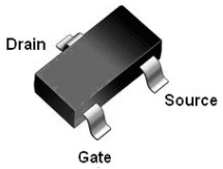
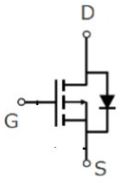
-20V P-Channel Enhancement Mode MOSFET

Features

- V_{DS}=-20V, I_D=-5.0A
  $R_{DS(ON)}$ <36 mΩ @ V_{GS} = -4.5V
  $R_{DS(ON)}$ <48 mΩ @ V_{GS} = -2.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired





SOT23

Applications

- PWM Applications
- Load Switch
- Power Management

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-5.0	A
Pulsed Drain Current (t=300μs)	I_{DM}	-21	A
Power Dissipation	P_D	1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	125	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-20V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±8V, V_{DS} = 0V			100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.4		-1.0	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-5.0A		24	36	mΩ
		V_{GS} =-2.5V, I_D =-4.0A		35	48	
		V_{GS} =-1.8V, I_D =-3.0A		46	68	
Forward tranconductance[a]	g_{FS}	V_{DS} =-5V, I_D =-4.1A	6			S
Dynamic characteristics[b,c]						
Input Capacitance	C_{iss}	V_{DS} =-4V,V_{GS} =0V,f =1MHz		905		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			195		
Gate resistance	R_g	f =1MHz	1.4		14	Ω
Total Gate Charge	Q_g	V_{DS} =-4V,V_{GS} =-2.5V,I_D=-4.1A		4.5	9	nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.6		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-4V,V_{GEN}=-4.5V,I_D=-3.3A R_L=1.2Ω,R_{GEN}=1Ω		13	20	ns
Turn-on rise time	t_r			35	53	
Turn-off delay time	$t_{d(off)}$			32	48	
Turn-off fall time	t_f			10	20	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-4V,V_{GEN}=-8V,I_D=-3.3A R_L=6Ω,R_{GEN}=1Ω		5	10	
Turn-on rise time	t_r			11	17	
Turn-off delay time	$t_{d(off)}$			22	33	
Turn-off fall time	t_f			16	24	
Source-Drain Diode characteristics						
Diode forward current	I_S	T_C=25℃			-5.0	A
Diode pulsed forward current[a]	I_{SM}				-21	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-3.3A			-1.2	V

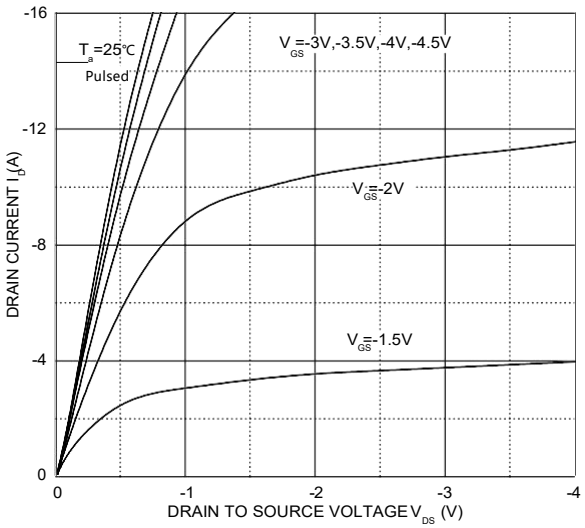
Note :

a. Pulse Test ; Pulse Width ≤300μs, Duty Cycle ≤2%.

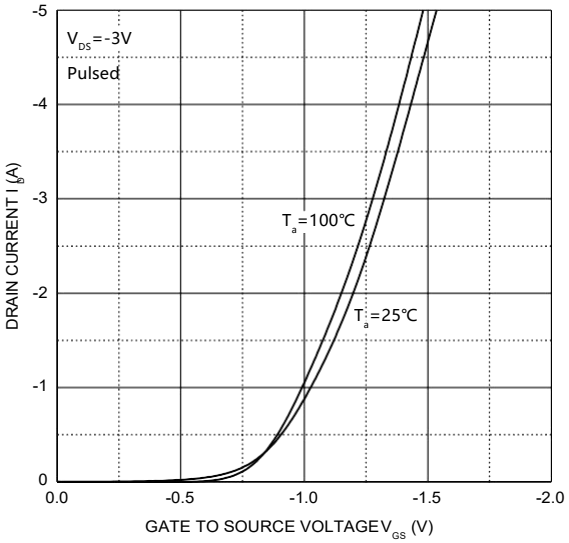
b. Guaranteed by design, not subject to production testing.

c. These parameters have no way to verify.

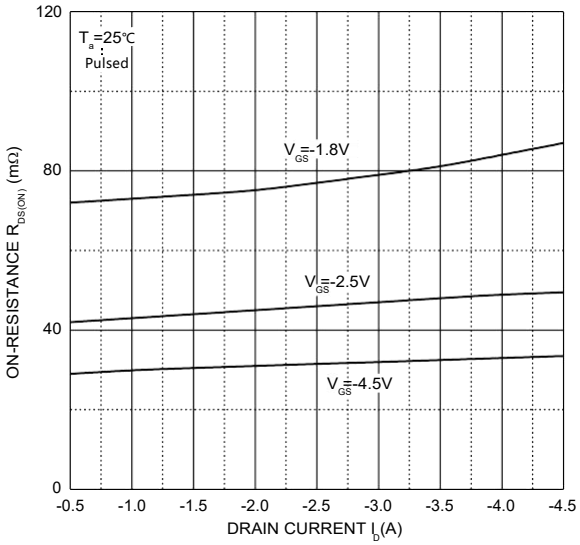
Output Characteristics



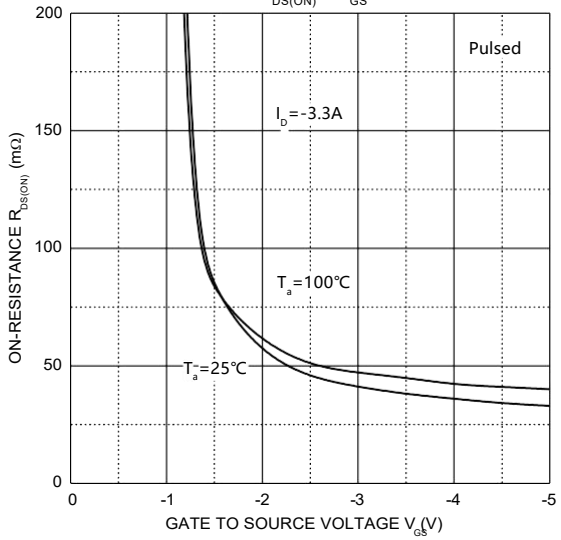
Transfer Characteristics



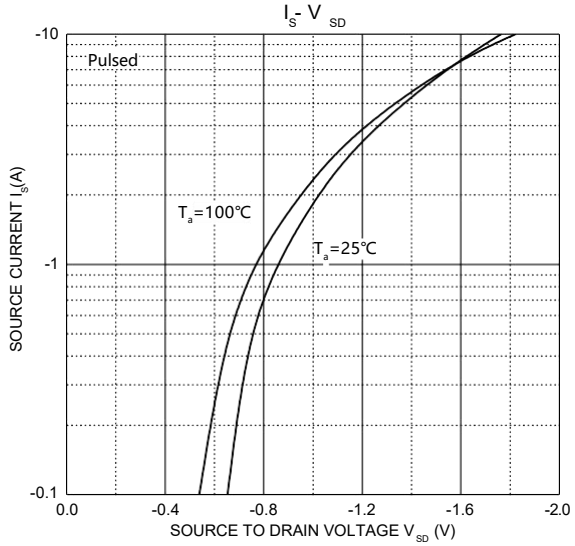
$R_{DS(ON)}$ – I_D



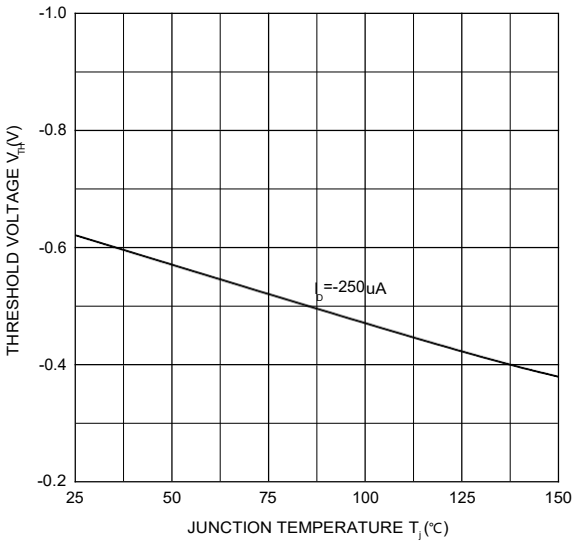
$R_{DS(ON)}$ - V_{GS}



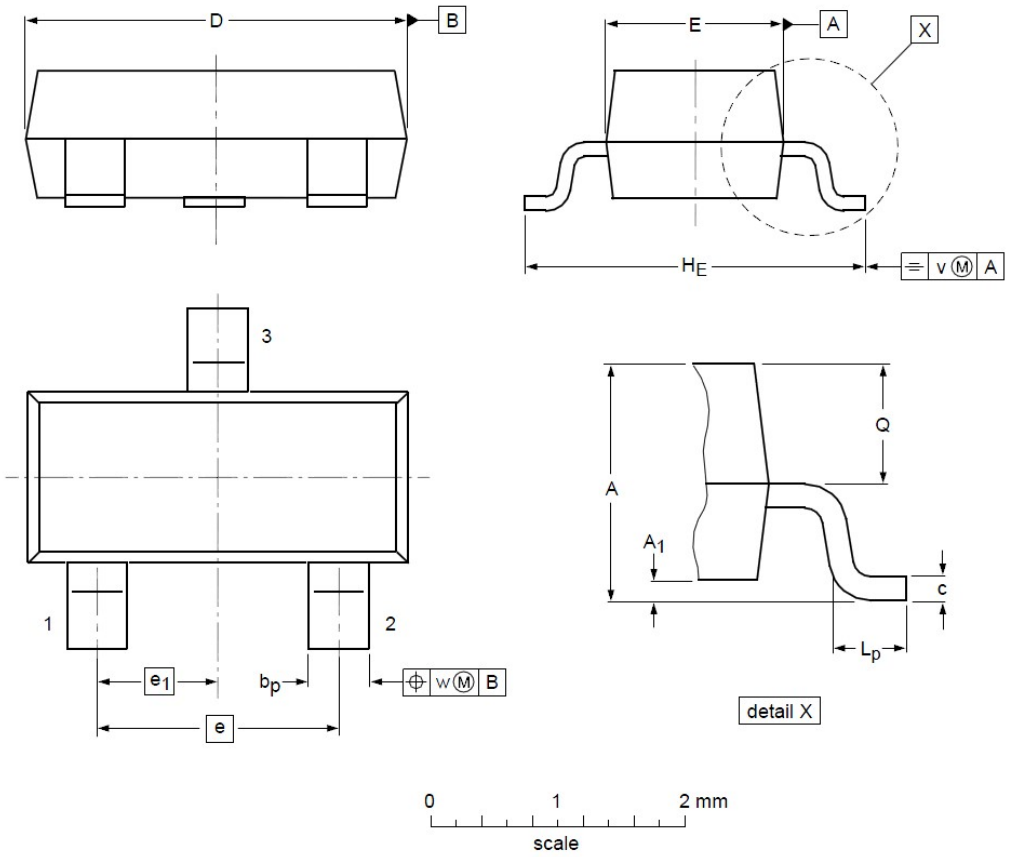
I_S- V_{SD}



Threshold Voltage



SOT23 Mechanical Data



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	**A_1**	0.01	0.05	0.10
b_p	0.30	0.42	0.50	**c**	0.08	0.13	0.15
D	2.80	2.92	3.00	**E**	1.20	1.33	1.40
e	--	1.90	--	**e_1**	--	0.95	--
H_E	2.25	2.40	2.55	**L_p**	0.30	0.42	0.50
Q	0.45	0.49	0.55	**v**	--	0.20	--
w	--	0.10	--				

SOT-23 Suggested Pad Layout