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

- We declare that the material of product are Halogen Free and compliance with RoHS requirements.
- ESD Protected:1000V



SOT– 23 (TO–236AB)

MAXIMUM RATINGS

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}	± 300 ± 210 ± 1.4A	mAdc
Gate–Source Voltage – Continuous – Non–repetitive ($t_p \leq 50$ µs)	V_{GS} V_{GSM}	± 20 ± 40	Vdc Vpk

THERMAL CHARACTERISTICS

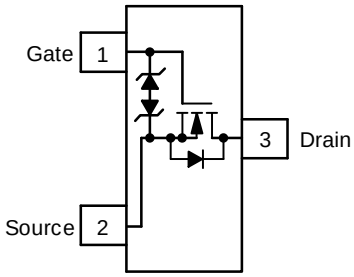
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board (Note 3.) T_A= 25°C Derate above 25℃	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate,(Note 4.) T_A= 25°C Derate above 25C	P_D	300 2.4	mW mW/°C
Thermal Resistance, 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 drain current.
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.

ORDERING INFORMATION

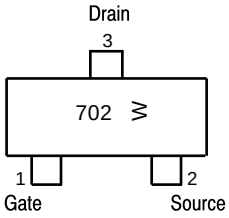
Device	Marking	Shipping
FTK7002	702	3000 Tape & Reel

Simplified Schematic



(Top View)

MARKING DIAGRAM & PIN ASSIGNMENT



702 = Device Code
W =Month Code

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 = 10μAdc)	$V_{(BR)DSS}$	60	–	–	Vdc
Zero Gate Voltage Drain Current (V_{GS} = 0, V_{DS} = 60 Vdc) T_J = 25°C T_J = 125°C	I_{DSS}	– –	– –	1.0 500	μAdc
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 ThresholdVoltage (V_{DS} = V_{GS}, I_D = 250μAdc)	$V_{GS(th)}$	1.0	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_{GS} = 5.0 Vdc, I_D= 50 mAdc)	$V_{DS(on)}$	 – –	 – –	 3.75 0.375	Vdc
Static Drain–Source On–State Resistance (V_{GS} = 10 V, I_D= 500 mAdc) T_C= 25°C T_C = 125°C (V_{GS} = 5.0 Vdc,I_D = 50 mAdc) T_C = 25°C T_C = 125°C	$r_{DS(on)}$	 – – – –	 1.4 – 1.8 –	 5.3 10.5 2.7 9.5	Ohms
Forward Transconductance (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, 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 Vdc , I_D ≅ 500 mAdc, R_G = 25Ω, R_L = 50Ω, 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 mAdc, V_{GS} = 0 V)	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≤300μs, Duty Cycle≤2.0%.

Typical Performance Characteristics

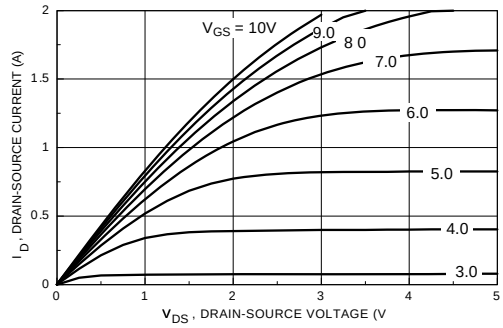


Figure 1. On-Region Characteristics

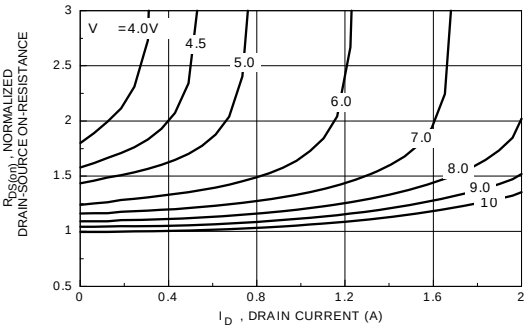


Figure 2. On-Resistance Variation with Gate Voltage and Drain Current

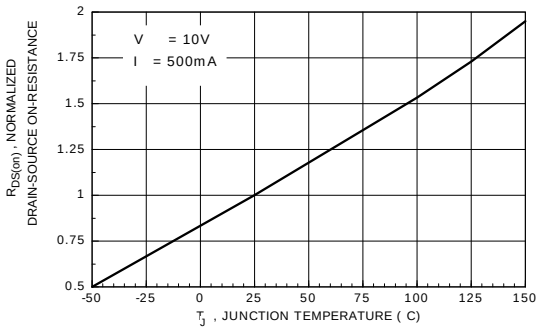


Figure 3. On-Resistance Variation with Temperature

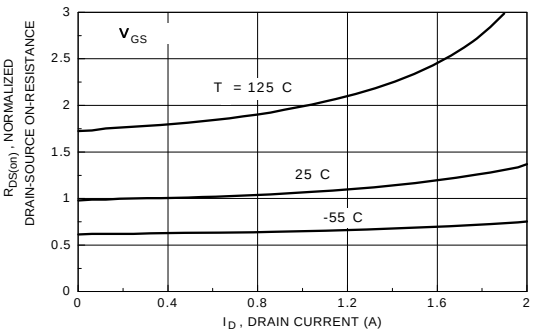


Figure 4. On-Resistance Variation with Drain Current and Temperature

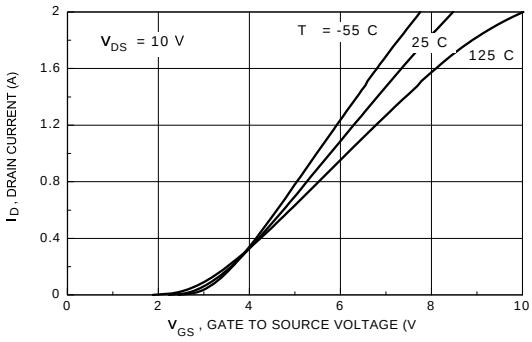


Figure 5. Transfer Characteristics

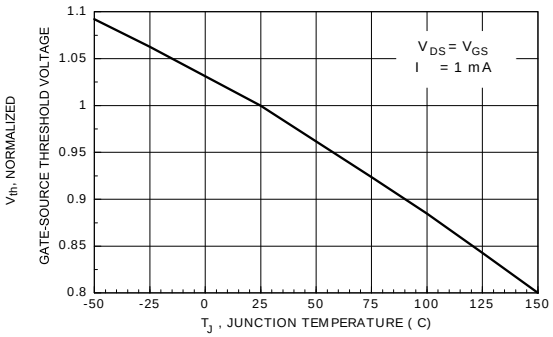
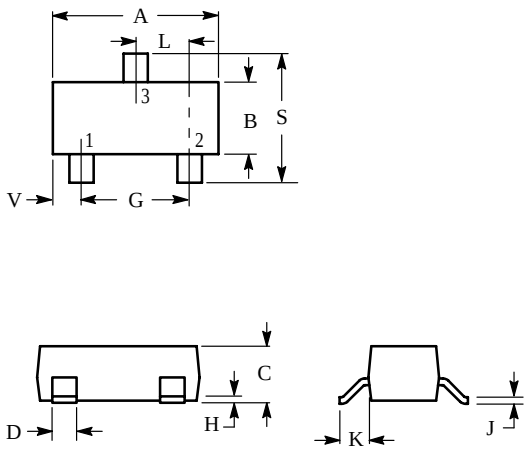


Figure 6. Gate Threshold Variation with Temperature

SOT –23



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

