

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 bias is small.
The static Rds(on) is small.
The switching time is fast.

APPLICATION

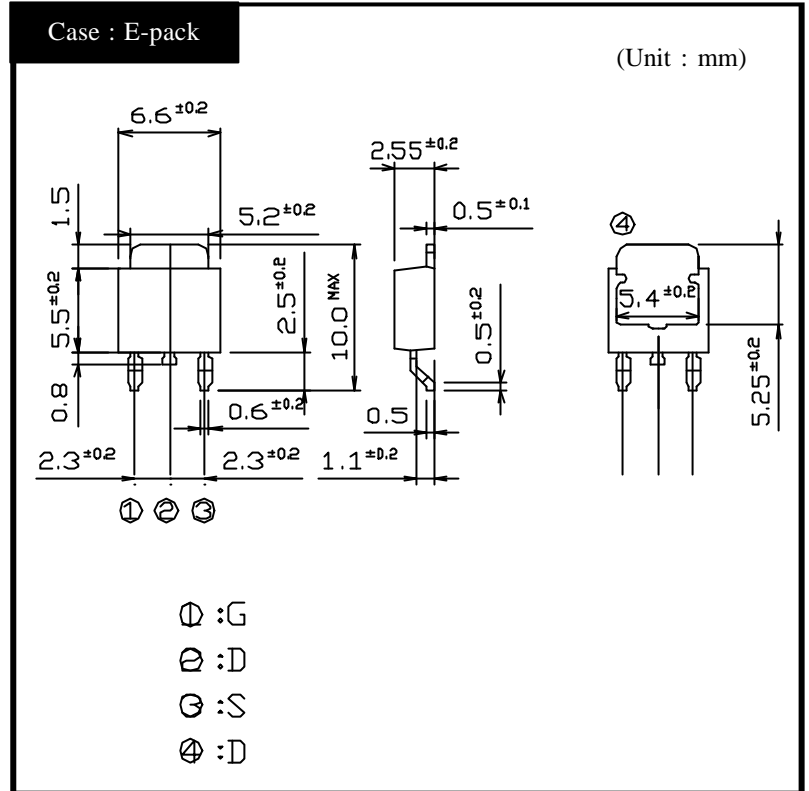
Switching power supply of AC 100V input
High voltage power supply
Inverter

RATINGS

Absolute Maximum Ratings (Tc = 25)

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T _{stg}		-55 ~ 150	
Channel Temperature	T _{ch}		150	
Drain-Source Voltage	V _{DSS}		500	V
Gate-Source Voltage	V _{GSS}		± 30	
Continuous Drain Current (DC)	I _D		2	A
Continuous Drain Current (Peak)	I _{DP}		6	
Continuous Source Current (DC)	I _S		2	
Total Power Dissipation	P _T		15	W
Single Pulse Avalanche Current	I _{AS}	T _{ch} = 25	2	A

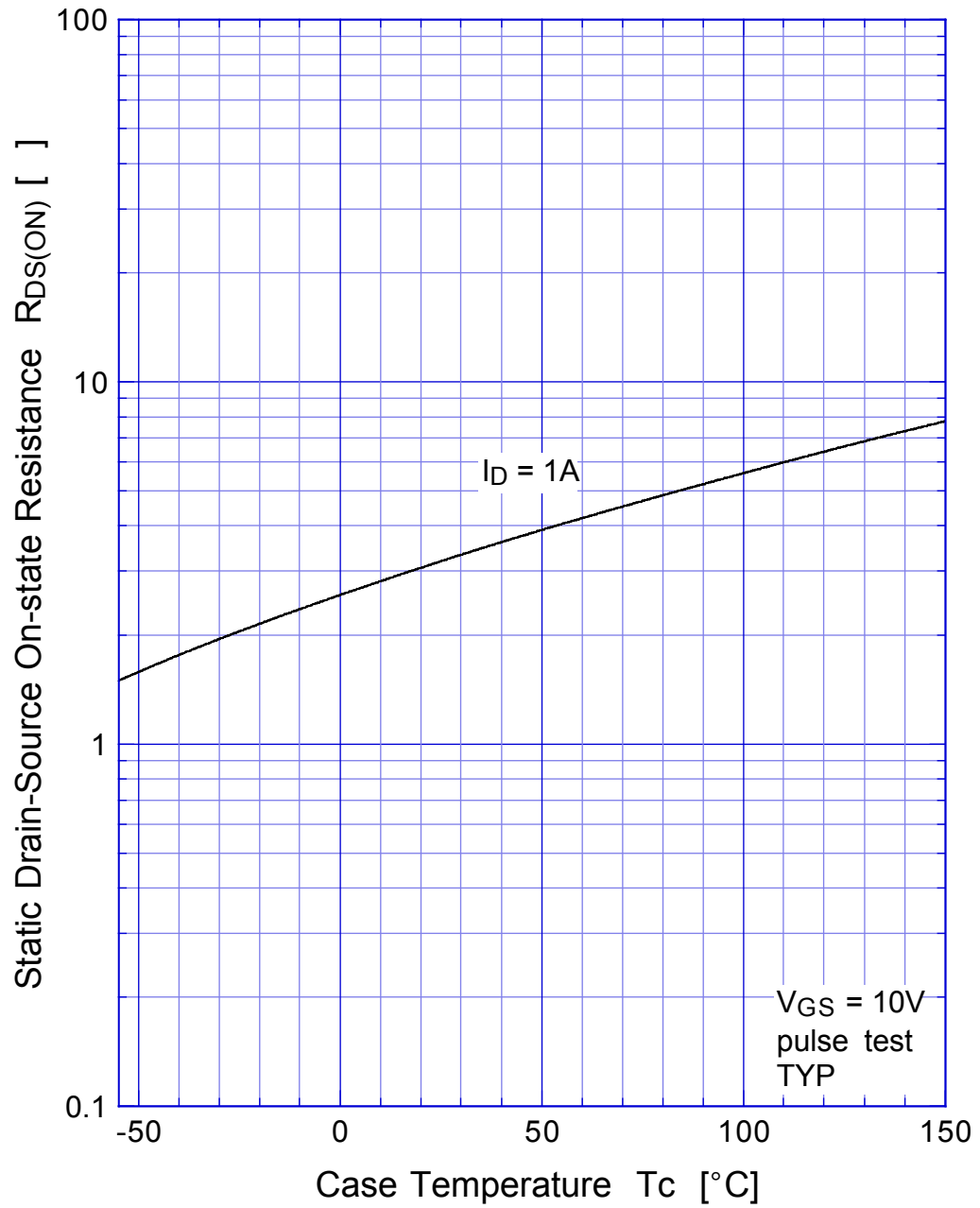
OUTLINE DIMENSIONS



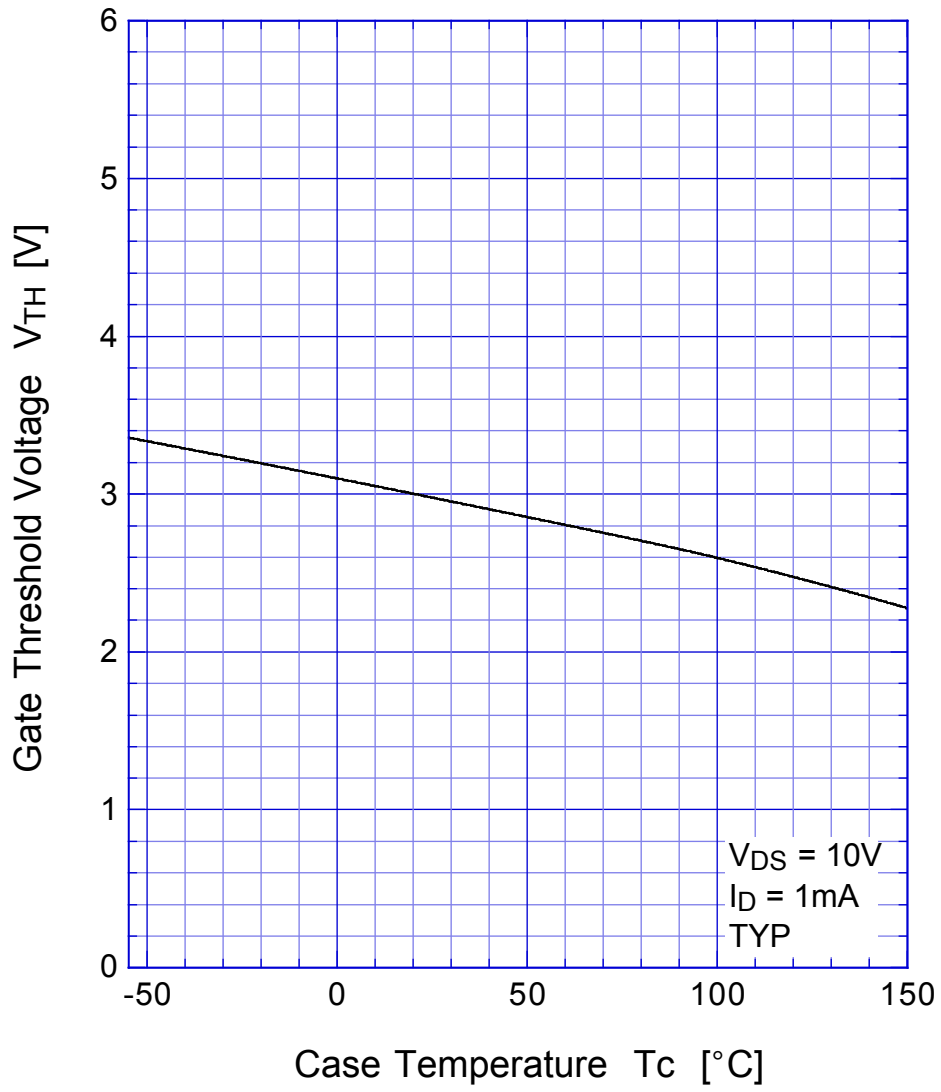
●Electrical Characteristics $T_c = 25^\circ\text{C}$

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

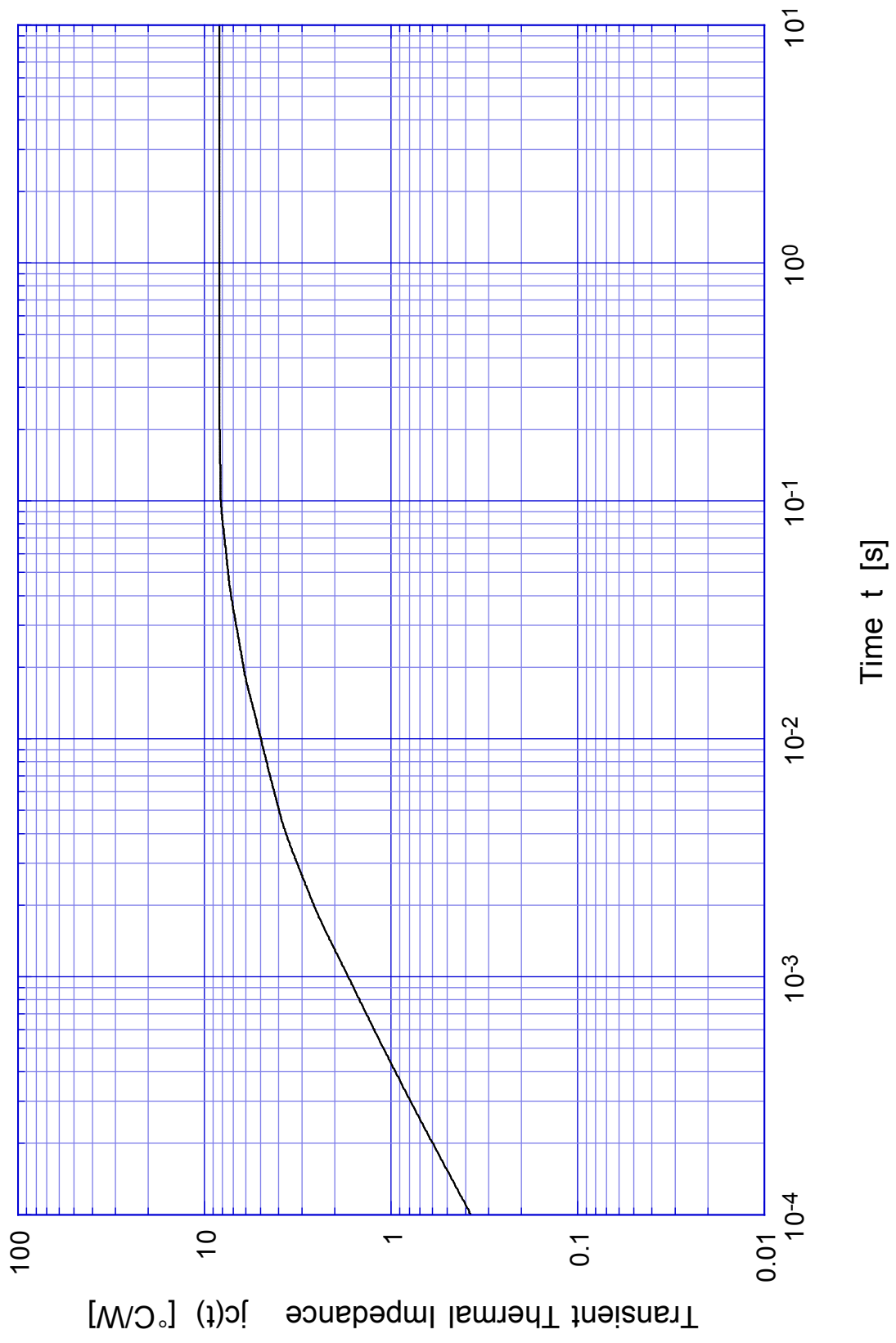
2SK2178 Static Drain-Source On-state Resistance



2SK2178 Gate Threshold Voltage



2SK2178 Transient Thermal Impedance



2SK2178

Power Derating

