SHINDENGEN

VX-2 Series Power MOSFET

N-Channel Enhancement type

2SK2178
(F2E50VX2)

500V 2A

FEATURES

- Input capacitance (Ciss) is small. Especially, input capacitance at 0 biass is small.
- The static Rds(on) is small.
- The switching time is fast.

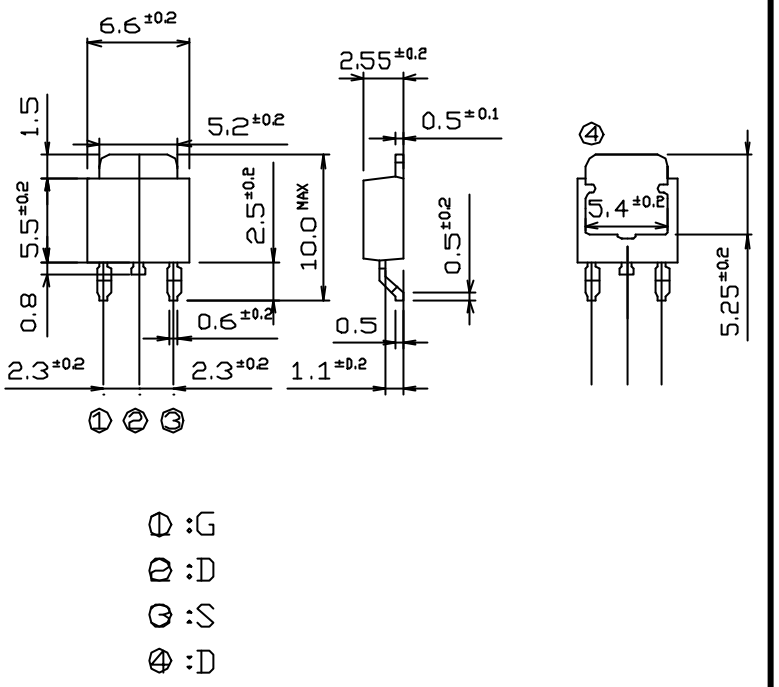
APPLICATION

- Switching power supply of AC 100V input
- High voltage power supply
- Inverter

OUTLINE DIMENSIONS

Case : E-pack

(Unit : mm)



RATINGS

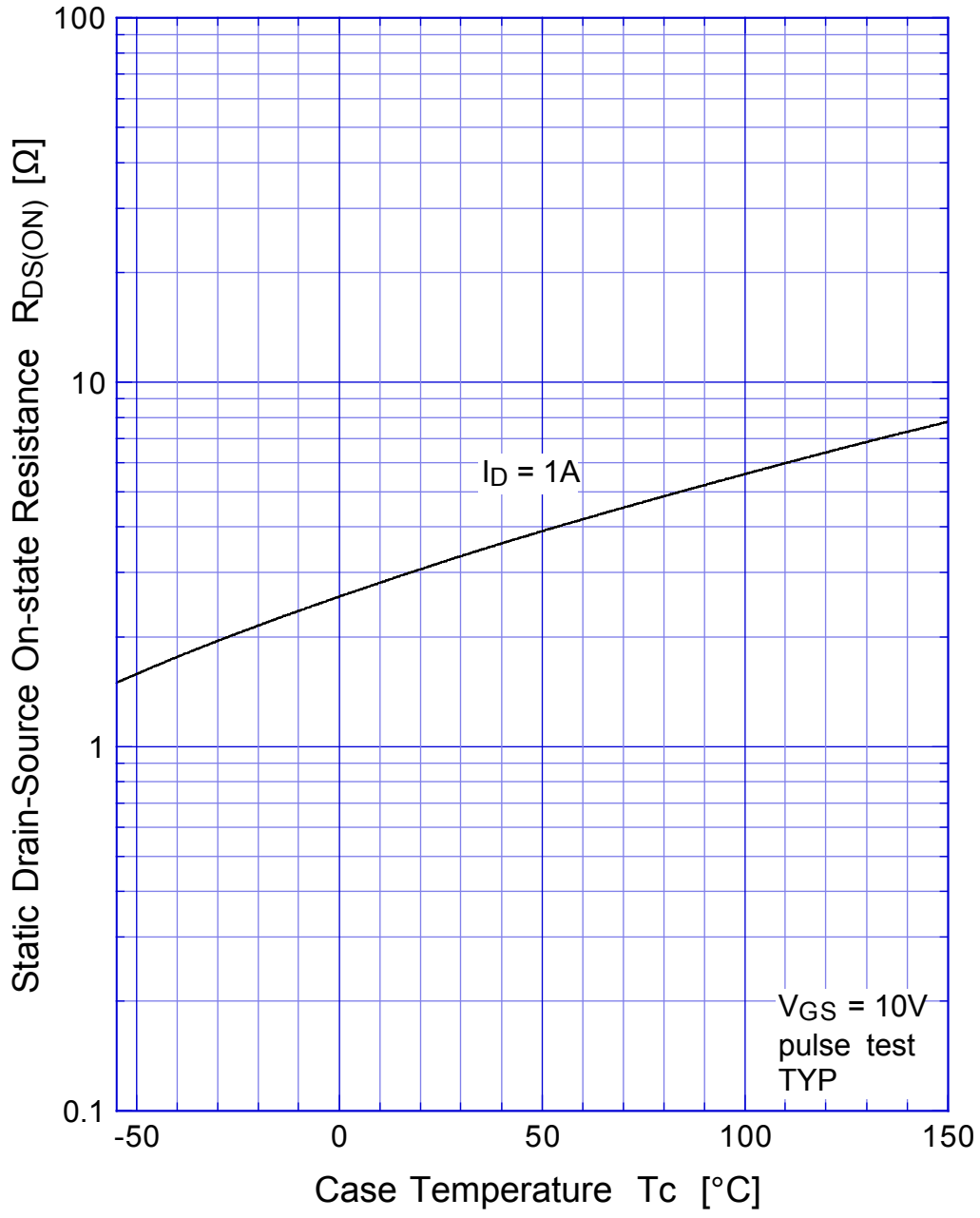
●Absolute Maximum Ratings (Tc = 25°C)

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		-55～150	°C
Channel Temperature	Tch		150	
Drain-Source Voltage	VDSS		500	V
Gate-Source Voltage	VGSS		±30	
Continuous Drain Current (DC)	ID		2	A
Continuous Drain Current (Peak)	IDP		6	
Continuous Source Current (DC)	IS		2	
Total Power Dissipation	PT		15	W
Single Pulse Avalanche Current	IAS	Tch = 25°C	2	A

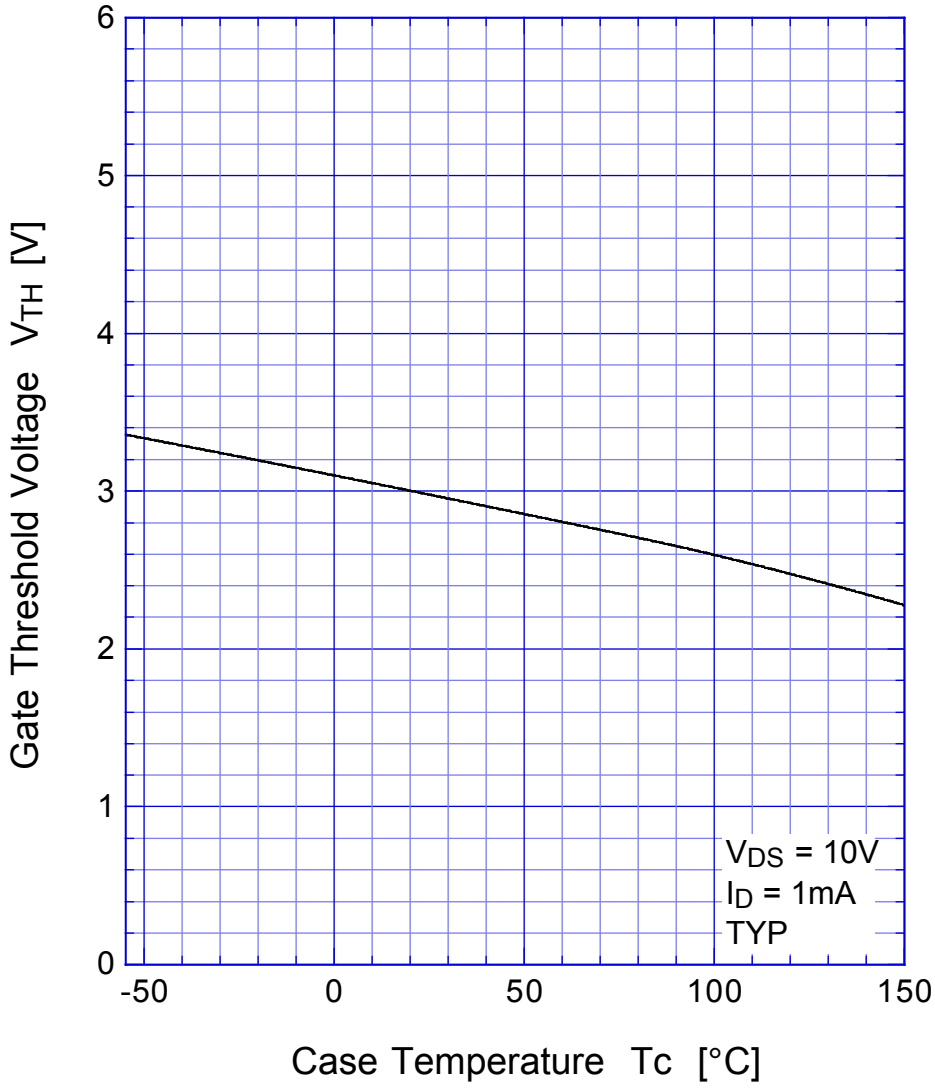
●Electrical Characteristics Tc = 25℃

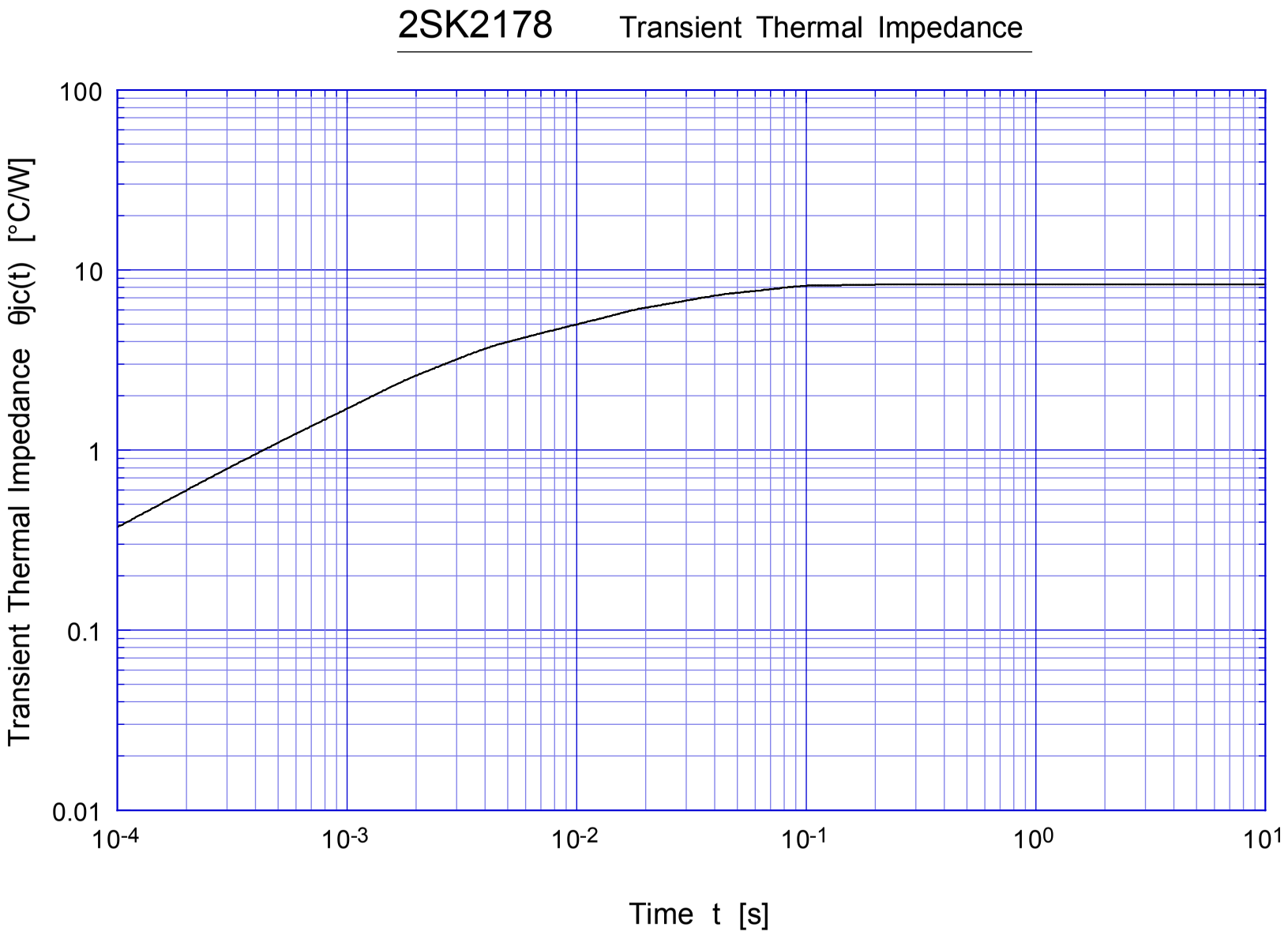
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1mA, V_{GS} = 0V	500			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 500V, V_{GS} = 0V			250	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±0.1	
Forward Transconductance	g_{fs}	I_D = 1A, V_{DS} = 10V	0.6	1.3		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	I_D = 1A, V_{GS} = 10V		3.2	4.0	Ω
Gate Threshold Voltage	V_{TH}	I_D = 0.3mA, V_{DS} = 10V	2.5	3.0	3.5	V
Source-Drain Diode Forwade Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V			1.5	
Thermal Resistance	θ jc	junction to case			8.33	℃/W
Total Gate Charge	Q_g	V_{DD} = 400V, V_{GS} = 10V, I_D = 2A		9		nC
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		220		pF
Reverse Transfer Capacitance	C_{rss}			17		
Output Capacitance	C_{oss}			55		
Turn-On Time	t_{on}	I_D = 1A, V_{GS} = 10V, R_L = 150Ω		40	75	ns
Turn-Off Time	t_{off}			70	120	

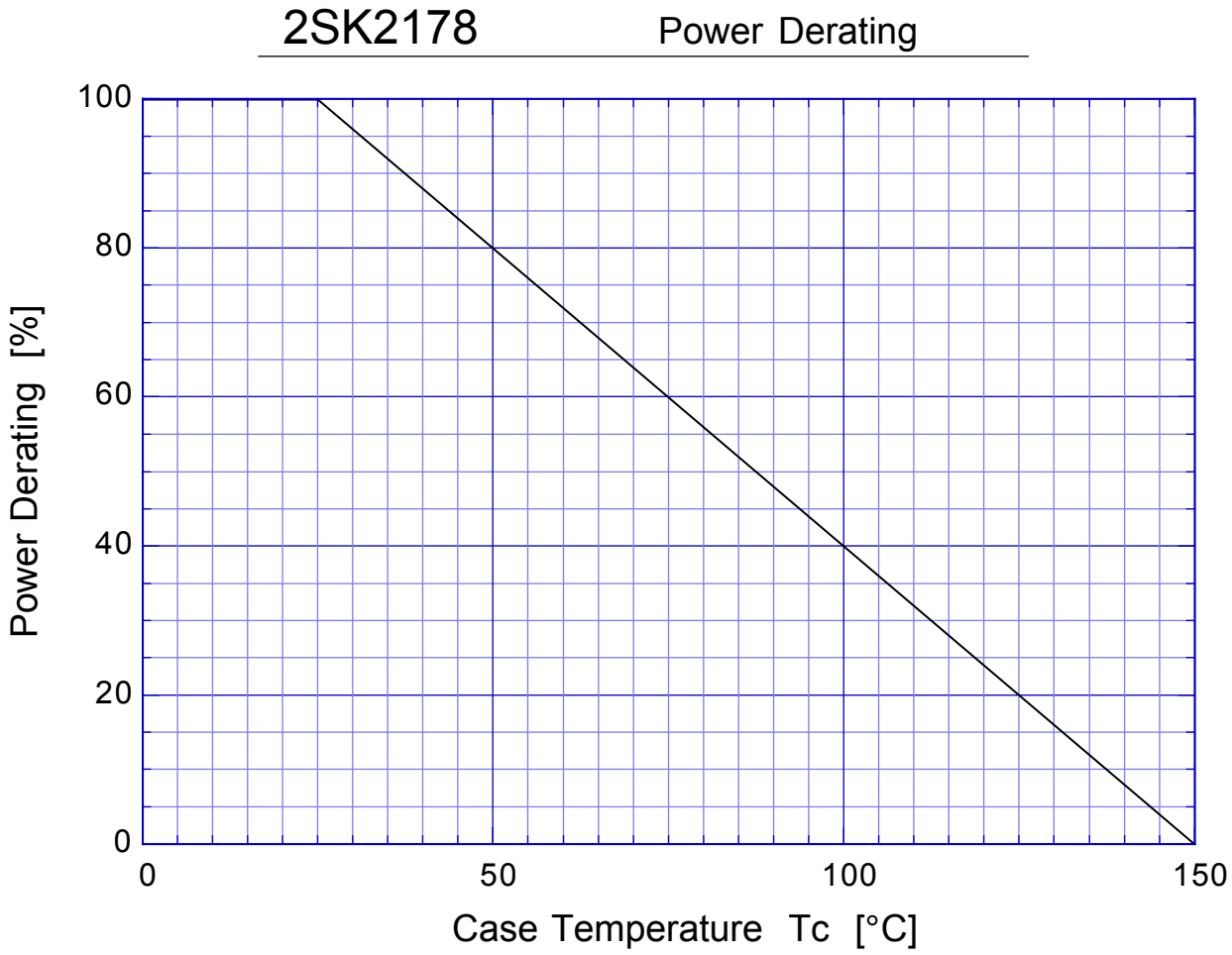
2SK2178 Static Drain-Source On-state Resistance



2SK2178 Gate Threshold Voltage




2SK2178
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
100
10
1
0.1
0.01
10-4
10-3
10-2
10-1
100
101
Time t [s]


2SK2178
Power Derating
Power Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]