

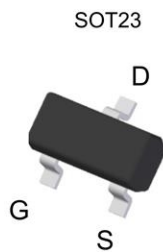
**General Features**

- 600V/16mA,  $R_{DS(ON)}=700\Omega@V_{GS}=10V$
- 600V/3mA,  $R_{DS(ON)}=700\Omega@V_{GS}=4.5V$
- Depletion-mode ( Normally-on)
- Improved ESD ability Fast switching
- Improved dv/dt capability
- SOT-23 package design

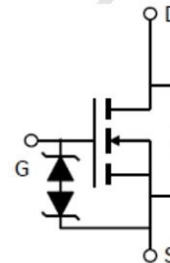
**Application**

- Desk PC Power Supply
- AC adapter
- LCD TC Power Supply

**Package and Pin Configuration**



**Circuit diagram**



**Marking :F5xxx Or SHs**

**F5=** is part number, fixed  
**xxx=** is internal code

**Pin Define**

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

**Absolute Maximum Ratings ( $T_A=25^\circ C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	600	V
Gate –Source Voltage	$V_{GSS}$	20	V
Continuous Drain Current( $T_J=150^\circ C$ )	$I_D$	$T_c=25^\circ C$	30
		$T_c=100^\circ C$	27
Pulsed Drain Current	$I_{DM}$	120	mA
Continuous Source Current	$I_S$	30	mA
Power Dissipation	$P_D$	$T_A=25^\circ C$	0.5
		$T_A=25^\circ C$	0.004
Operating Junction Temperature	$T_J$	-55/150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55/150	$^\circ C$
Thermal Resistance-Junction to Case	$R_{\theta JC}$	50	$^\circ C/W$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	250	$^\circ C/W$

**Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

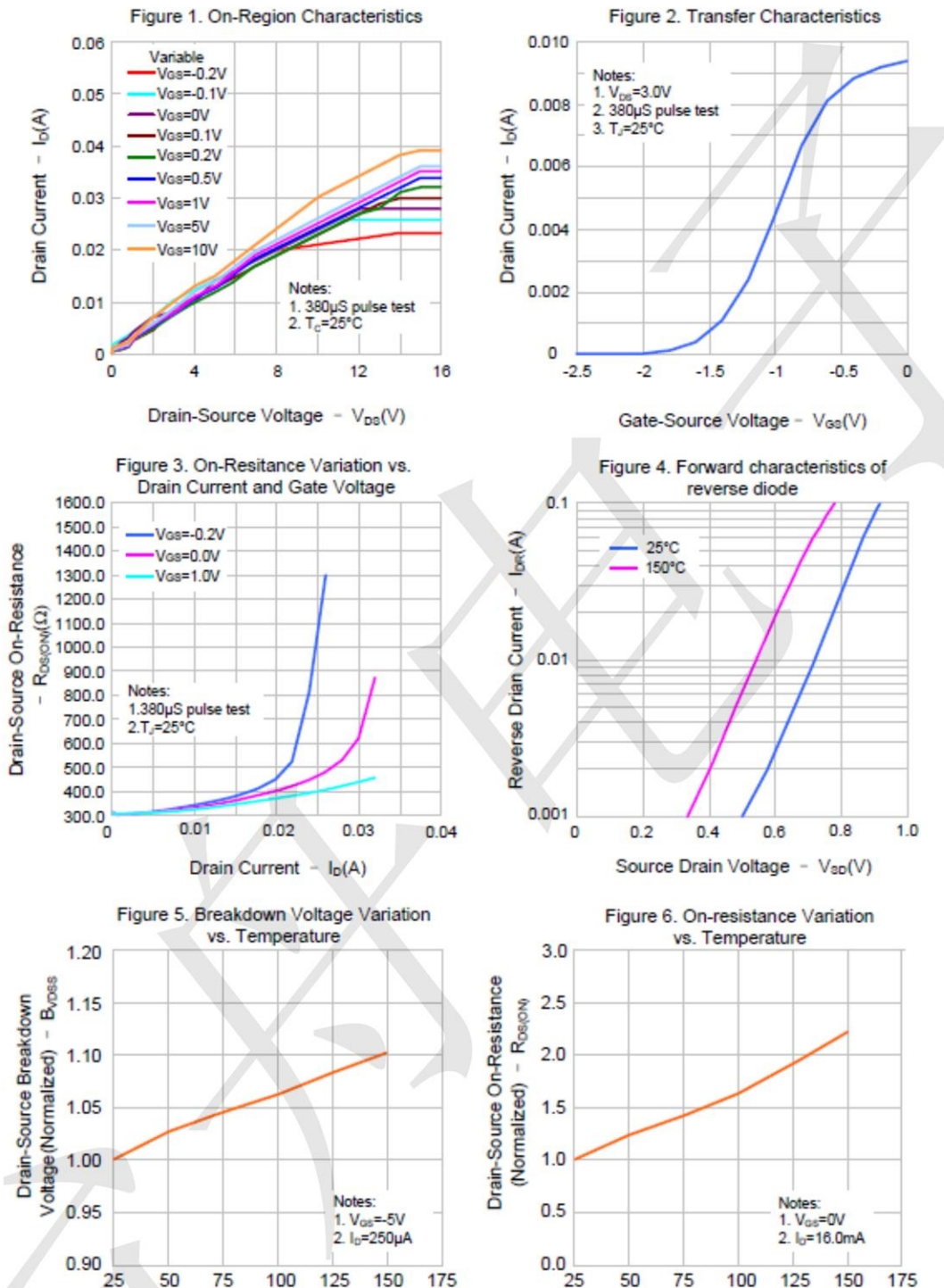
( $T_A=25^\circ\text{C}$  Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=-5V, I_D=250\mu A$	600			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=3V, I_D=8\mu A$	-2.7		-1.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=20V$			10	$\mu A$
Drain-Source Leakage Current	$I_{D(off)}$	$V_{DS}=600V, V_{GS}=-5V$			0.1	$\mu A$
On-state drain current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=25V$	12			$mA$
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=16mA$		310	700	$\Omega$
		$V_{GS}=0V, I_D=3mA$		330	700	
Diode Forward Voltage	$V_{SD}$	$I_S=16mA, V_{GS}=-5V$		0.85	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=400V, V_{GS}=-5V$ to 5V			1.8	nC
Gate-Source Charge	$Q_{gs}$	$I_D=0.01A$			0.75	
Gate-Drain Charge	$Q_{gd}$	(Note 1,2)			0.56	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=-5V$ $f=1MHz$			99	pF
Output Capacitance	$C_{oss}$				9.1	
Reverse Transfer Capacitance	$C_{rss}$				5	
Turn-On Time	$t_{d(on)}$	$V_{DD}=300V$			18	ns
	$t_r$	$I_D=0.01A, V_{GEN}=-5\dots 7V$			90	
Turn-Off Time	$t_{d(off)}$	$R_G=6\Omega$			93	
	$t_f$	(Note 1,2)			210	

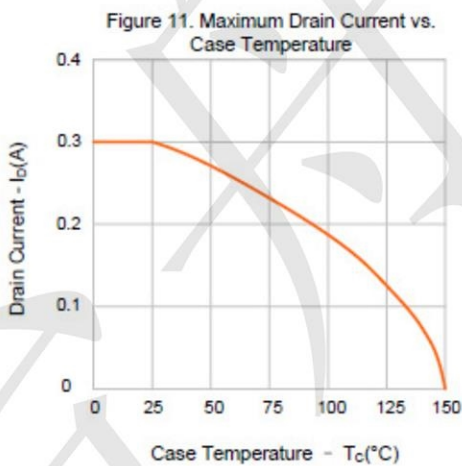
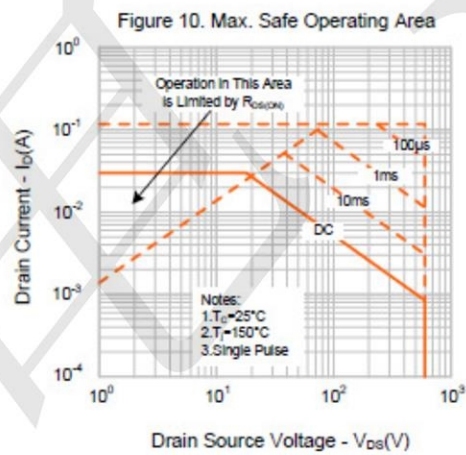
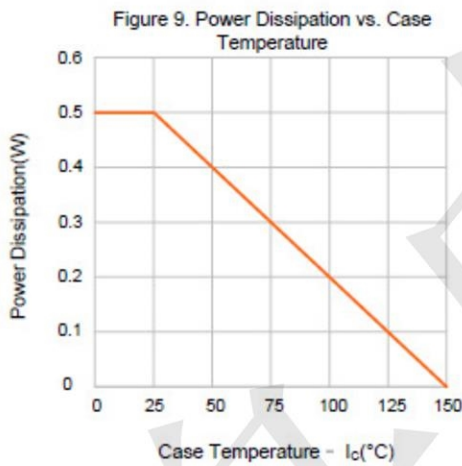
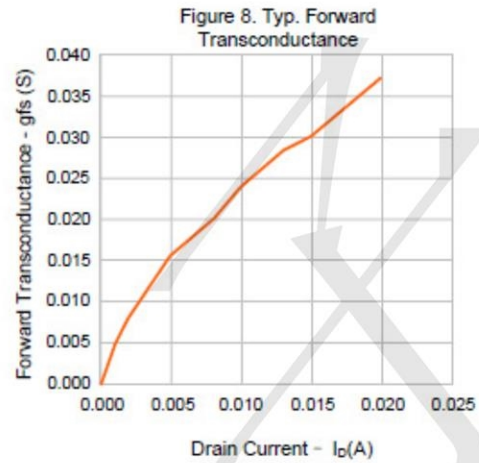
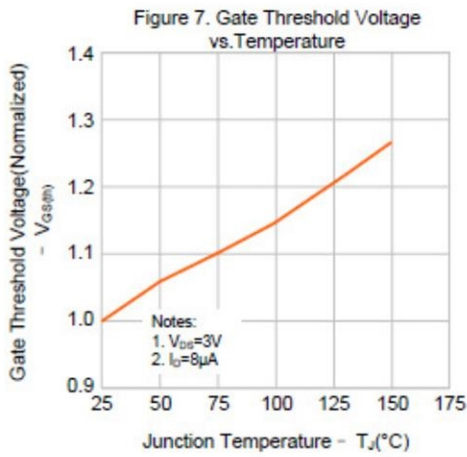
Notes:

1. Pulse Test: Pulse width  $\leq 300\mu s$ , Duty cycles  $\leq 2\%$
2. Essentially independent of operating temperature

**Typical Electrical and Thermal Characteristics (Curves)**

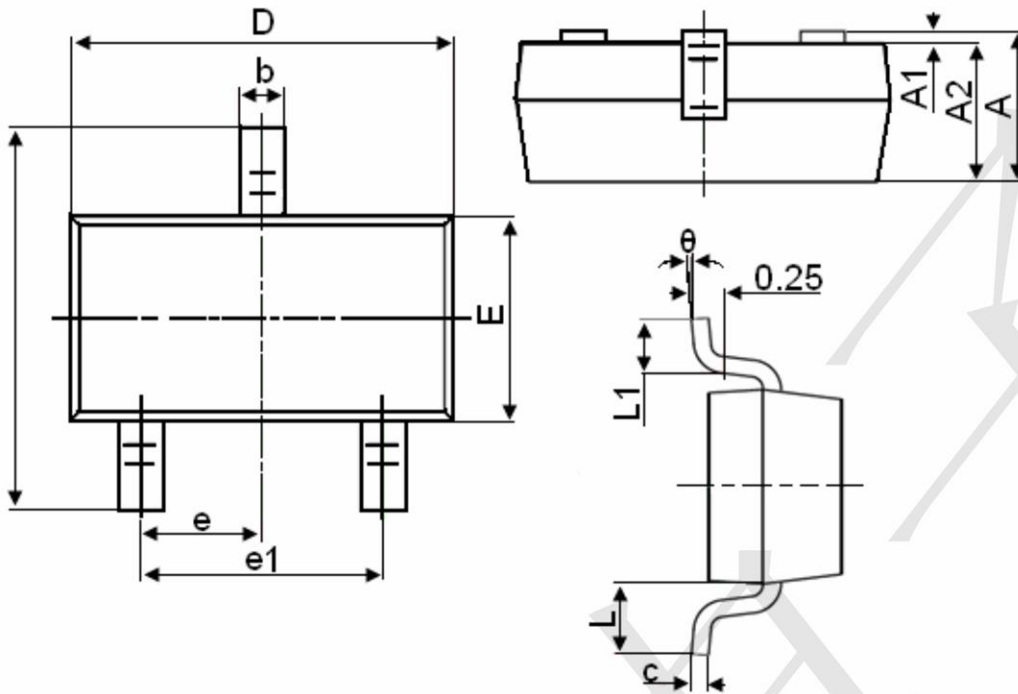


**Typical Electrical and Thermal Characteristics (Curves)**





**Package Outline Dimensions (SOT-23)**



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

**Notes**

1. All dimensions are in millimeters.
2. Tolerance  $\pm 0.10\text{mm}$  (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.