TECH PUBLIC
台舟电子

TPM7002NBS6

50V Dual N-Channel Enhancement Mode MOSFET

www.sot23.com.tw

Product Summary

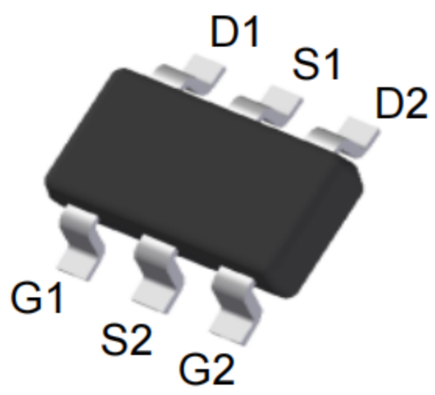
BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_A = +25°C
50V	2.4Ω @ V_{GS} = 10V	500mA
	4.0Ω @ V_{GS} = 4V	390mA

Application

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

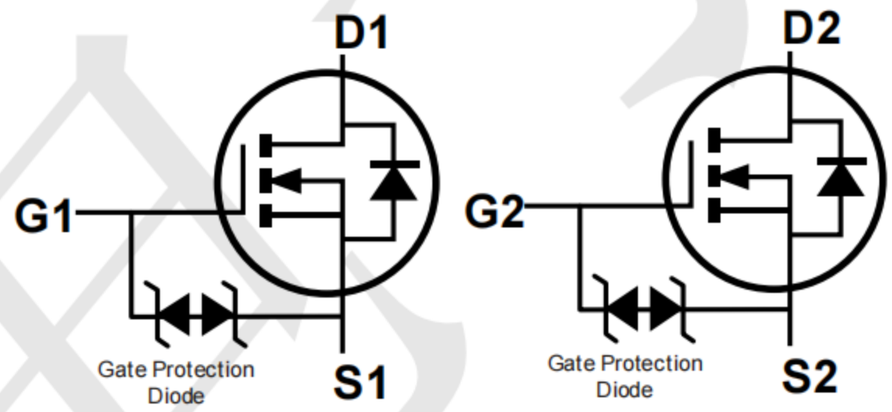
Package and Pin Configuration

SOT23-6



Top View

Circuit diagram



Marking: 02Nf

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

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

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	0.7	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	157	°C/W
	t<10s		121	
Total Power Dissipation (Note 6)		P_D	0.98	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	113	°C/W
	t<10s		88	
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	26	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	50	65	—	V	V_{GS} = 0V, I_D = 10μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	V_{DS} = 50V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	μA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
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	Ω	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
DYNAMIC CHARACTERISTICS (Note 8)						
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	—	Ω	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 = 25Ω, R_L = 150Ω
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	—		

www.sot23.com.tw

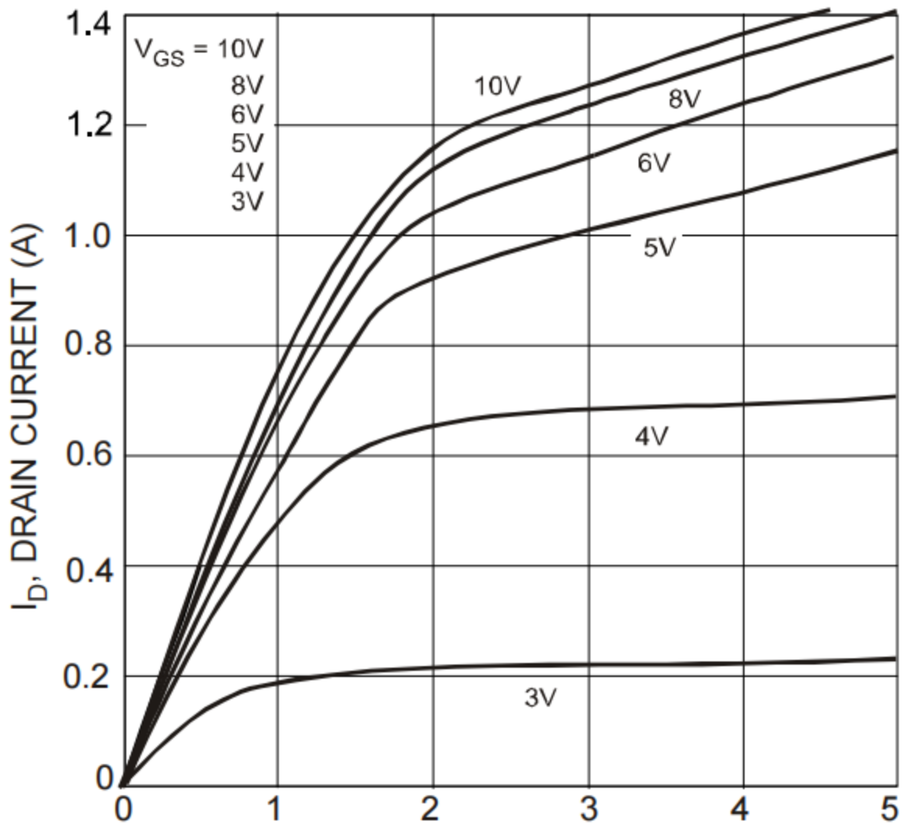


Fig. 1 Typical Output Characteristics

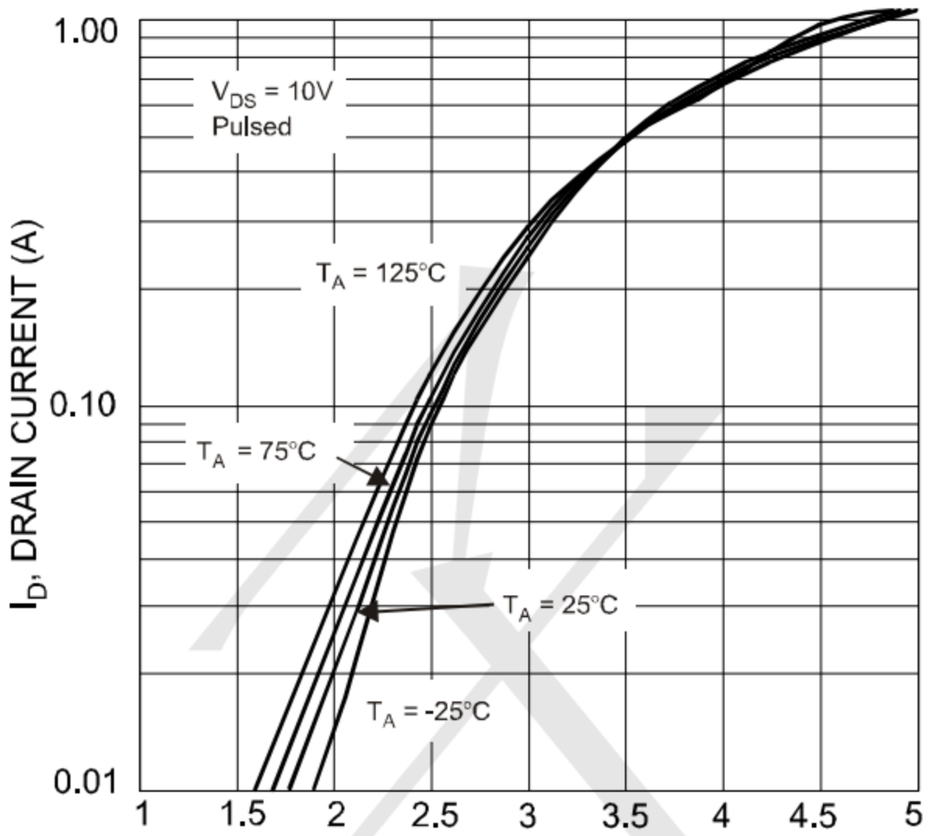


Fig. 2 Typical Transfer Characteristics

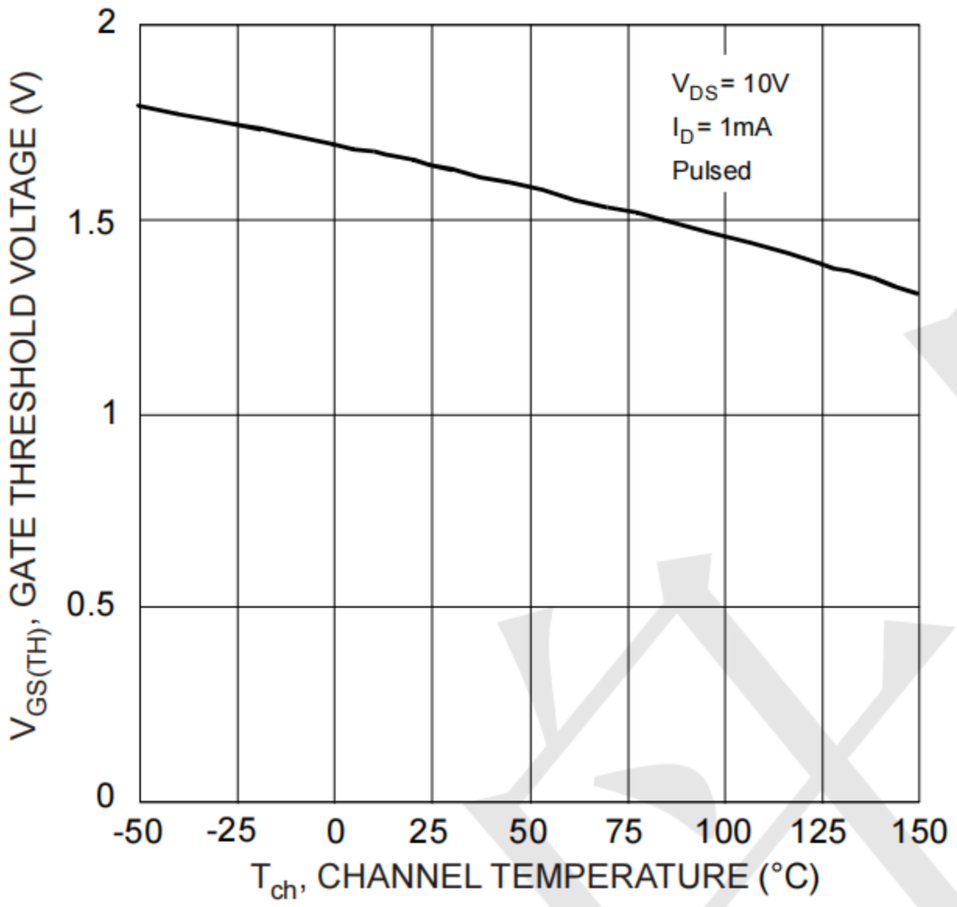


Fig. 3 Gate Threshold Voltage vs. Channel Temperature

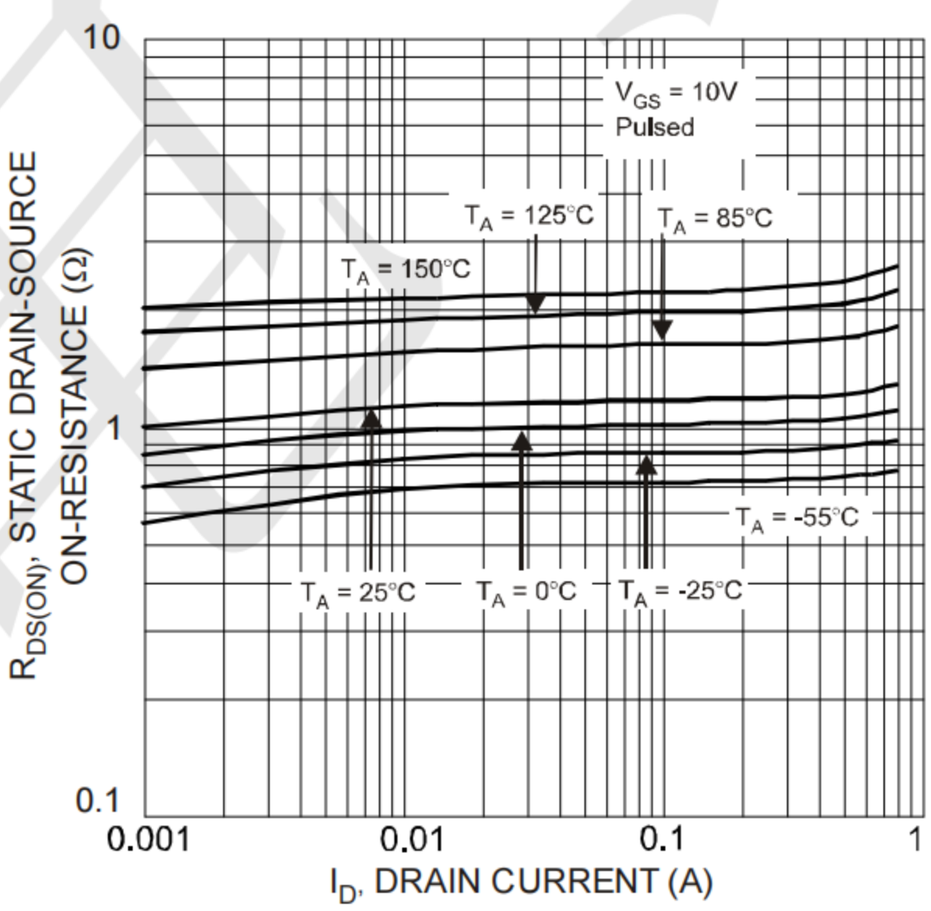


Fig. 4 Static Drain-Source On-Resistance vs. Drain Current

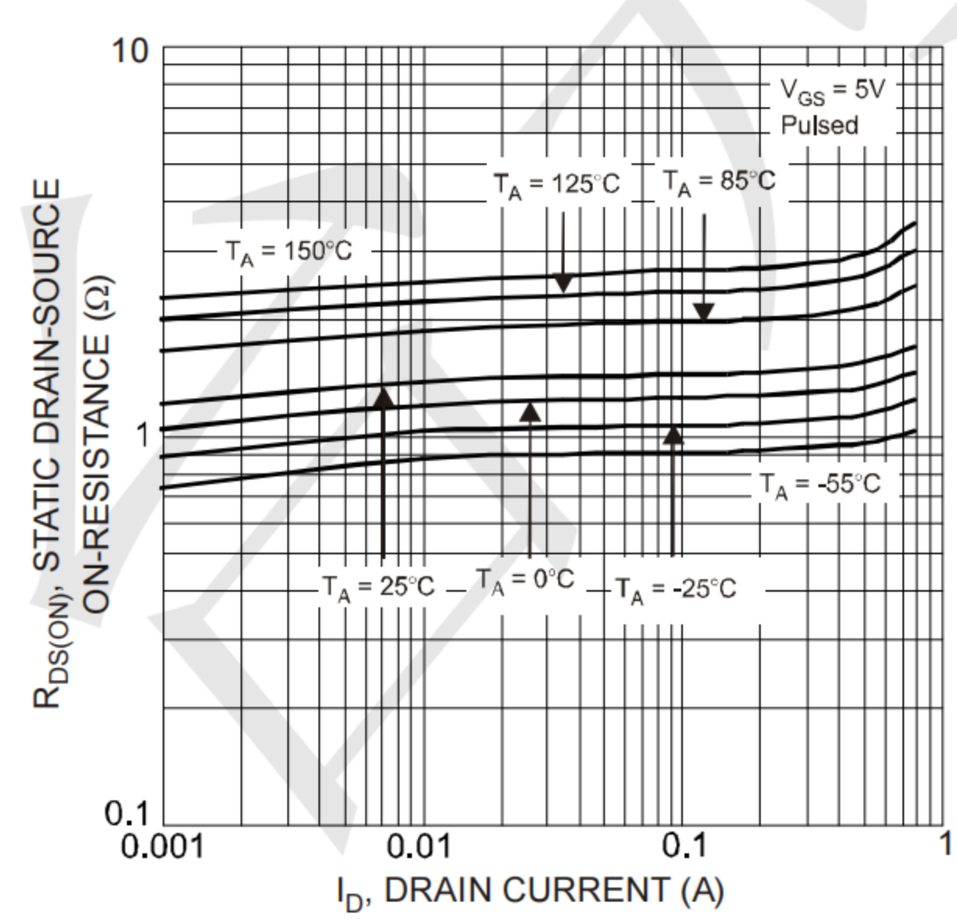


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

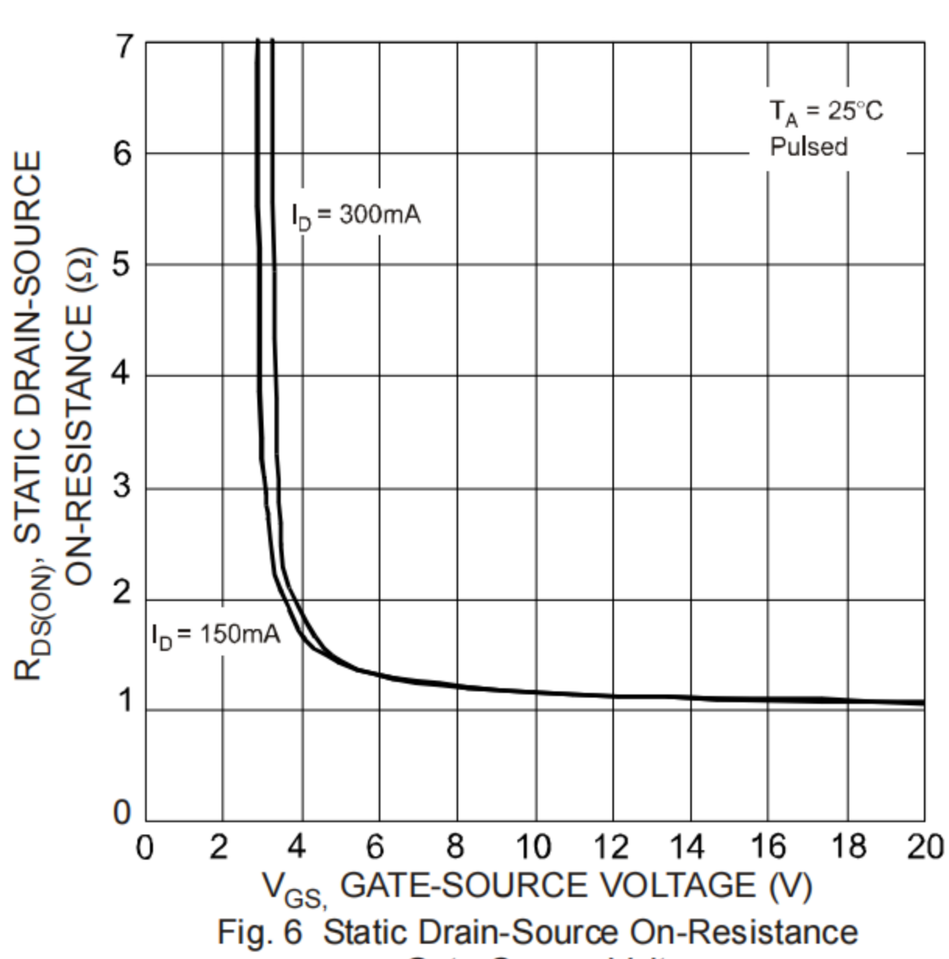


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

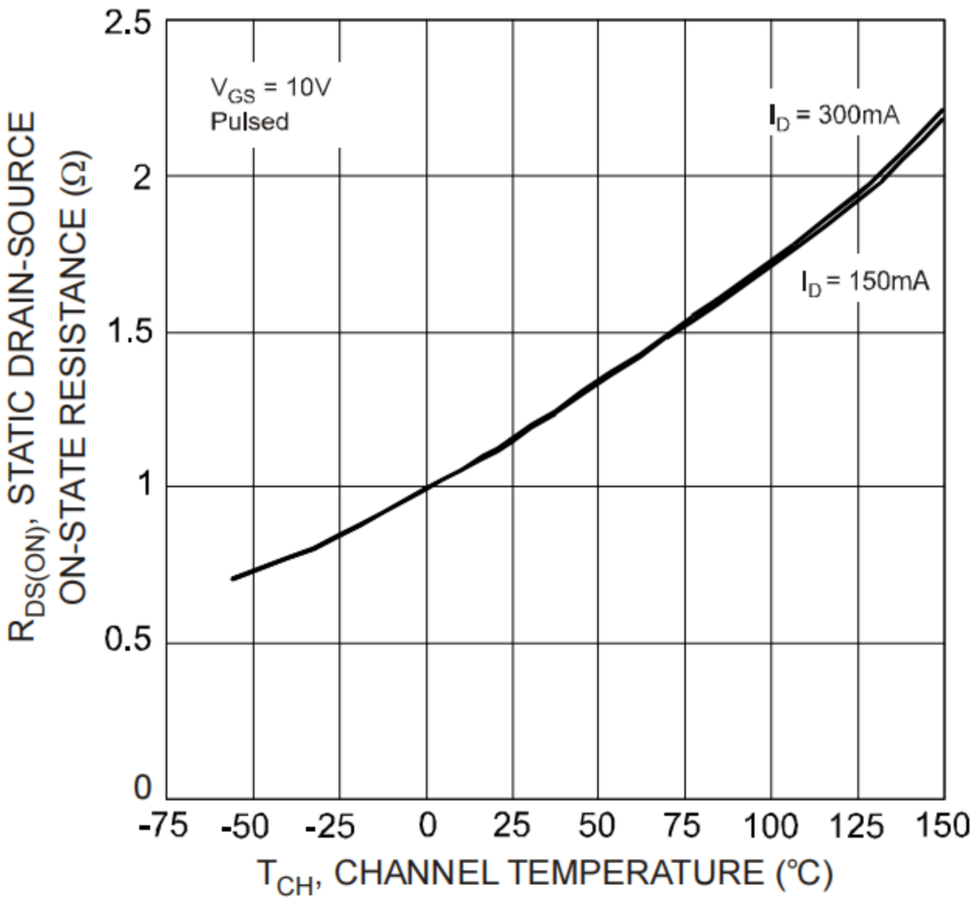


Fig. 7 Static Drain-Source On-State Resistance vs. Channel Temperature

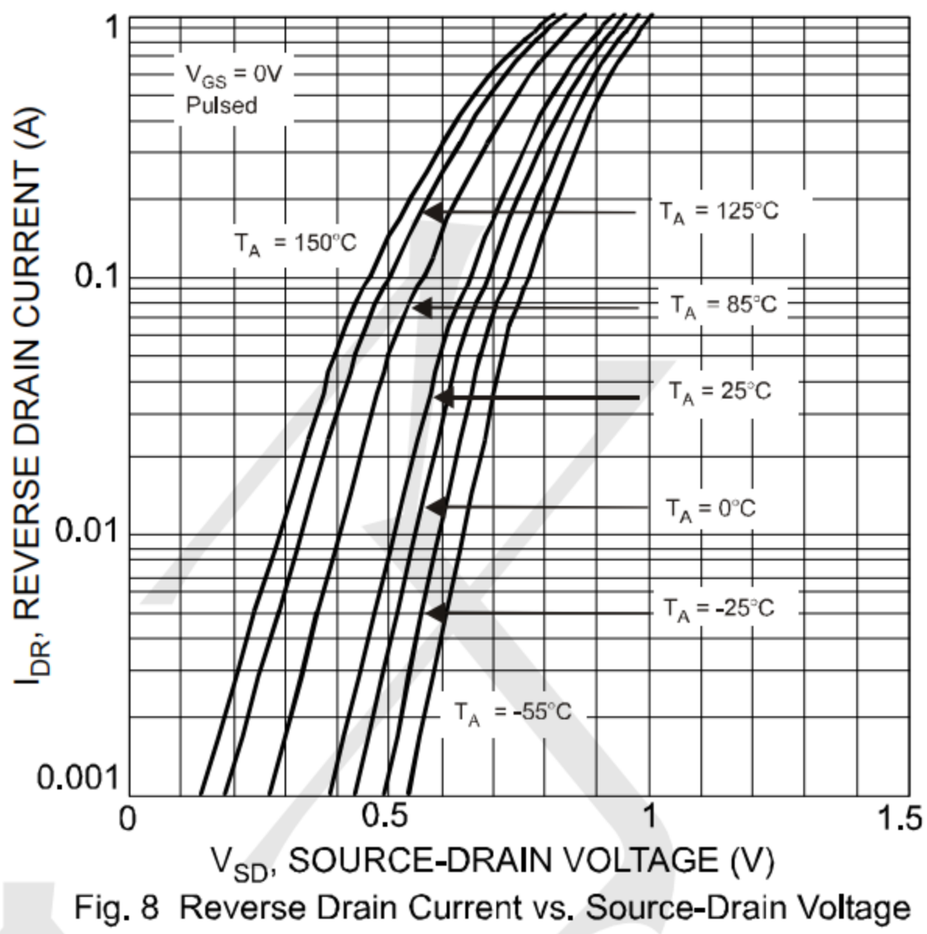


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

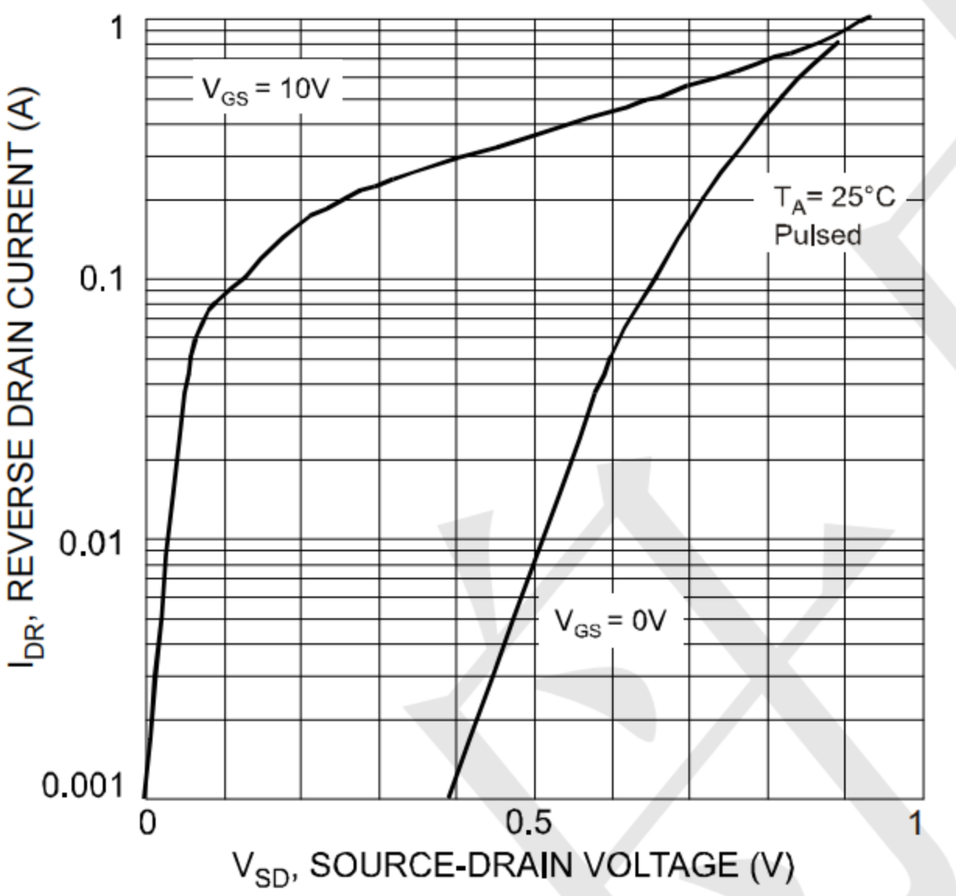


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

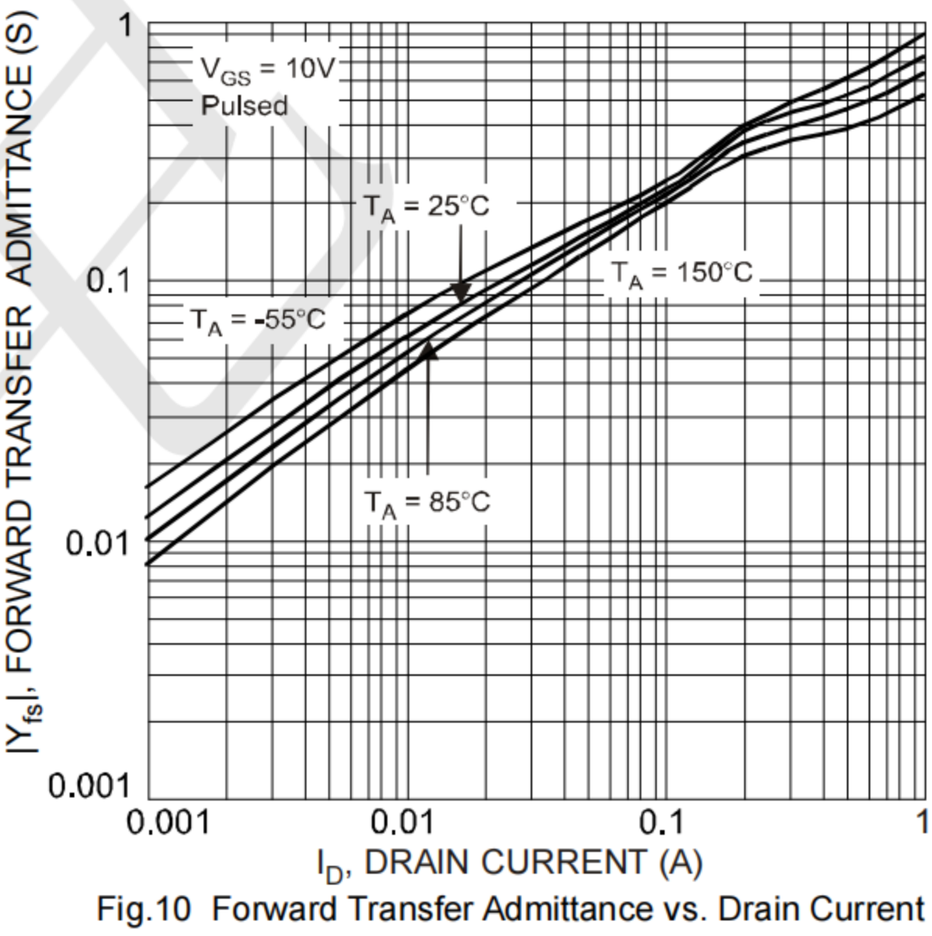
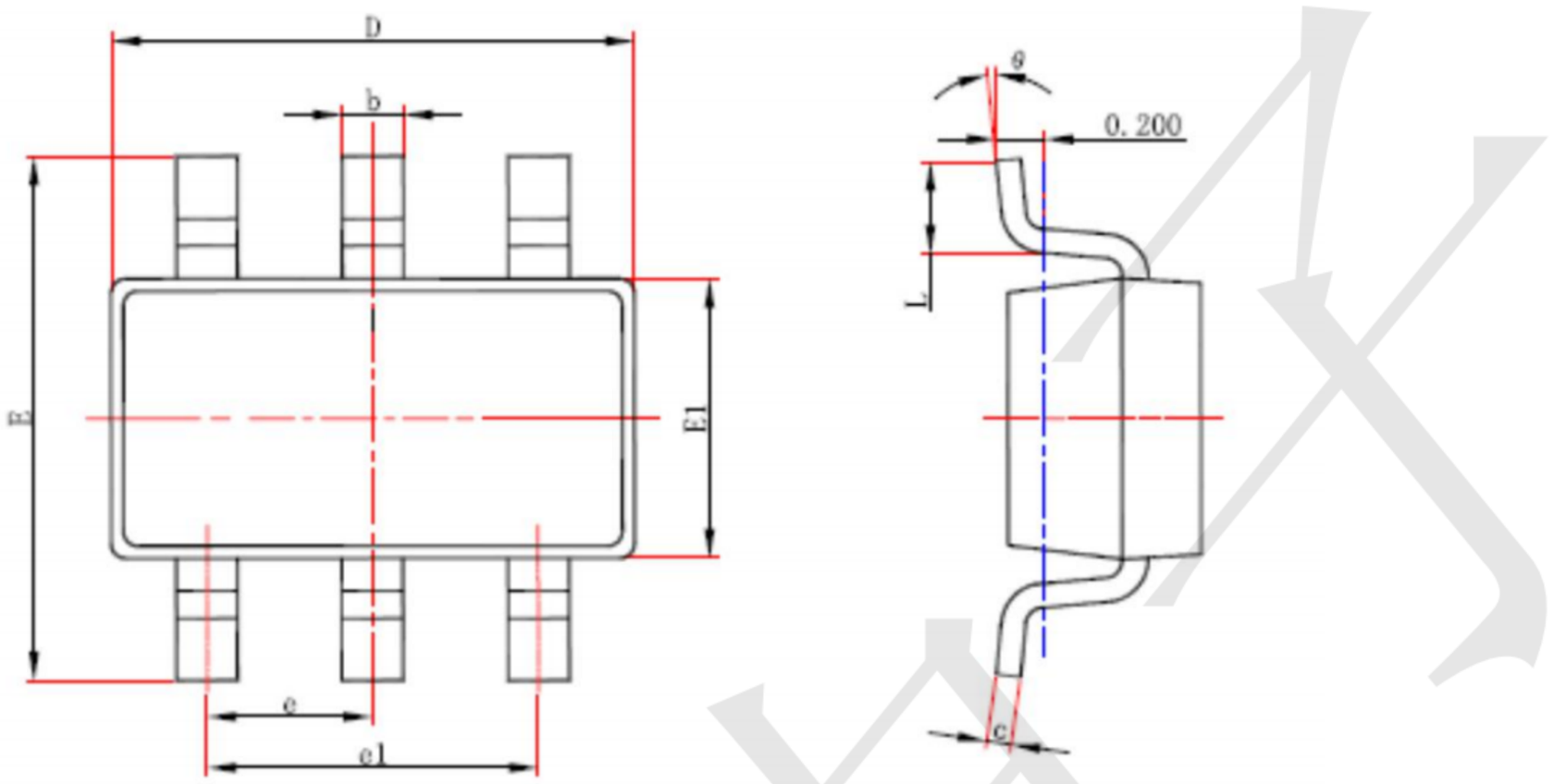


Fig.10 Forward Transfer Admittance vs. Drain Current

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°