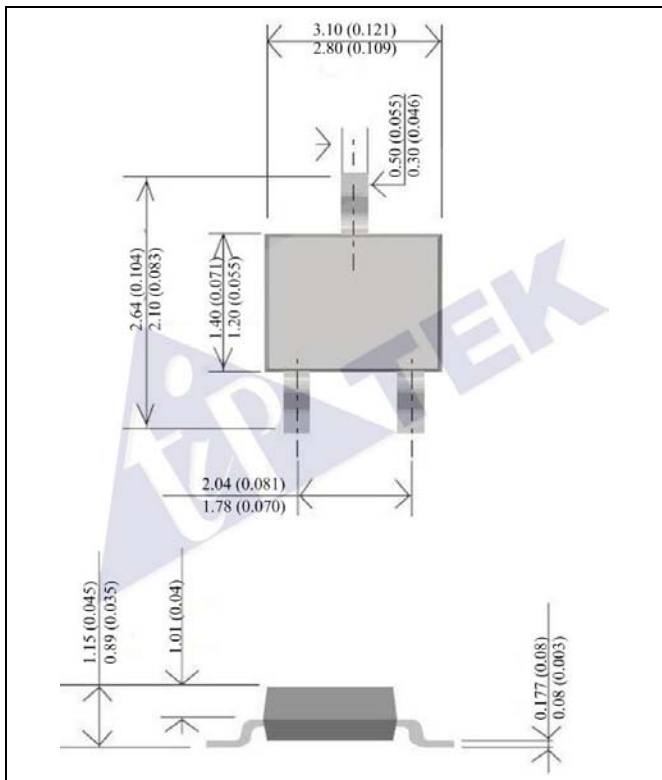


N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



CASE : SOT-23

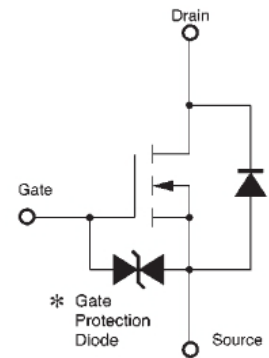
DIMENSIONS IN MILLIMETERS AND (INCHES)

FEATURES

- LOW ON-RESISTANCE
- FAST SWITCHING SPEED
- LOW -VOLTAGE DRIVE
- ESD PROTECTED:1000V

MECHANICAL DATA

- Pb-Free PACKAGE IS AVAILABLE.
- Pb Free: S2N7002K
Halogen Free: S2N7002K-H



ABSOLUTE MAXIMUM RATINGS

RATINGS AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE SPECIFIED.				
PATING		SYMBOL	S2N7002K	UNITS
DRAIN-SOURCE VOLTAGE		V_{DSS}	60	V
DRAIN-GATE VOLTAGE($R_{GS}=1.0M\Omega$)		V_{DGR}	60	V
DRAIN CURRENT	CONTINUOUS@ 25°C (NOTE 1)	I_D	± 115	mA
	CONTINUOUS@ 100°C (NOTE 1)		± 75	
	PULSED (NOTE 2)	I_{DM}	± 800	
GATE-SOURCE VOLTAGE	CONTINUOUS	V_{GS}	115	mA
	NON-REPETITIVE($t_p \leq 50 \mu s$)	V_{GSM}	± 20	
MAXIMUM POWER DISSIPATION DERATING (NOTE 2)		P_D	± 40	mW
OPERATING AND STORAGE JUNCTION TEMPERATURE RANGE		$T_j; T_{STG}$	- 55 TO +150	°C

NOTE: 1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.

ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS (At TA =25°C UNLESS OTHERWISE NOTED)						
CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNITS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =10μA	V _{(BR)DSS}	60	–	–	V
Zero Gate Voltage Drain	V _{DS} =60V, V _{GS} =0V, T _J =25°C	I _{DSS}	–	–	1.0	μA
	V _{DS} =60V, V _{GS} =0V, T _J =125°C				500	
Gate-Body Leakage, Forward (V _{DS} =0, V _{GS} =20V)		I _{GSSF}	–	–	+1	μA
Gate-Body Leakage, Reverse (V _{DS} =0, V _{GS} =-20V)		I _{GSSR}	–	–	-1	μA
ON CHARACTERISTICS (NOTE 2)						
Gate Threshold Voltage(V _{DS} = V _{GS} , I _D =250μA)		V _{GS(th)}	1	1.6	2.0	V
Drain-Source On- Resistance	V _{GS} =10V, I _D =500mA	R _{DS(ON)}	–	1.4	7.5	Ω
	V _{GS} =5.0V, I _D =50mA				7.5	
On-State Drain Current(V _{GS} =10V, V _{DS} ≥ 2V _{DS(ON)})		I _{D(ON)}	500	–	–	mA
Static Drain-Source On-State Voltage	I _D =500mA, V _{GS} =10V	V _{DS(ON)}	–	–	3.75	V
	I _D =50mA, V _{GS} =5.0V				0.375	
Forward Tran SCONDUCTANCE(V _{DS} = ≥ 2V _{DS(ON)} , I _D =200mA)		g _{FS}	80	–	–	mmhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	V _{DS} =25V, V _{GS} =0V, F=1.0MHz	C _{iss}	–	17	50	pF
Output Capacitance		C _{oss}	–	10	25	pF
Reverse Transfer Capacitance		C _{rss}	–	2.5	5	pF
SWITCHING CHARACTERISTICS (NOTE 2)						
Turn-On Delay Time	V _{DD} =25V, R _L =50Ω , I _D ≅ 500mA	t _{dON}	–	7	20	ns
Turn-Off Delay Time	V _{GS} =10V, R _G =25Ω	t _{dOFF}	–	11	40	ns
BODY-DRAIN DIODE RATING						
Diode Forward On-Voltage (I _S =115mA, V _{GS} =0V)		V _{SD}	–	–	-1.5	V
Source Current Continuous (Body Diode)		I _S	–	–	-115	mA
Source Current Pulsed		I _{SM}	–	–	-800	mA

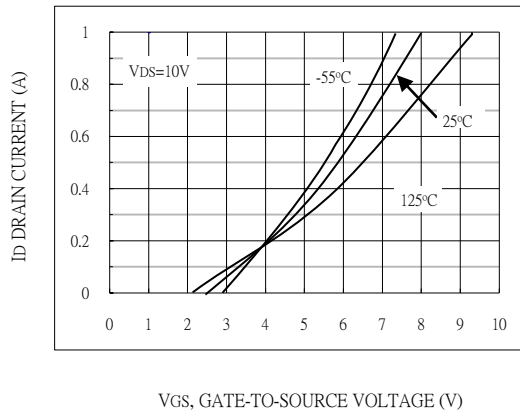


Fig.1-TRANSFER CHARACTERISTICS

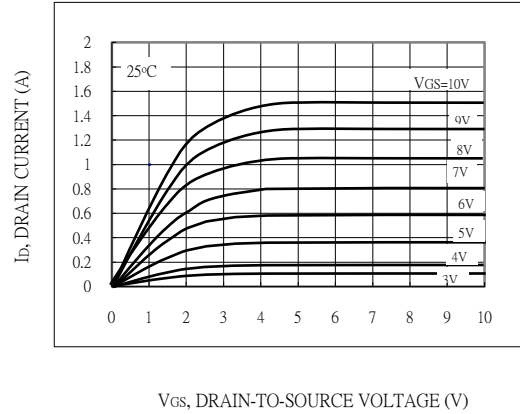


Fig.2-ON-REGION CHARACTERISTICS

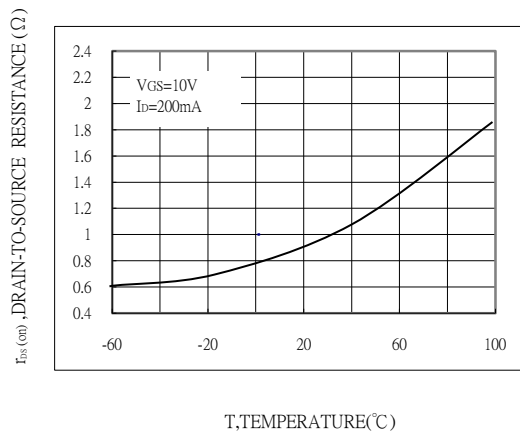


Fig.3- TEMPERATURE VERSUS STATIC DRAIN-SOURCE ON-

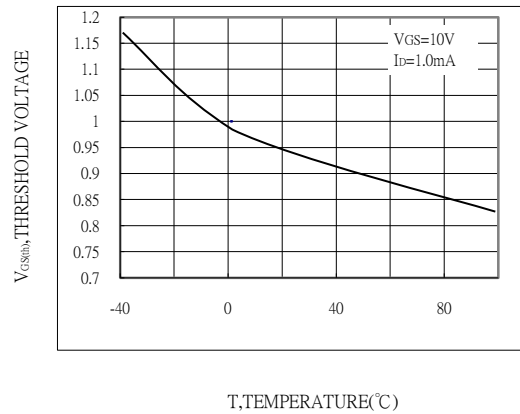


Fig.4- TEMPERATURE VERSUS GATE THRESHOLD VOLTAGE