

### SMD Power MOSFET Transistor (N-Channel)

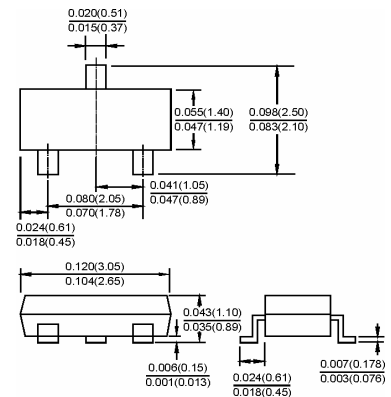
#### Features

- Low On-Resistance:6Ω
- Low input capacitance:20pF
- Low output capacitance:9pF
- Low threshold:2.8V
- Fast switching speed:20nS
- RoHS Compliance and Halogen Free

#### Application

- DC to DC converter
- Cellular & PCMCIA card
- Cordless telephone
- Power management in portable and battery etc.

#### SOT-23



Dimensions in inches and (millimeters)

#### Mechanical Data

<b>Case:</b>	SOT-23, Plastic Package
<b>Terminals:</b>	Solderable per MIL-STD-202G, Method 208
<b>Weight:</b>	0.008 gram

#### Maximum Ratings ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	BSS123	Unit	Conditions
	Marking Code	SA		
<b>V<sub>DSS</sub></b>	Drain-Source Voltage	100	V	
<b>V<sub>GSS</sub></b>	Gate-Source Voltage	± 20	V	
<b>I<sub>D</sub></b>	Drain Current Continuous	170	mA	T <sub>A</sub> =25° C
<b>I<sub>DM</sub></b>	Drain Current Pulsed (Note 1)	680	mA	
<b>P<sub>D</sub></b>	Drain Power Dissipation (Note 2)	225	mW	T <sub>A</sub> =25° C
<b>R<sub>thJA</sub></b>	Thermal Resistance, Junction to Ambient	556	° C/W	
<b>T<sub>J</sub>, T<sub>STG</sub></b>	Storage Temperature Range	-55 to +150	° C	

### Electrical Characteristics ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
<b>V(BR)DSS</b>	Drain-Source Breakdown Voltage	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$
<b>VGS(th)</b>	Gate Threshold Voltage	0.8	-	2.8	V	$V_{DS}=V_{GS}, I_D=1mA$
<b>IGSS</b>	Gate-Body Leakage Current	-	-	50	nA	$V_{DS}=0V, V_{GS}=20V$
<b>IDSS</b>	Zero Gate Voltage Drain Current	-	-	15	$\mu A$	$V_{DS}=0V, V_{GS}=100V, T_J=25^{\circ}C$
		-	-	60	$\mu A$	$V_{DS}=0V, V_{GS}=100V, T_J=125^{\circ}C$
<b>RDS(ON)</b>	Static Drain-to-Source On-Resistance	-	5.0	6.0	$\Omega$	$V_{GS}=10V, I_D=0.1A$
<b>gFS</b>	Forward Transconductance	8.0	-	-	mS	$V_{DS}=25V, I_D=100mA$

### Dynamic Characteristics ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
<b>Ciss</b>	Input Capacitance	-	20	-	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
<b>Crss</b>	Reverse Transfer Capacitance	-	4.0	-		
<b>Coss</b>	Output Capacitance	-	9.0	-		
<b>ton</b>	Switching Time Turn-On Time	-	20	-	nS	$V_{CC}=30V, R_{GS}=50\Omega, I_C=0.28A, V_{GS}=10V$
<b>toff</b>	Switching Time Turn-Off Time	-	40	-		

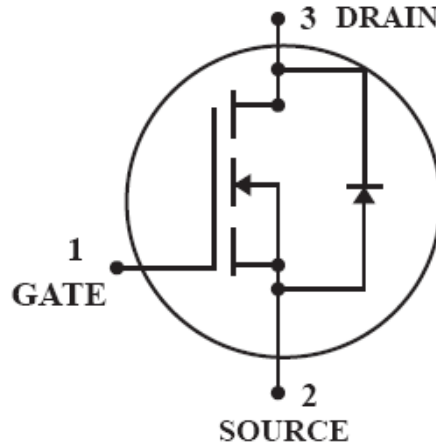
### Reverse Diode ( $T_{Ambient}=25^{\circ}C$ )

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
<b>VSD</b>	Drain-Source Diode Forward Voltage	-	-	1.3	V	$V_{GS}=0V, I_D=0.34A$

**Note:** (1) Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 2\%$

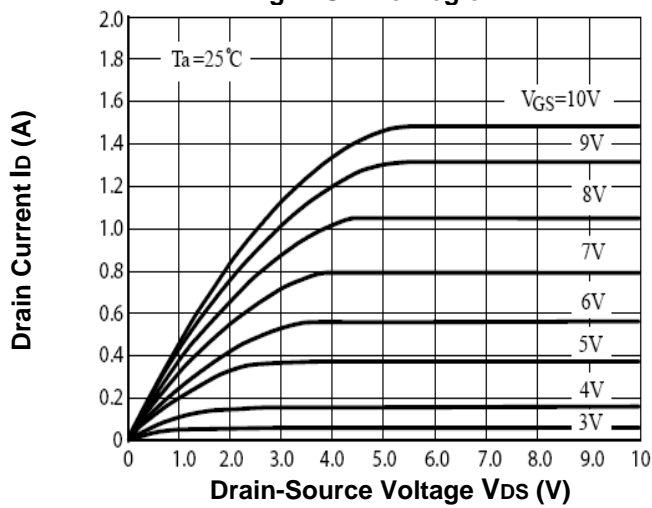
(2) RF-5=1.0X0.75X0.062m.

### Switching Time Test Circuit

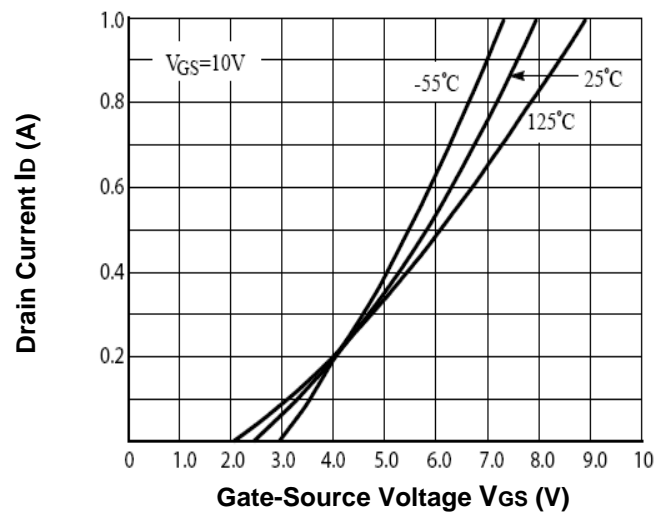


### Typical Characteristics Curves

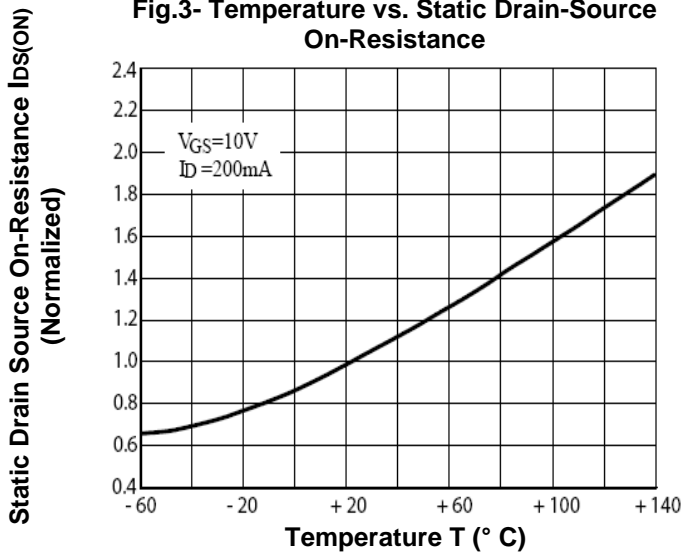
**Fig.1- Ohmic Region**



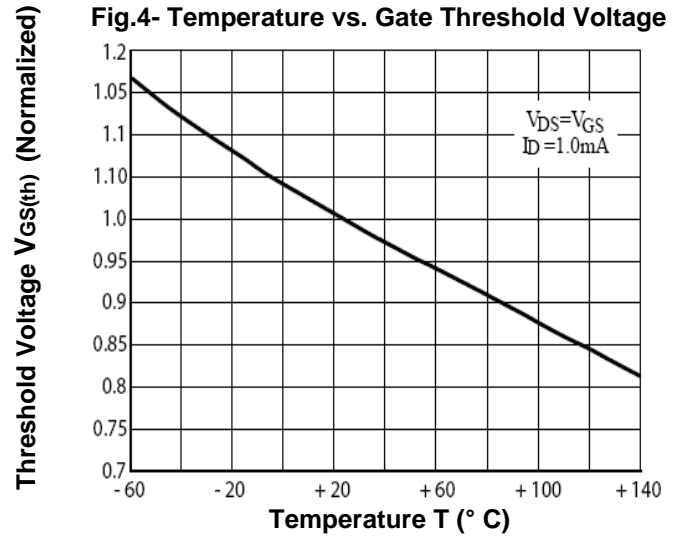
**Fig.2- Transfer Characteristics**

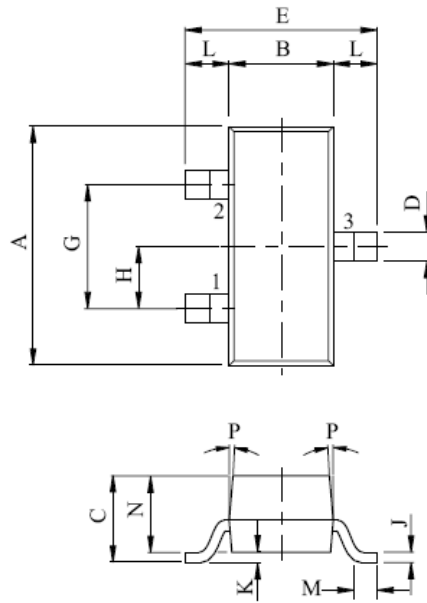


**Fig.3- Temperature vs. Static Drain-Source On-Resistance**



**Fig.4- Temperature vs. Gate Threshold Voltage**



**Dimensions in mm**


DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.45+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°

1. Source
2. Gate
3. Drain

**SOT-23**