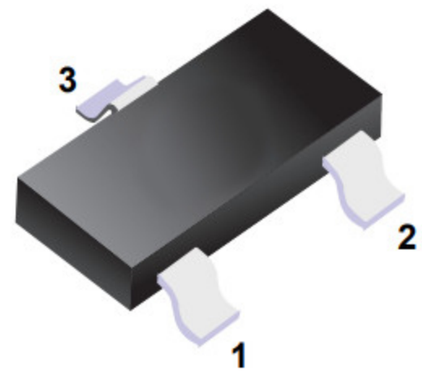
2301 SOT-23

P- Enhancement Mode Field Effect Transistor

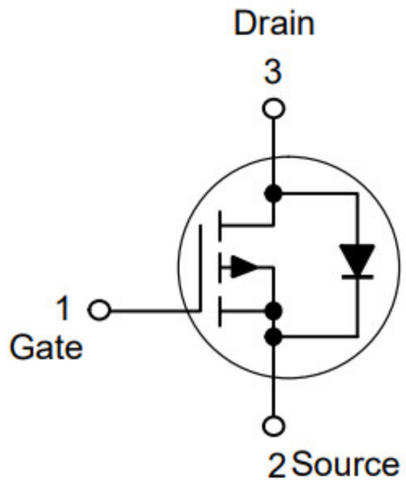


1. Gate
2. Source
3. Drain

■ Simplified outline(SOT-23)

■ Features

- High power and current handing capability
- Halogen free product is acquired
- Surface mount package



■ Applications

- Battery protection
- Load switch
- Power management

■ Absolute Maximum Ratings Ta = 25℃

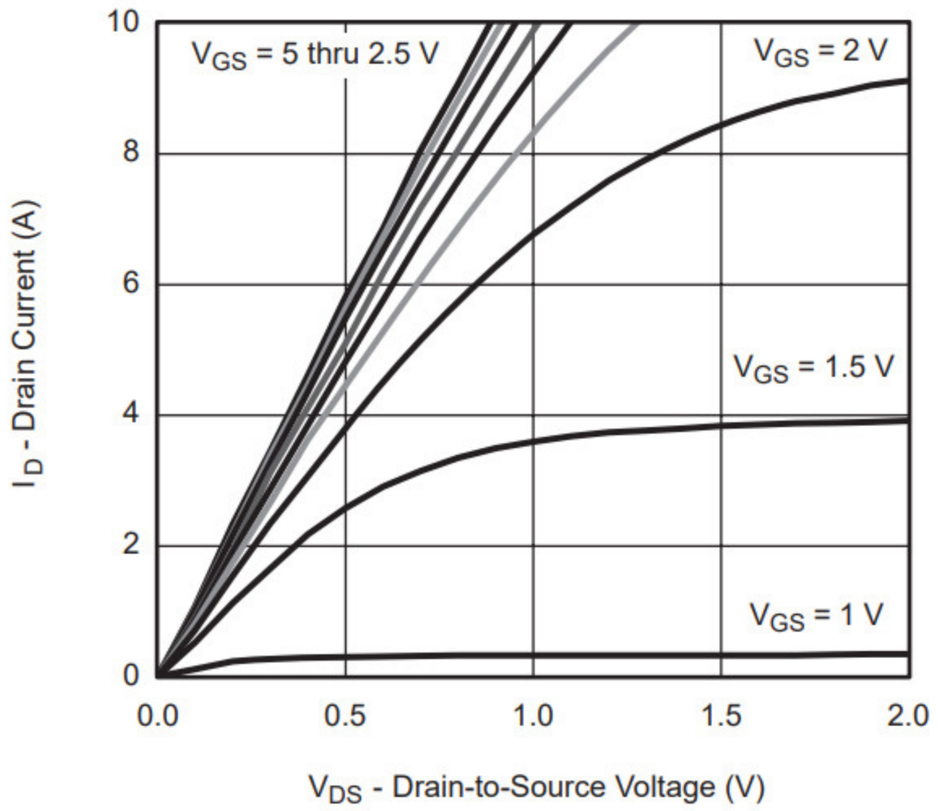
Parameter	Symbol	Value	Units
Drain-Source Voltage	$-V_{DS}$	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	$-I_D$	3.0	A
Pulsed Drain Current Note1	$-I_{DM}$	10	
Power Dissipation	P_D	1.25	W
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55 to 150	°C
Thermal Characteristics			
Parameter	**Symbol**	**Typ.**	**Units**
Maximum Junction-to-Ambient Note2	$R_{\theta JA}$	100	°C/W

■ Electrical Characteristics Ta = 25℃

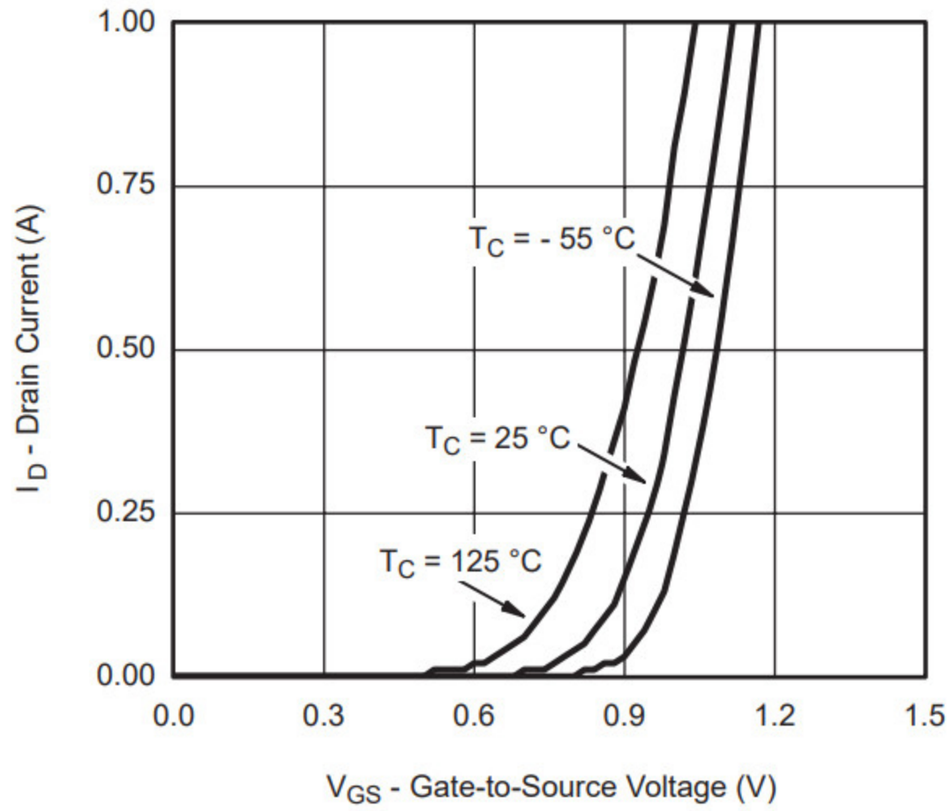
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	V_{GS} = 0 V, I_D = - 250 μA	20			V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 8 V			±100	nA
Zero Gate Voltage Drain Current	$-I_{DSS}$	V_{DS} = - 20 V, V_{GS} = 0 V			1	μA
Gate-Source Threshold Voltage Note3	$-V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 μA	0.4		1	V
Drain-Source On-State Resistance Note3	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 3.0 A		78	110	mΩ
		V_{GS} = - 2.5 V, I_D = - 2 A		102	140	
Forward Transconductance Note3	g_{FS}	V_{DS} = - 5 V, I_D = - 3.0 A		2		S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} = - 10 V, V_{GS} = 0 V, f = 1 MHz		405		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			55		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -10V, V_{GS}= -4.5V, I_D= -3.0A		5.5	10	nC
		V_{DS} = - 10 V, V_{GS} = - 2.5 V, I_D = - 3.0 A		3.3	6	
Gate-Source Charge	Q_{gs}			0.7		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = - 10 V, R_L = 10 Ω I_D = - 1 A, V_{GEN} = - 4.5 V, R_G = 1 Ω		11	20	ns
Rise Time	t_r			35	60	
Turn-Off Delay Time	$t_{d(off)}$			30	50	
Fall Time	t_f			10	20	
Source-Drain Diode characteristics						
Continuous Source-Drain Diode Current	$-I_S$				1.3	A
Pulse Diode Forward Current Note1	$-I_{SM}$				10	
Body Diode Voltage	$-V_{SD}$	I_S = - 1 A	0.5		1.2	V

Notes:

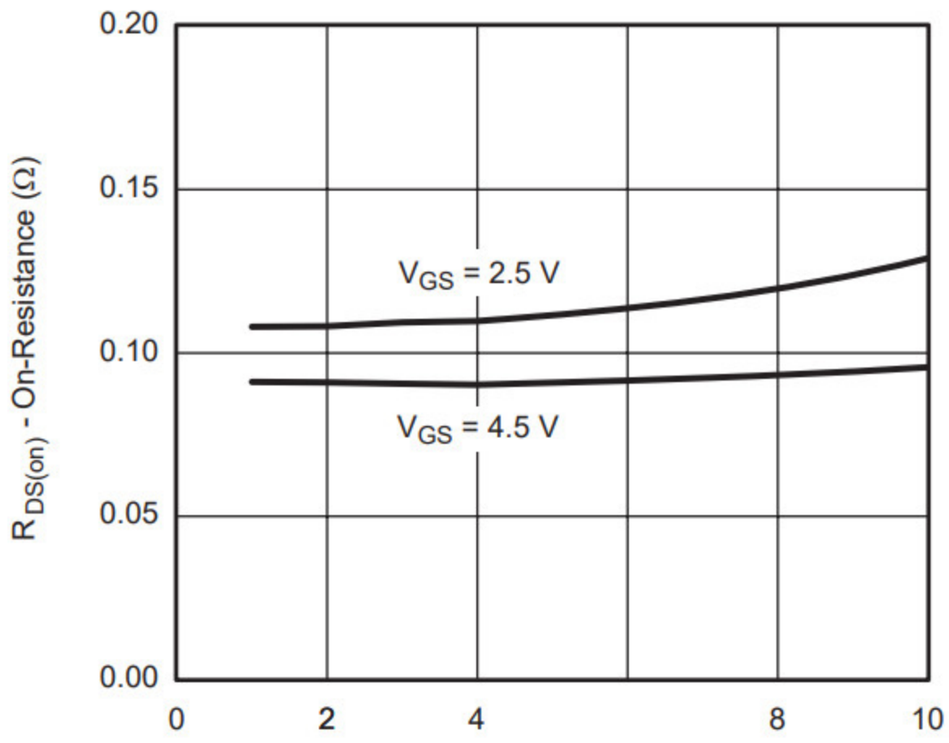
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.



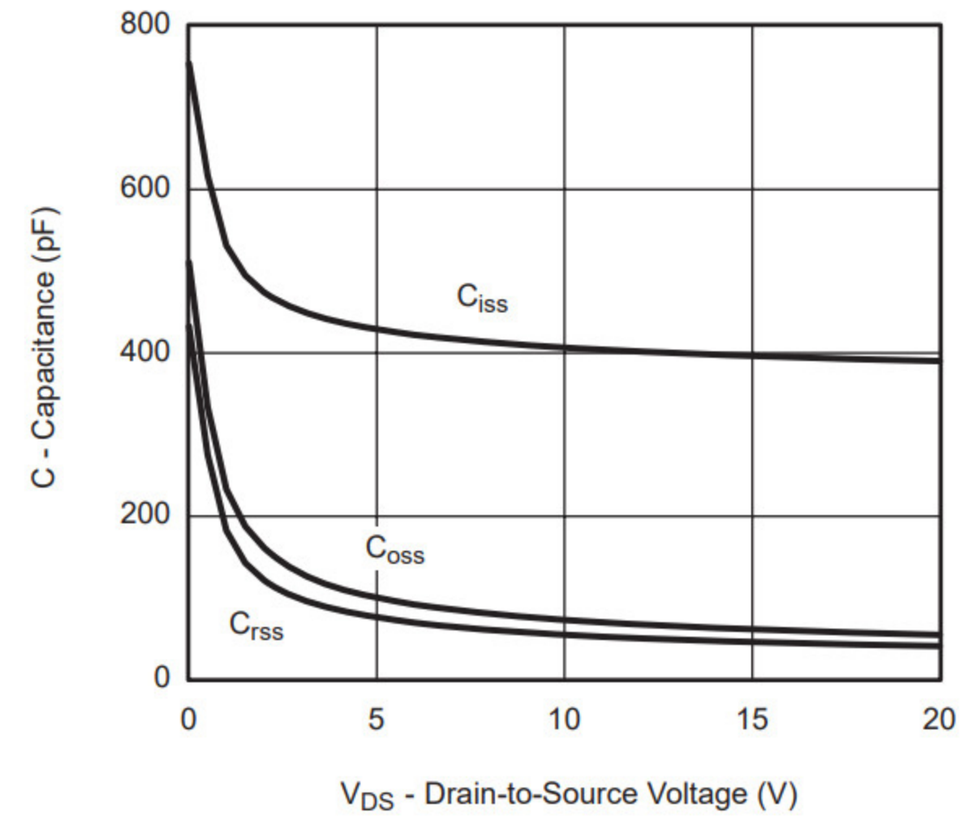
Output Characteristics



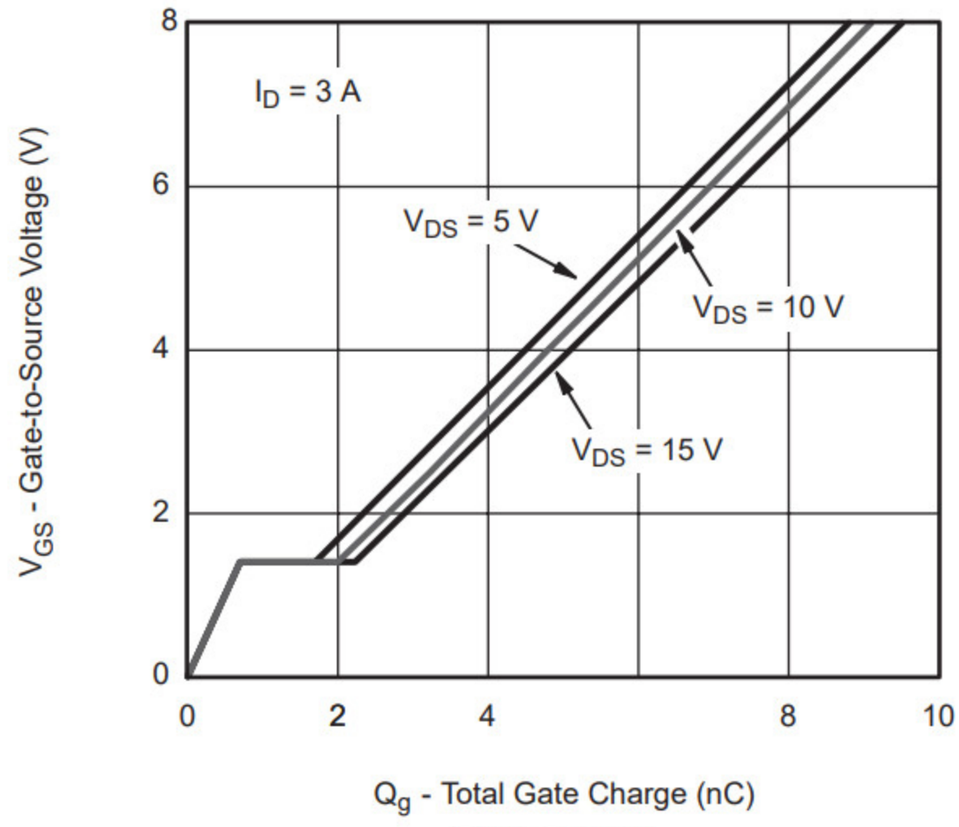
Transfer Characteristics



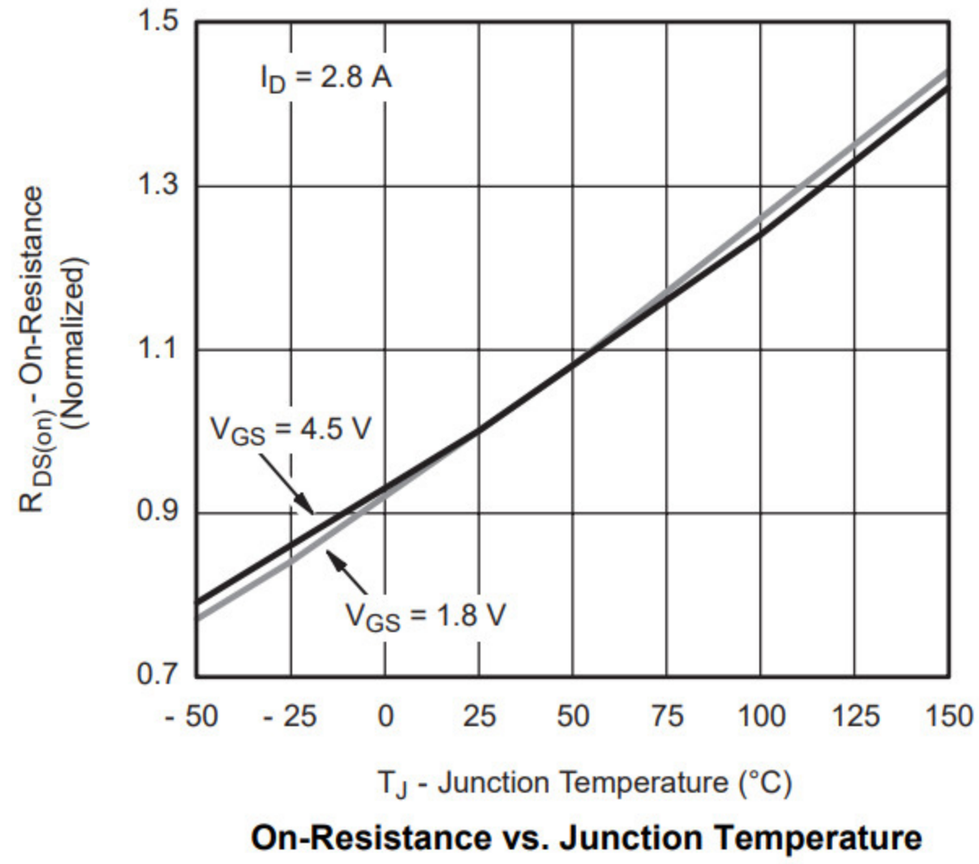
On-Resistance vs. Drain Current and Gate Voltage



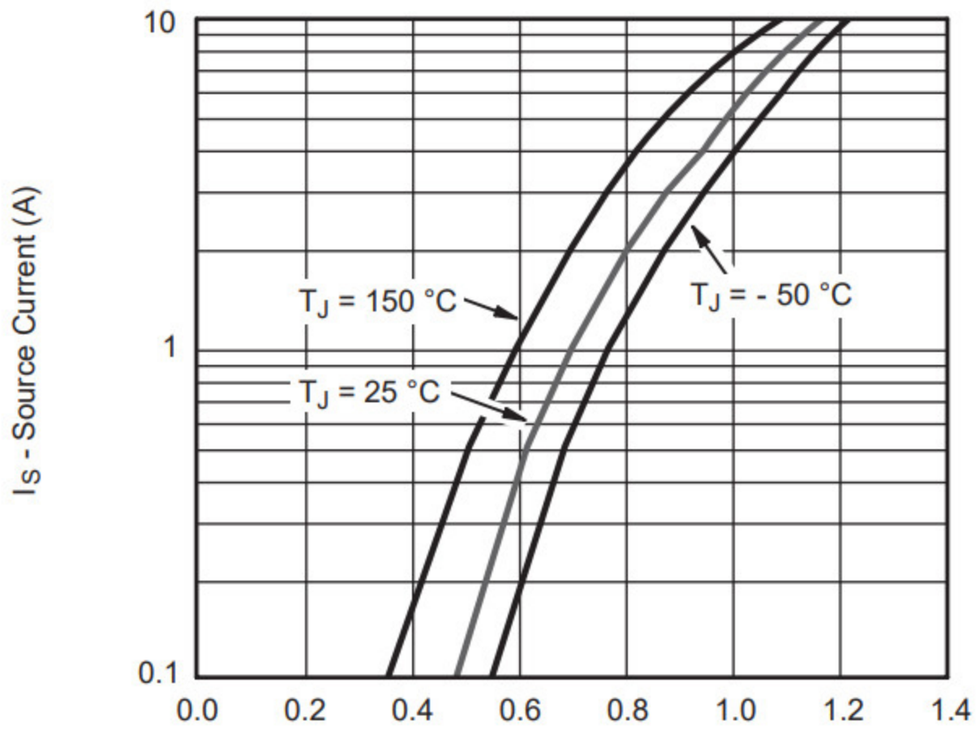
Capacitance



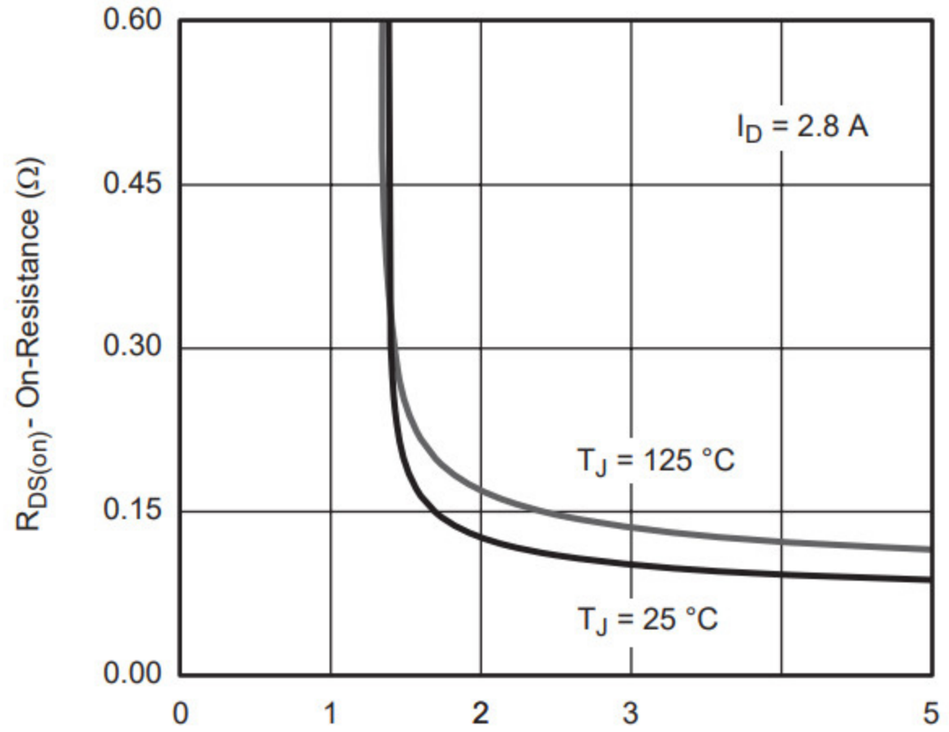
Gate Charge



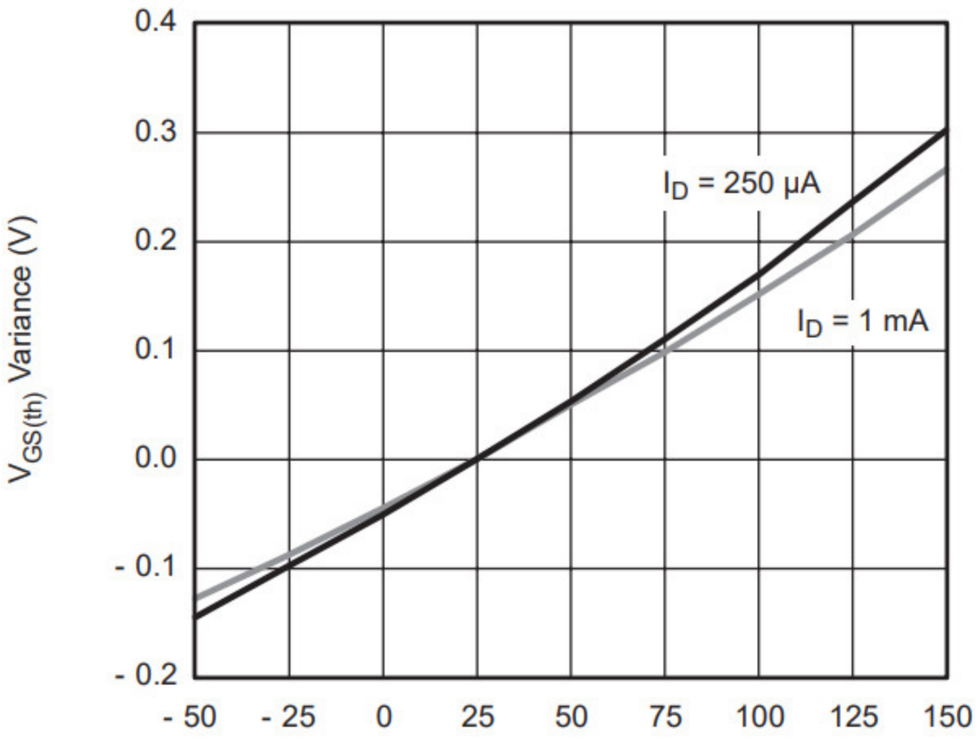
On-Resistance vs. Junction Temperature



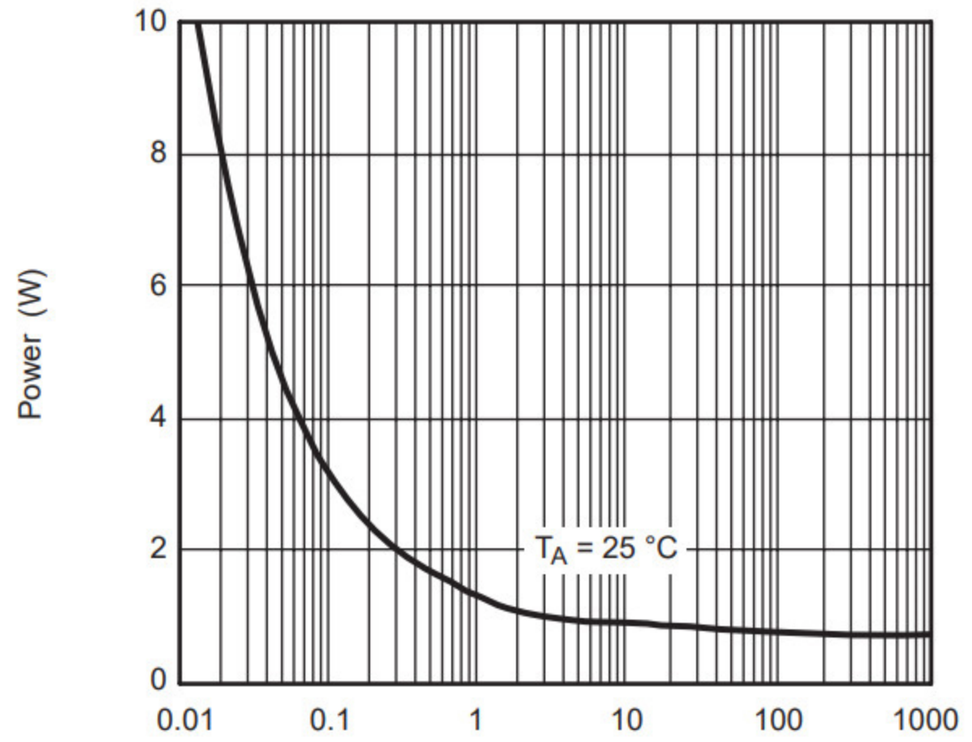
Source-Drain Diode Forward Voltage



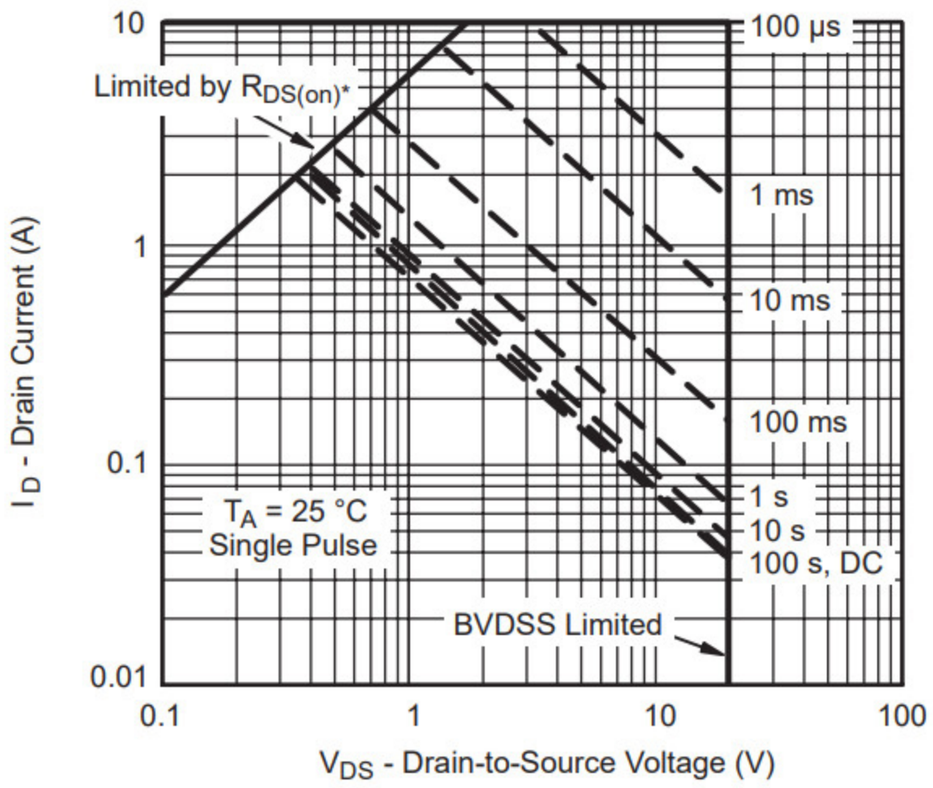
On-Resistance vs. Gate-to-Source Voltage



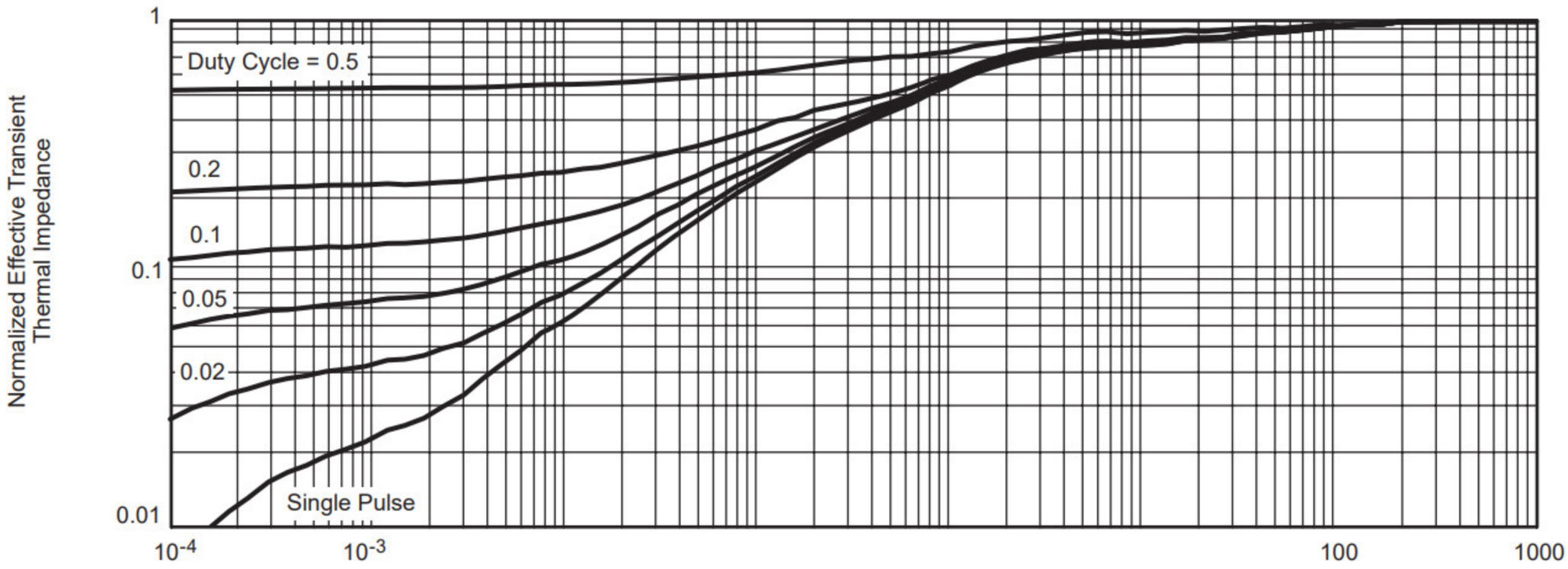
Threshold Voltage



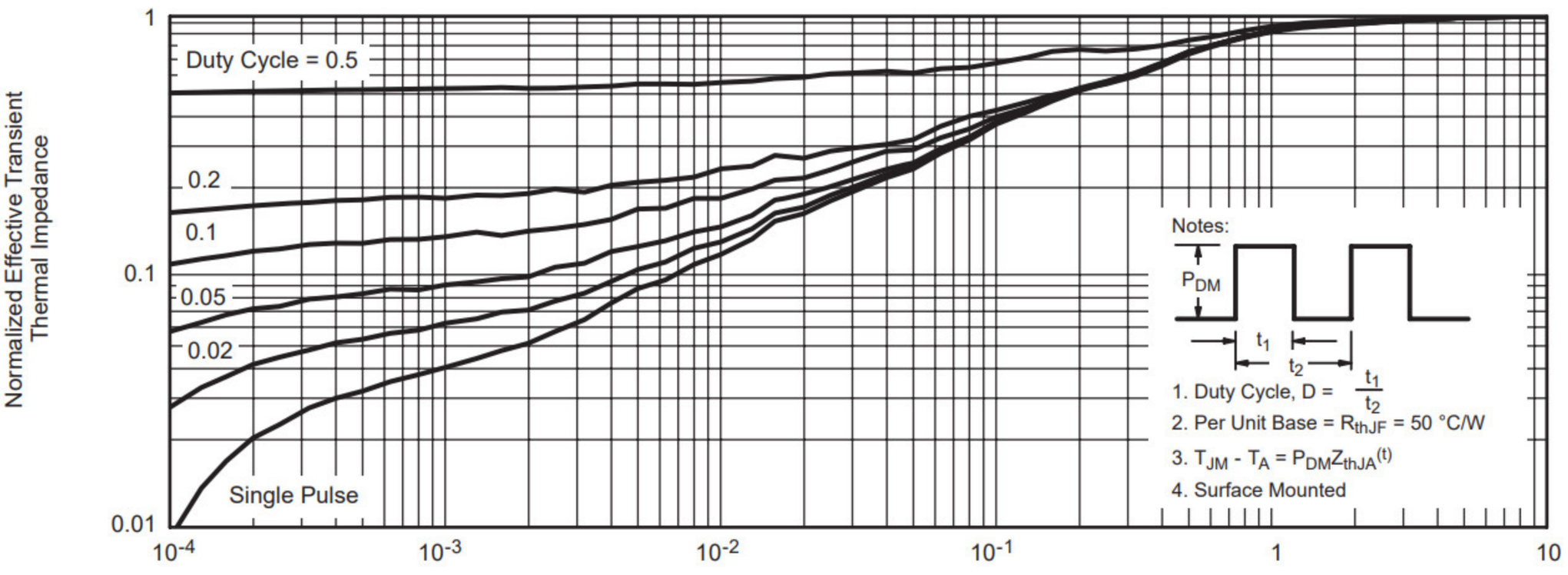
Single Pulse Power



Safe Operating Area

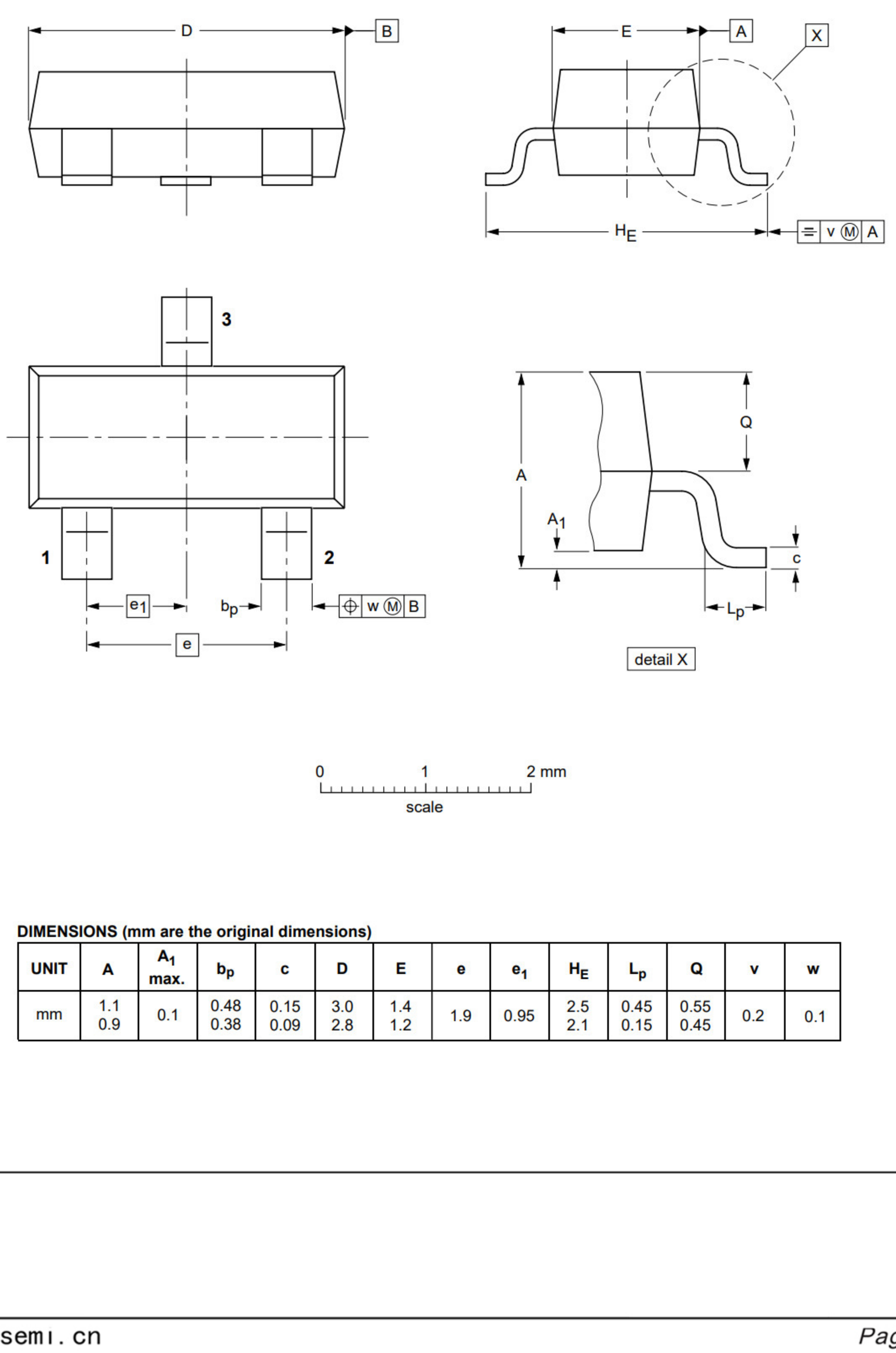


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1