

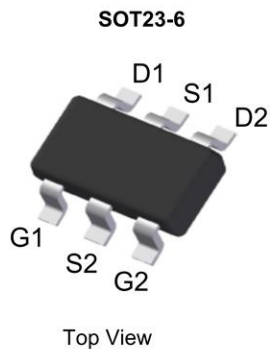
### Product Summary

BV <sub>DSS</sub>	R <sub>DS(ON)</sub> Max	I <sub>D</sub> Max T <sub>A</sub> = +25°C
50V	2.4Ω @ V <sub>GS</sub> = 10V	500mA
	4.0Ω @ V <sub>GS</sub> = 4V	390mA

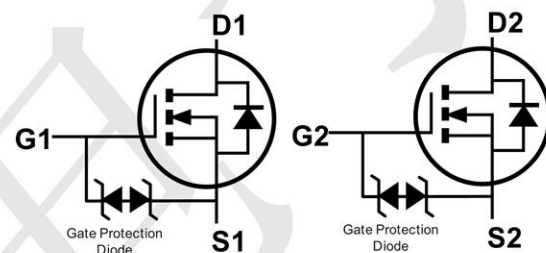
### Application

- Notebook
- Load Switch
- Networking
- Hand-held Instruments

### Package and Pin Configuration



### Circuit diagram



Marking: 02Nf

### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

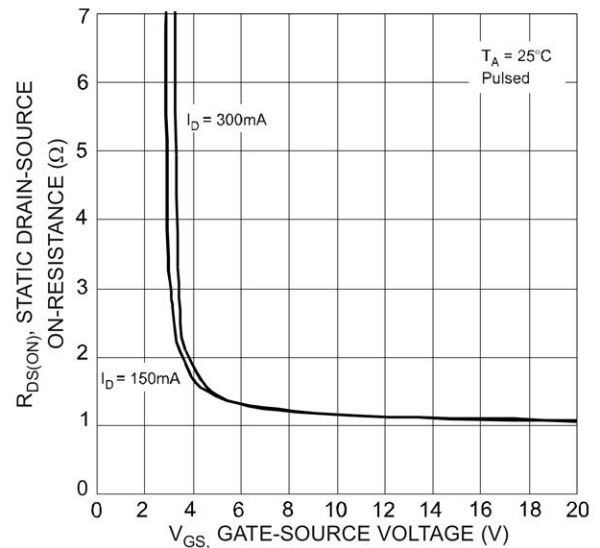
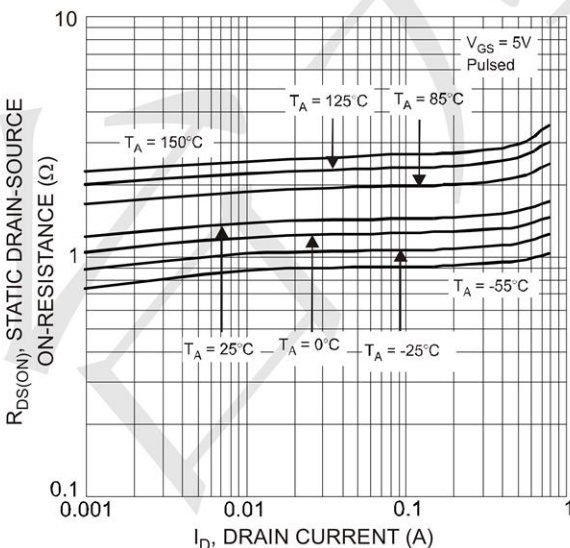
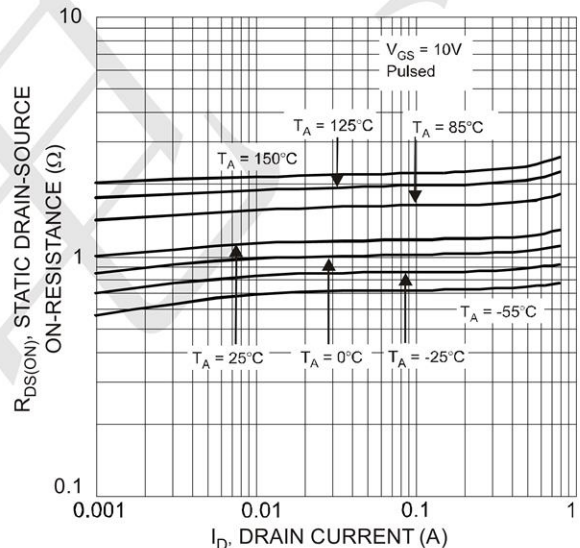
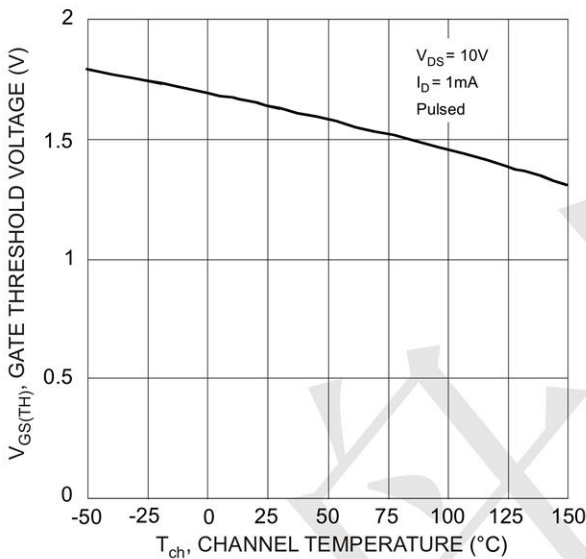
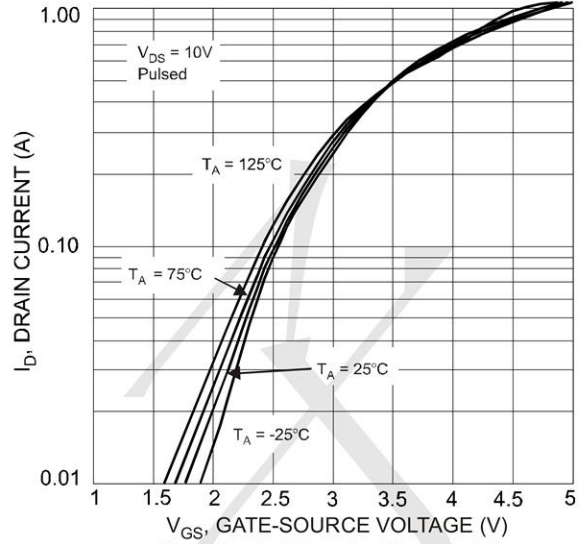
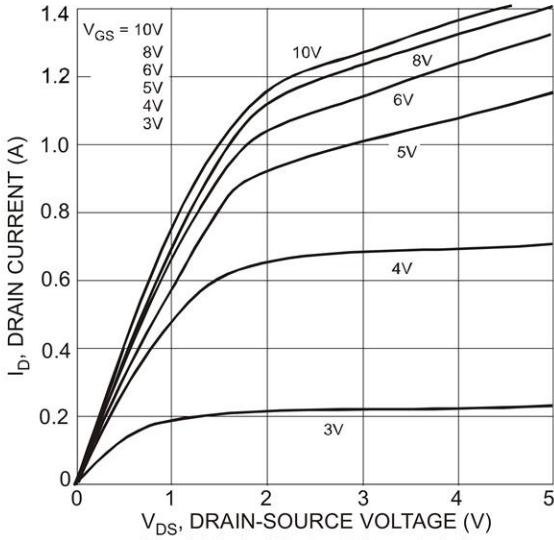
Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	V <sub>DSS</sub>	50	V	
Gate-Source Voltage	V <sub>GSS</sub>	±20	V	
Continuous Drain Current (Note 6) (V <sub>GS</sub> = 10V)	Steady State	T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	500 400	mA
	t < 10s	T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	580 470	mA
Continuous Drain Current (Note 6) (V <sub>GS</sub> = 4V)	Steady State	T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	390 300	mA
	t < 10s	T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	440 340	mA
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)	I <sub>DM</sub>	850	mA	
Maximum Body Diode Continuous Current	I <sub>S</sub>	510	mA	

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P <sub>D</sub>	0.7	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	157	°C/W
	t < 10s	121	
Total Power Dissipation (Note 6)	P <sub>D</sub>	0.98	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	113	°C/W
	t < 10s	88	
Thermal Resistance, Junction to Case (Note 6)	R <sub>θJC</sub>	26	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	50	65	—	V	$V_{GS} = 0V, I_D = 10\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu A$	$V_{DS} = 50V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 10$	$\mu A$	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	1.6	2.5	V	$V_{DS} = 10V, I_D = 1mA$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.2 1.5	2.4 4.0	$\Omega$	$V_{GS} = 10V, I_D = 200mA$ $V_{GS} = 4V, I_D = 200mA$
Forward Transfer Admittance	$ Y_{fs} $	100	—	—	mS	$V_{DS} = 10V, I_D = 200mA$
Diode Forward Voltage	$V_{SD}$	0.5	0.8	1.4	V	$V_{GS} = 0V, I_S = 115mA$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	30	50	pF	$V_{DS} = 25V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	—	5	25	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	3	5	pF	
Gate Resistance	$R_g$	—	133	—	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge	$Q_g$	—	304	—	pC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 250mA$
Gate-Source Charge	$Q_{gs}$	—	84	—		
Gate-Drain Charge	$Q_{gd}$	—	203	—		
Turn-On Delay Time	$t_{D(ON)}$	—	3.9	—	ns	$V_{DS} = 30V, I_D = 0.2A,$ $V_{GS} = 10V, R_G = 25\Omega, R_L = 150\Omega$
Turn-On Rise Time	$t_R$	—	3.4	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	15.7	—		
Turn-Off Fall Time	$t_F$	—	9.9	—		



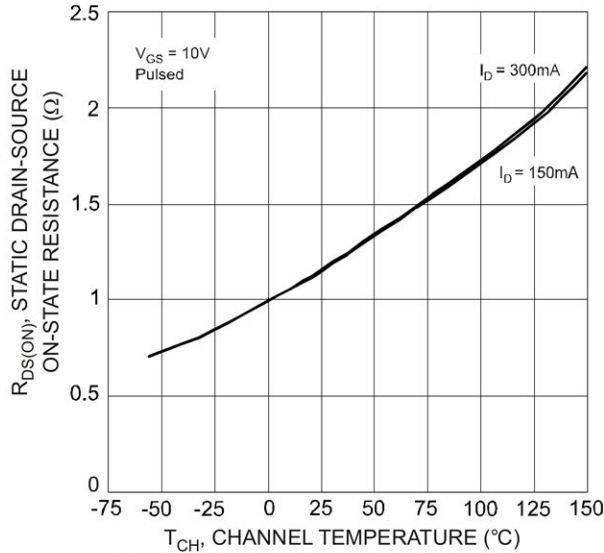


Fig. 7 Static Drain-Source On-State Resistance vs. Channel Temperature

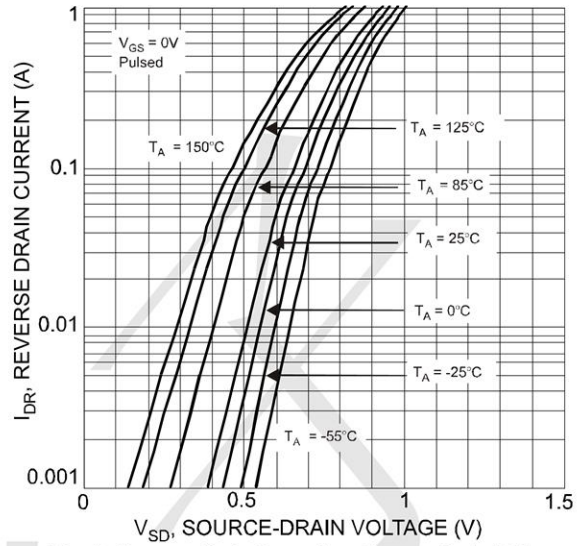


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

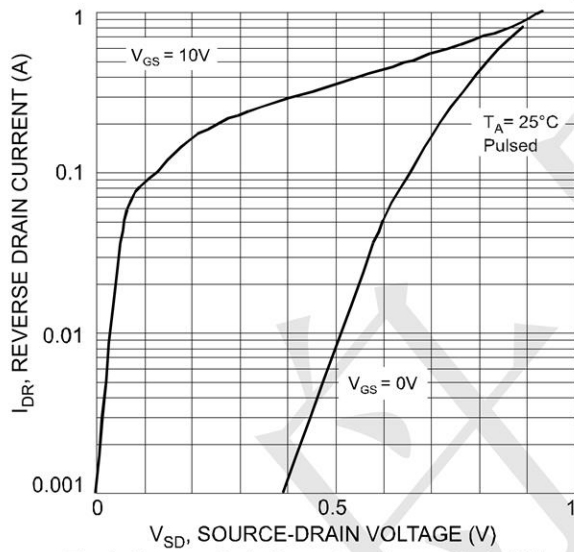


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

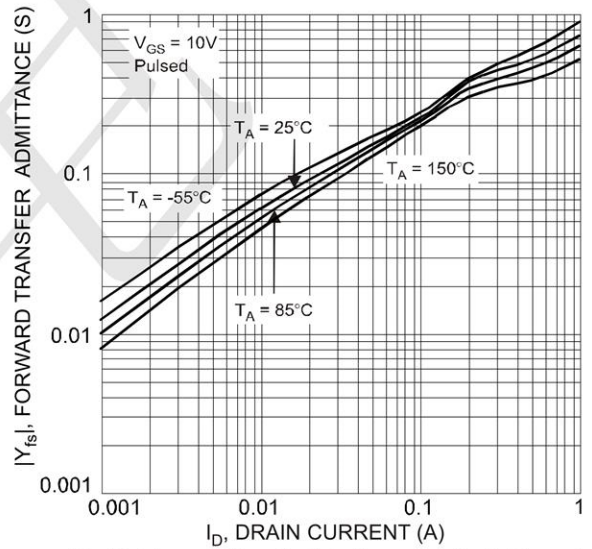
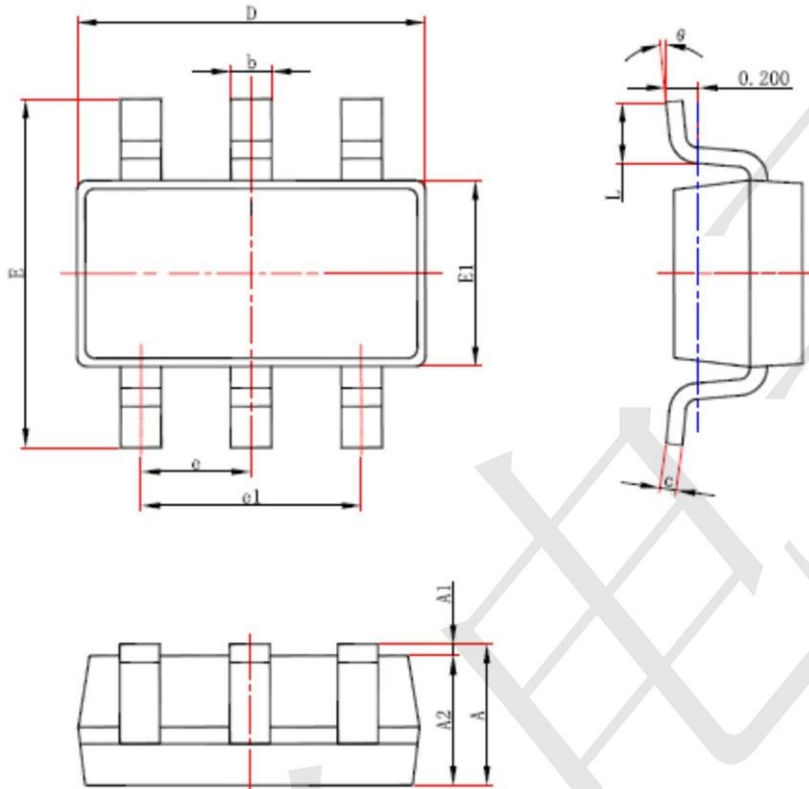


Fig. 10 Forward Transfer Admittance vs. Drain Current



SOT23-6 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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