

Features

- -20V, -0.7A **$R_{DS(on)}$** = 520m Ω @-4.5V **Max**
- **$R_{DS(on)}$** = 700m Ω @-2.5V **Max**
- **$R_{DS(on)}$** = 950m Ω (TYP)@-1.8V

Application

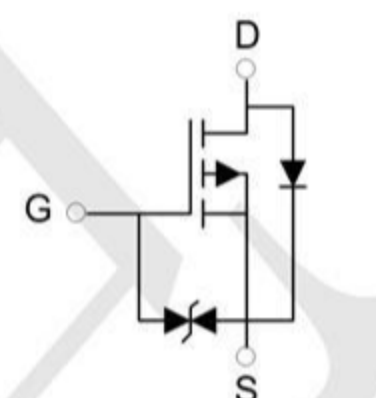
- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration



SOT323

Circuit diagram



Marking: PA1

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

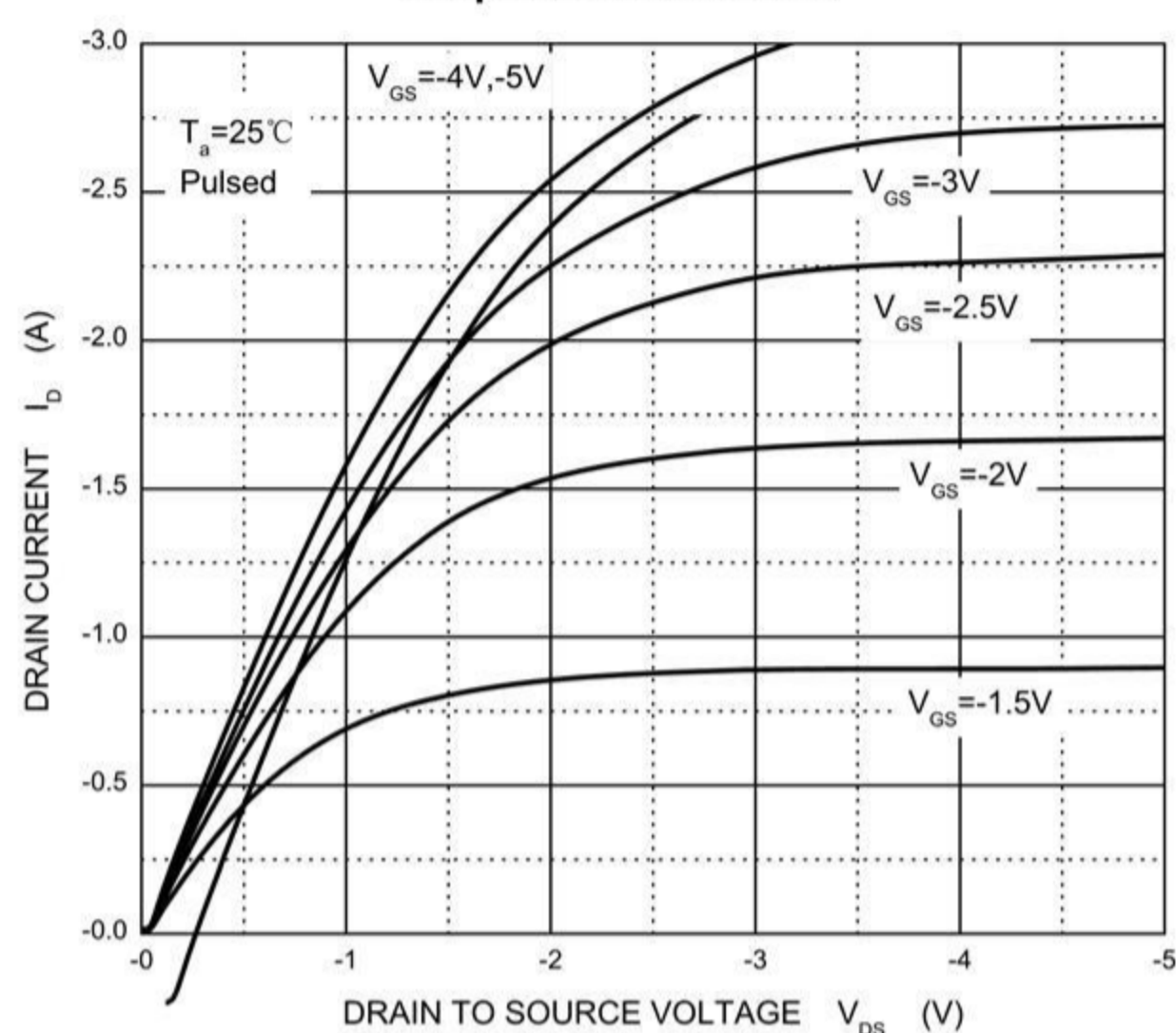
Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DSS}	-20	V
Typical Gate-Source Voltage	V_{GS}	± 12	
Drain Current-Continuous	I_D	-0.7	A
Drain Current -Pulsed(note1)	I_{DM}	-2.7	
Power Dissipation (note 2)	P_D	200	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~ +150	$^{\circ}\text{C}$

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

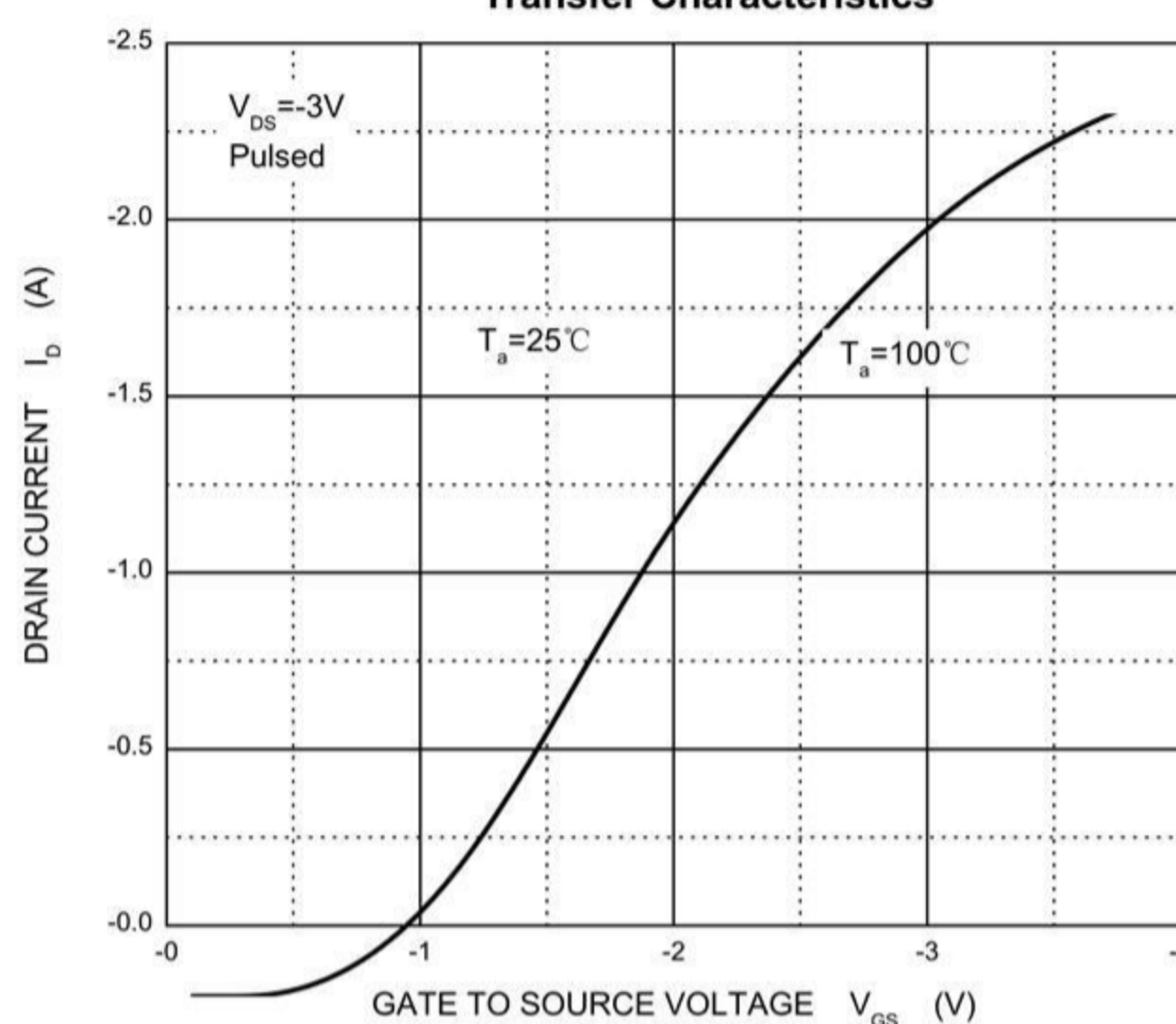
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate-Threshold Voltage(note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.35	-0.45	- 1.1	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 10V$			± 20	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Drain-Source On-State Resistance(note 3)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -1A$		430	520	m Ω
		$V_{GS} = -2.5V, I_D = -800mA$		624	700	
		$V_{GS} = -1.8V, I_D = -500mA$		950		
Forward Transconductance	g_{FS}	$V_{DS} = -10V, I_D = -540mA$	0.8			S
Dynamic Characteristics(note 4)						
Input Capacitance	C_{iss}	$V_{DS} = -16V, V_{GS} = 0V, f = 1MHz$			170	pF
Output Capacitance	C_{oss}				25	
Reverse Transfer Capacitance	C_{rss}				15	
Switching Times (note 4)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10V,$ $I_D = -200mA,$ $V_{GS} = -4.5V, R_G = 10\Omega$		9		ns
Rise Time	t_r			5.8		
Turn-Off Delay Time	$t_{d(off)}$			32.7		
Fall Time	t_f			20.3		
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 3)	V_{SD}	$I_S = -0.5A, V_{GS} = 0V$			-1.2	V

Characteristic Curves

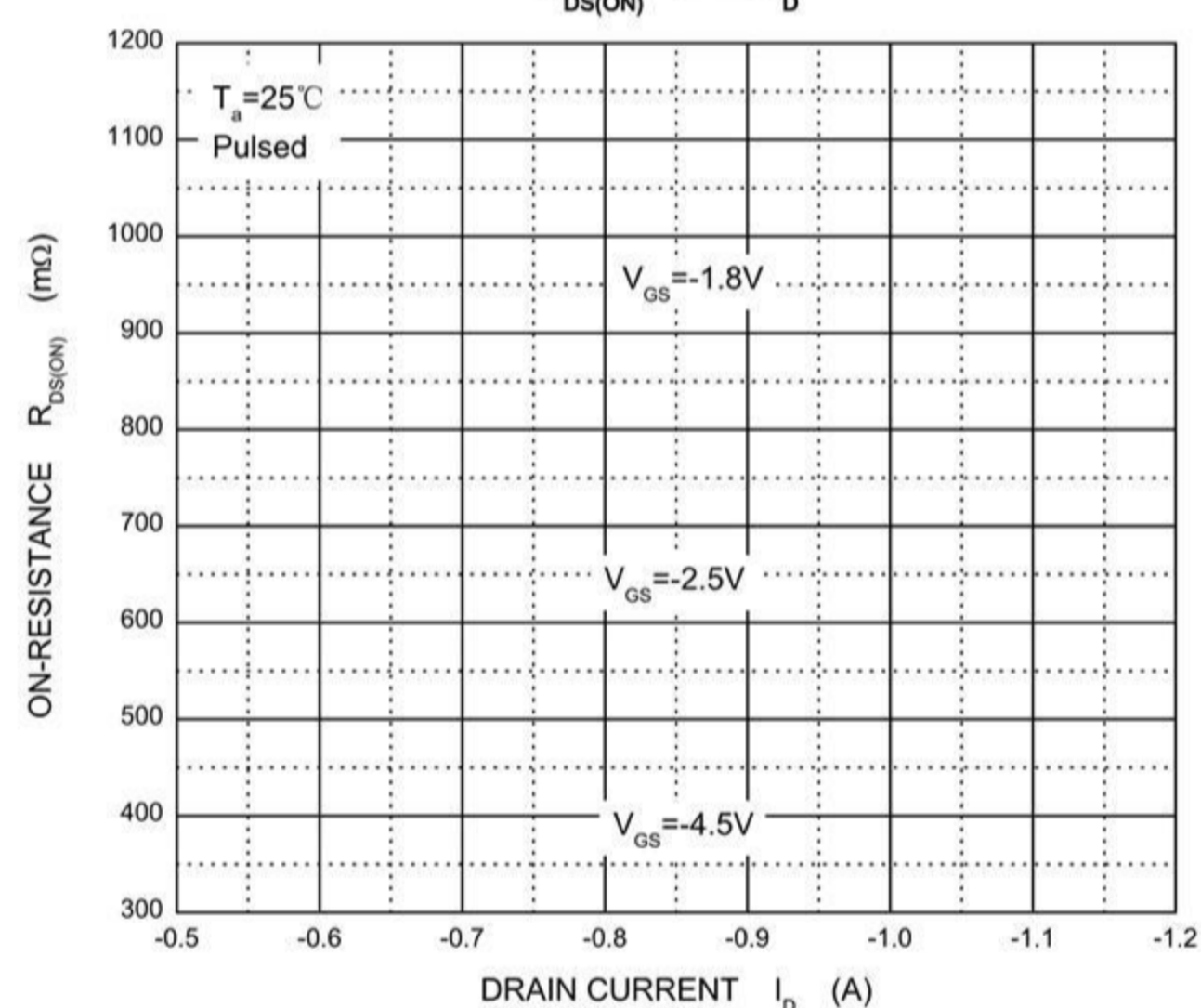
Output Characteristics



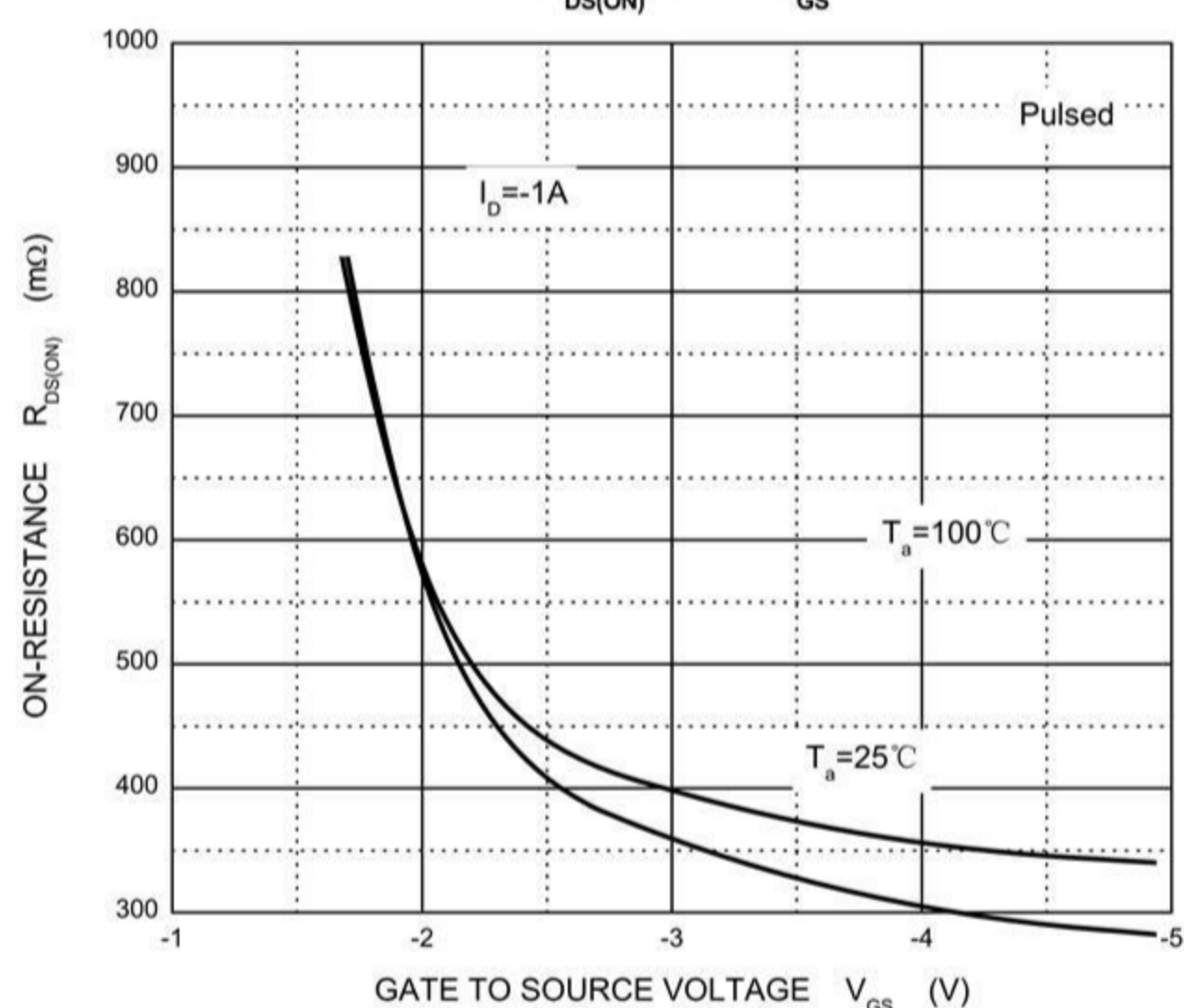
Transfer Characteristics



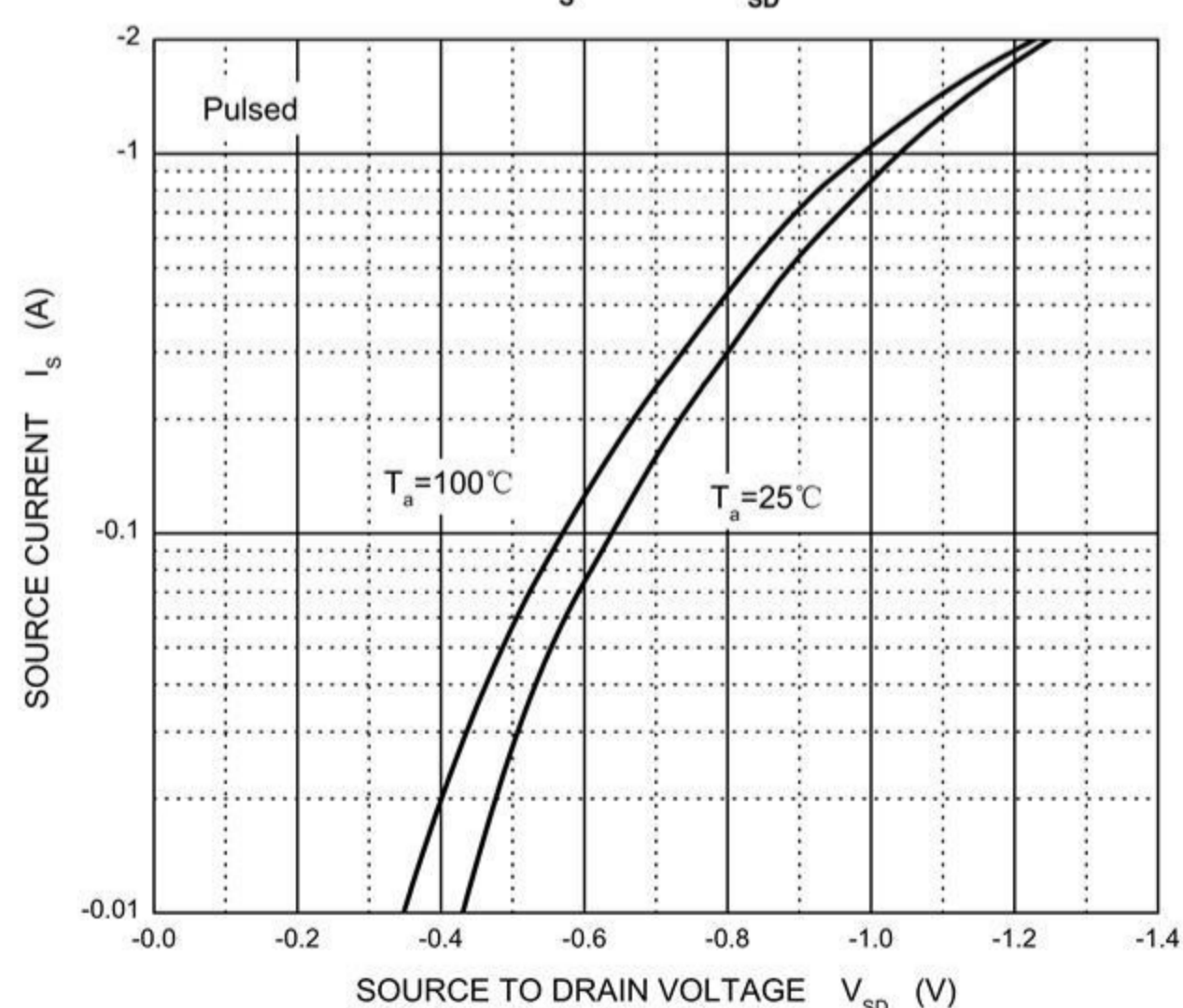
$R_{DS(ON)}$ — I_D



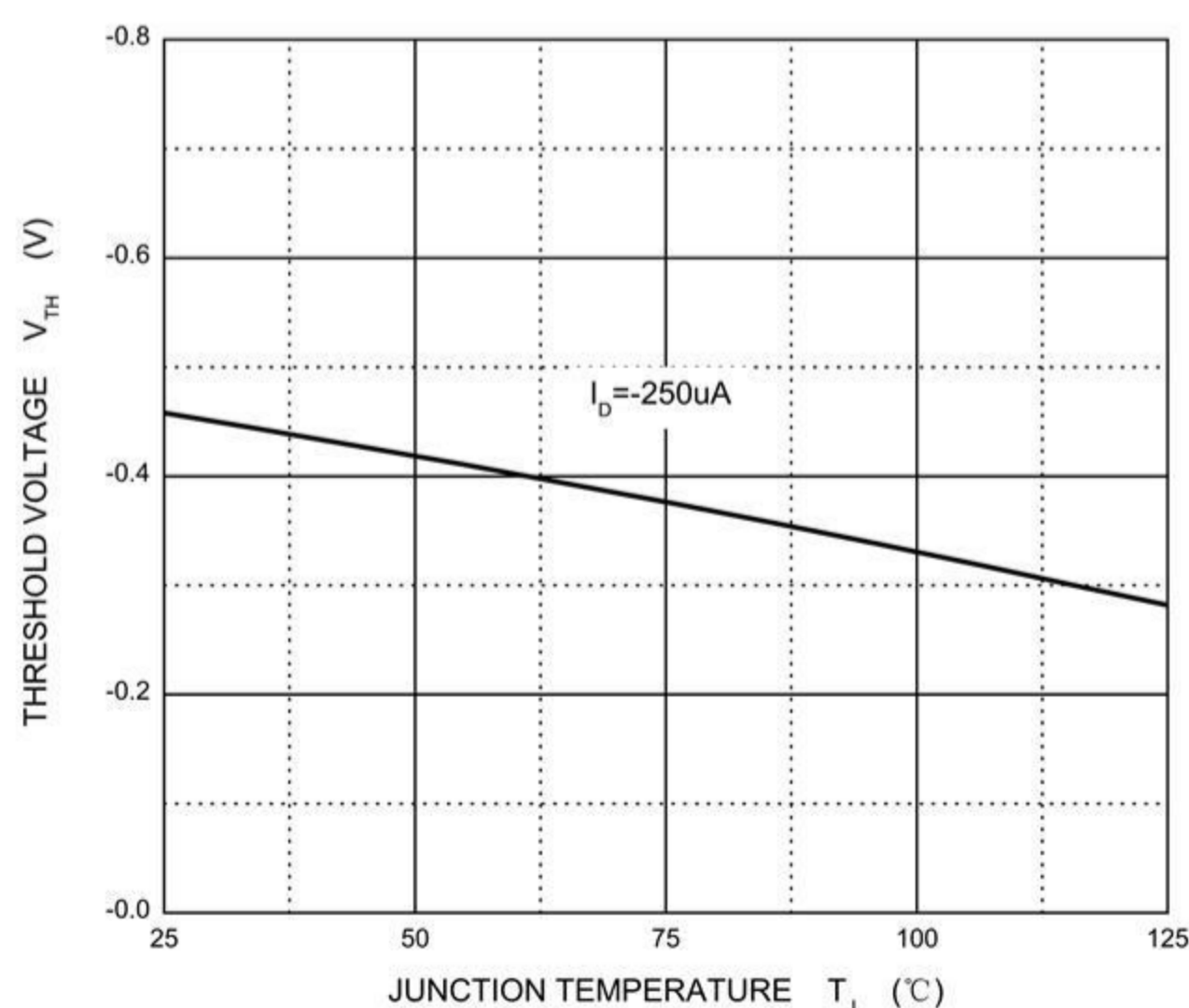
$R_{DS(ON)}$ — V_{GS}



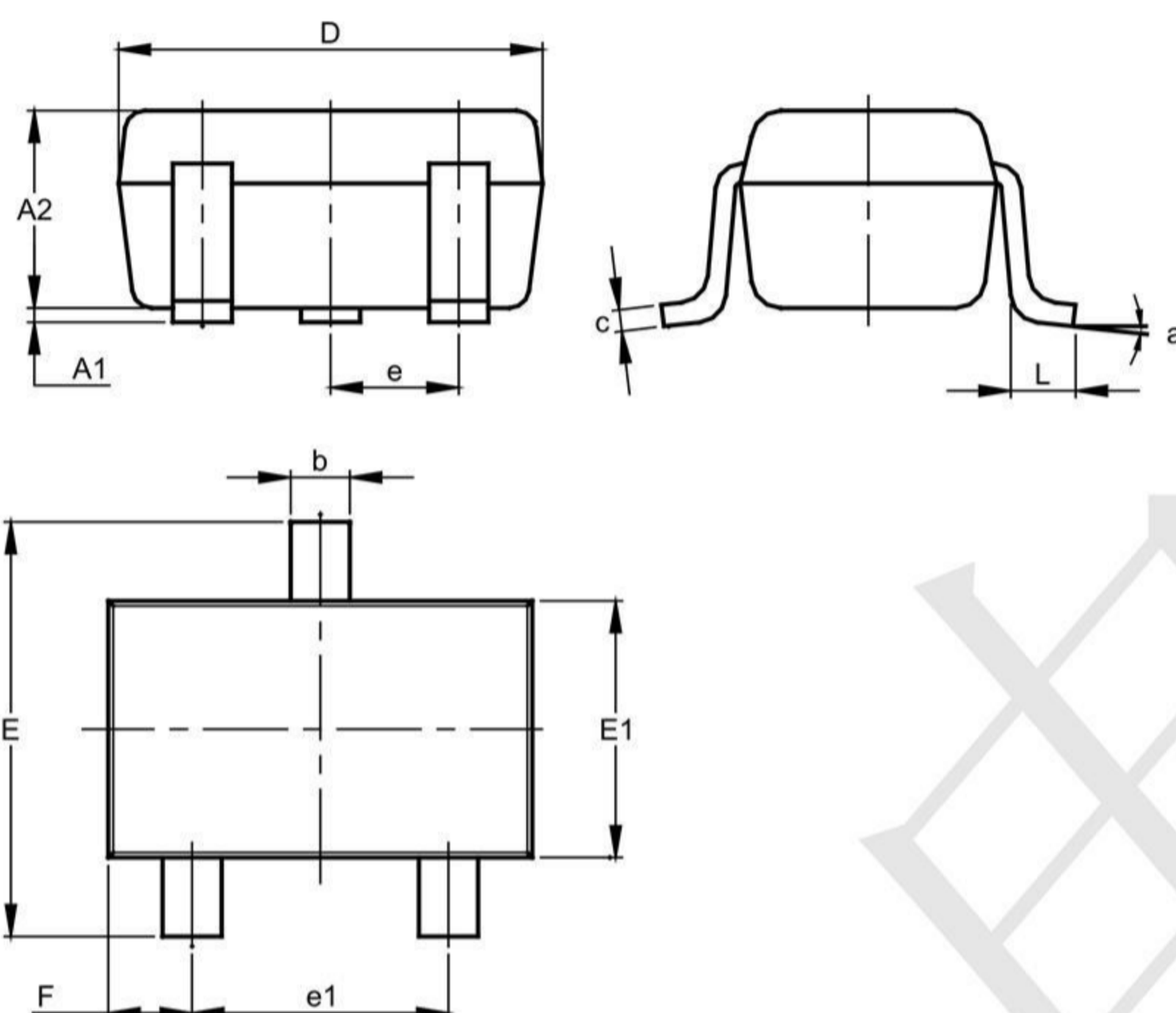
I_S — V_{SD}



Threshold Voltage

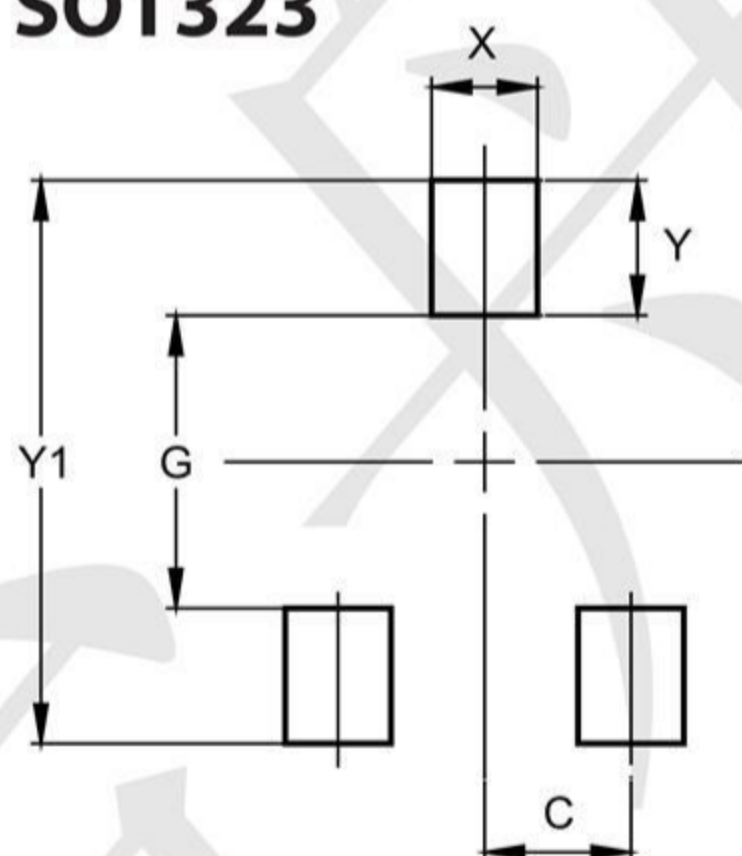


Outline Drawing - SOT323(SC70-3)



SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Land Pattern - SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500