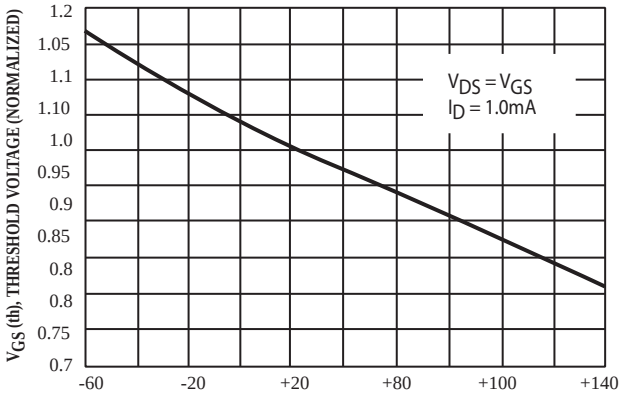
V_{GS}, GATE SOURCE VOLTAGE (VOLTS)

FIG.2 Transfer Characteristics



T,TEMPERATURE (˚C)

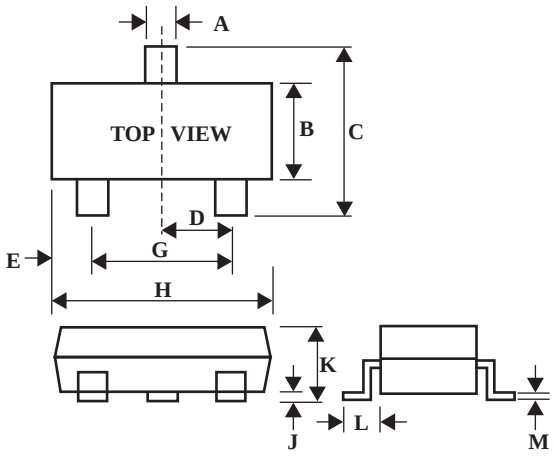
FIG.3 Temperature Versus Static Drain-Sourse On-Resistance



T,TEMPERATURE (℃)

FIG.4 Temperature Versus Gate Threshold Voltage

SOT-23 Outline Dimension



SOT-23		
Dim	**Min**	**Max**
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25