

# SHINDENGEN

## HVX-2 Series Power MOSFET

N-Channel Enhancement type

**2SK2333**  
( F6F70HVX2 )

**700V 6A**

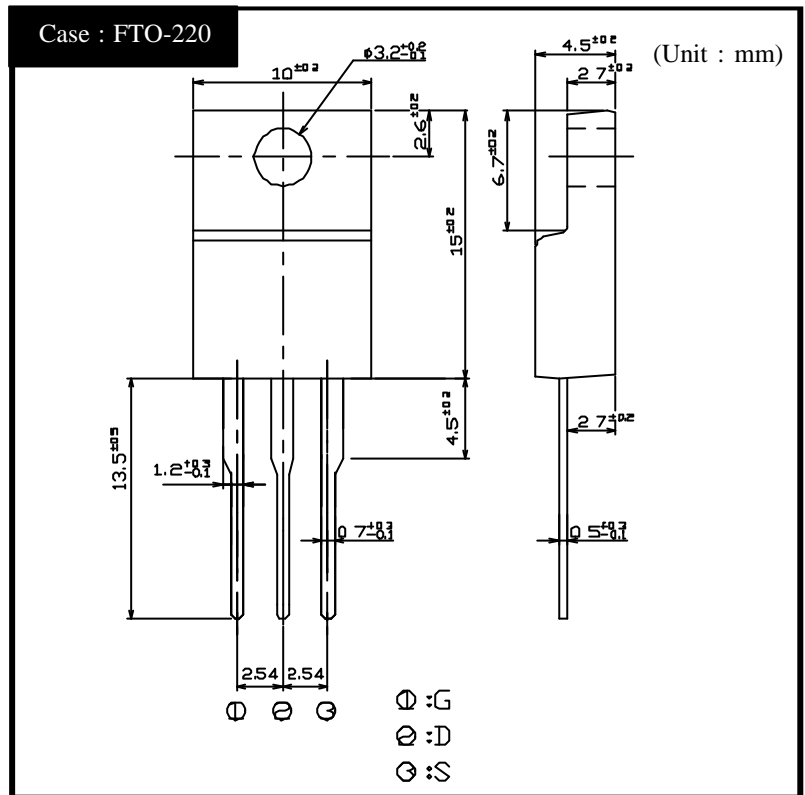
### FEATURES

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

### APPLICATION

- Switching power supply of AC 240V input
- High voltage power supply
- Inverter

### OUTLINE DIMENSIONS



### RATINGS

Absolute Maximum Ratings (Tc = 25 )

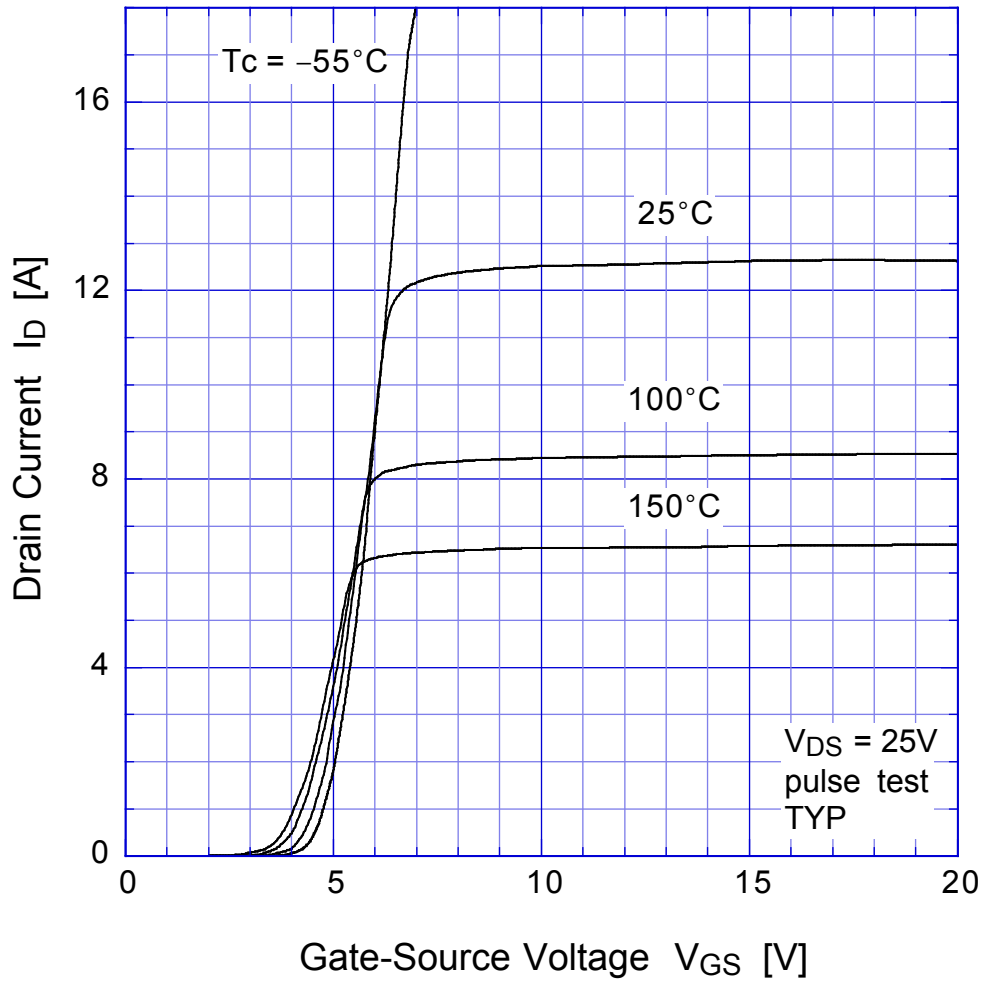
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T <sub>stg</sub>		-55 ~ 150	
Channel Temperature	T <sub>ch</sub>		150	
Drain-Source Voltage	V <sub>DSS</sub>		700	V
Gate-Source Voltage	V <sub>GSS</sub>		± 30	
Continuous Drain Current (DC )	I <sub>D</sub>		6	
Continuous Drain Current (Peak)	I <sub>DP</sub>	Pulse width 10 μs, Duty cycle 1/100	18	A
Continuous Source Current (DC )	I <sub>S</sub>		6	
Total Power Dissipation	P <sub>T</sub>		50	W
Repetitive Avalanche Current	I <sub>AR</sub>	T <sub>ch</sub> = 150	6	A
Single Avalanche Energy	E <sub>AS</sub>	T <sub>ch</sub> = 25	190	mJ
Repetitive Avalanche Energy	E <sub>AR</sub>	T <sub>ch</sub> = 25	19	
Dielectric Strength	V <sub>dis</sub>	Terminals to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque 0.3 N·m )	0.5	N·m

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

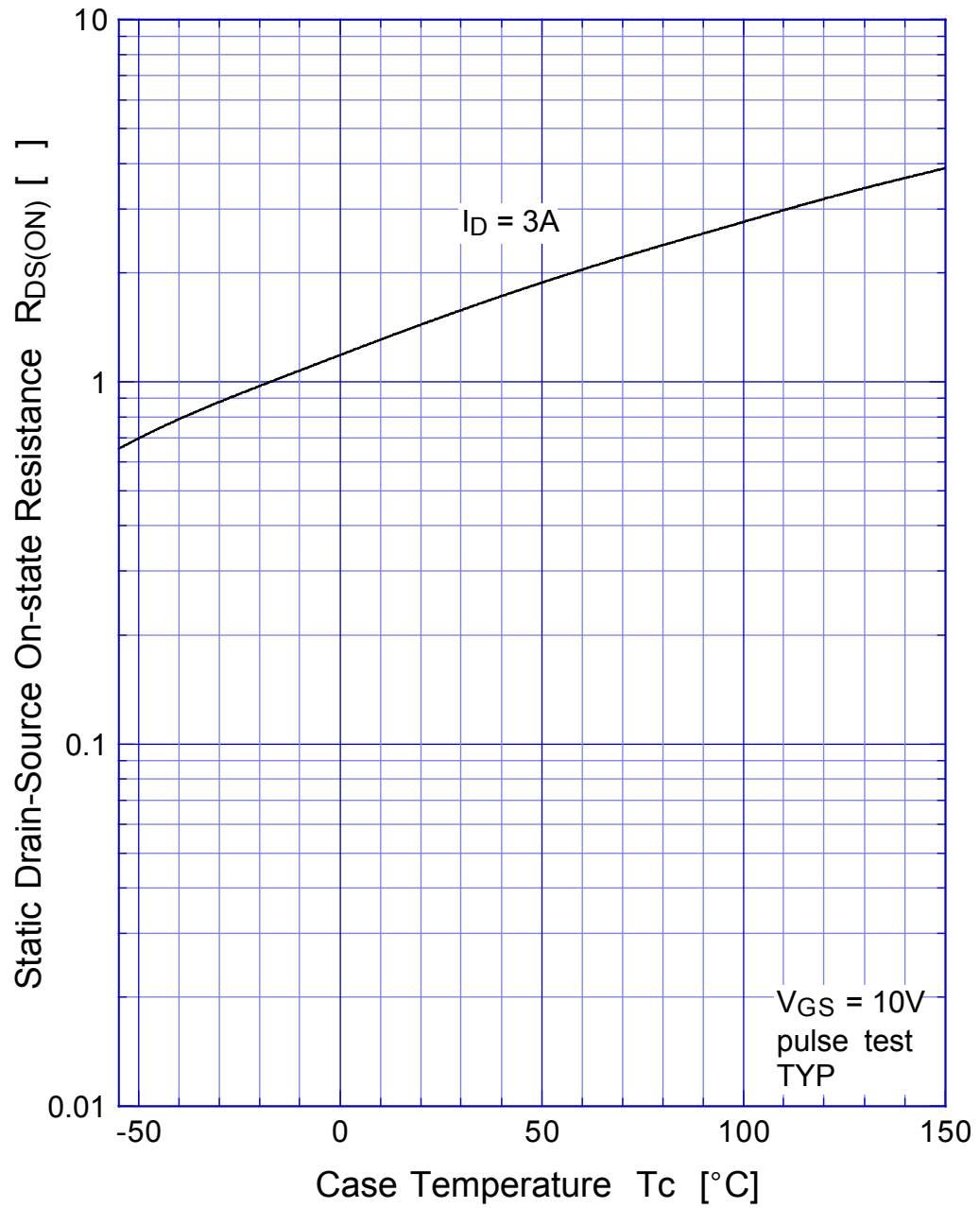
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}, V_{GS} = 0\text{V}$	700			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 700\text{V}, V_{GS} = 0\text{V}$			250	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 30\text{V}, V_{DS} = 0\text{V}$			$\pm 0.1$	
Forward Transconductance	$g_{fs}$	$I_D = 3\text{A}, V_{DS} = 10\text{V}$	3.0	5.0		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	$I_D = 3\text{A}, V_{GS} = 10\text{V}$		1.5	2.0	$\Omega$
Gate Threshold Voltage	$V_{TH}$	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$	2.5	3.0	3.5	V
Source-Drain Diode Forward Voltage	$V_{SD}$	$I_S = 3\text{A}, V_{GS} = 0\text{V}$			1.5	
Thermal Resistance	$\theta_{jc}$	junction to case			2.5	$^\circ\text{C}/\text{W}$
Total Gate Charge	$Q_g$	$V_{DD} = 400\text{V}, V_{GS} = 10\text{V}, I_D = 6\text{A}$		35		nC
Input Capacitance	$C_{iss}$			1250		
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		250		pF
Output Capacitance	$C_{oss}$			530		
Turn-On Time	$t_{on}$	$I_D = 3\text{A}, R_L = 50\Omega, V_{GS} = 10\text{V}$		60	110	ns
Turn-Off Time	$t_{off}$			160	250	

# 2SK2333

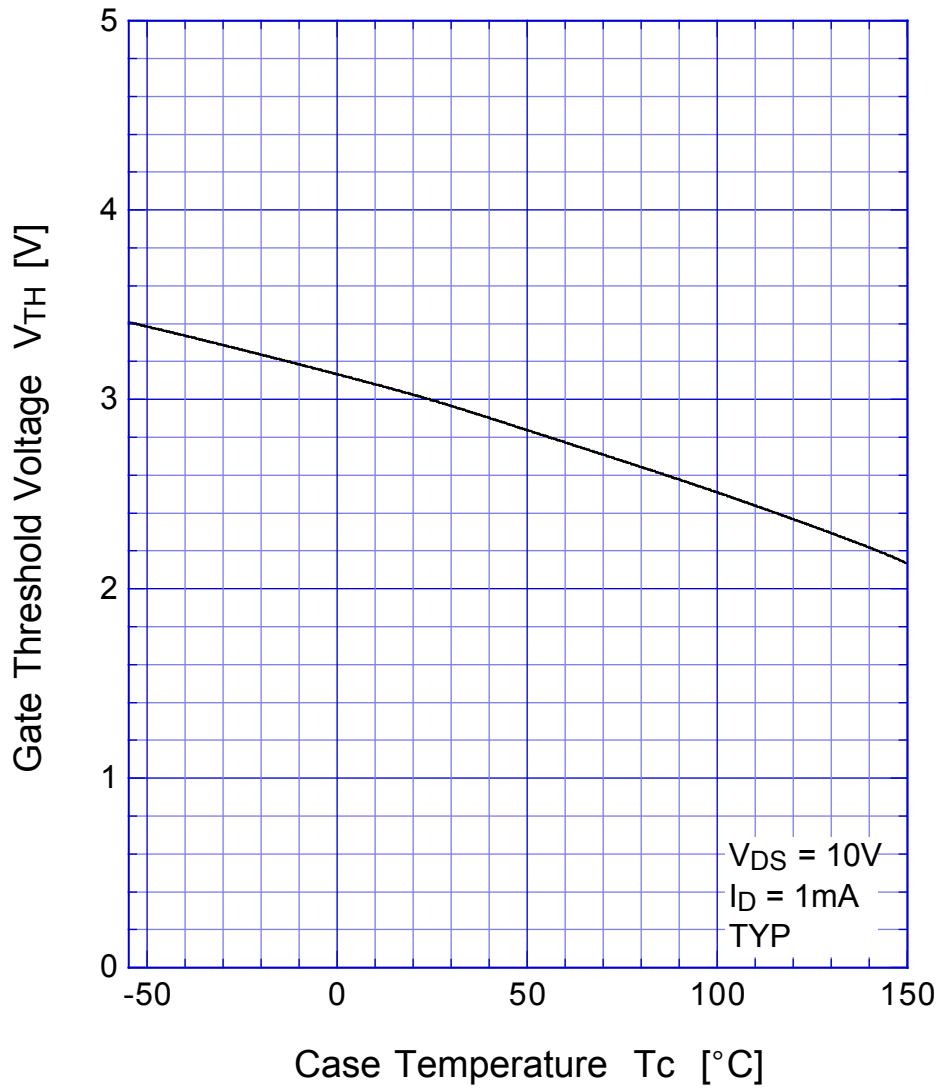
## Transfer Characteristics



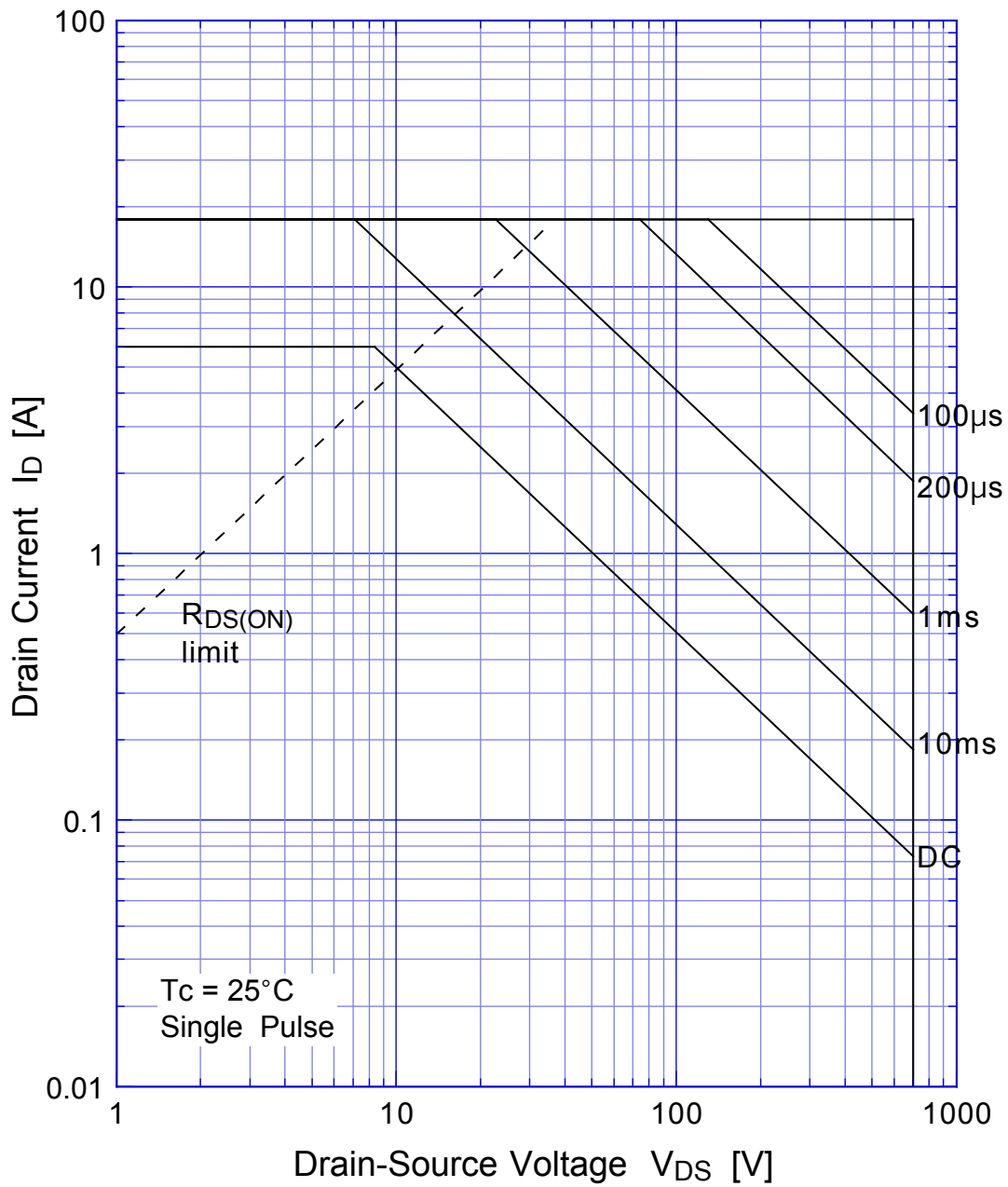
## 2SK2333 Static Drain-Source On-state Resistance



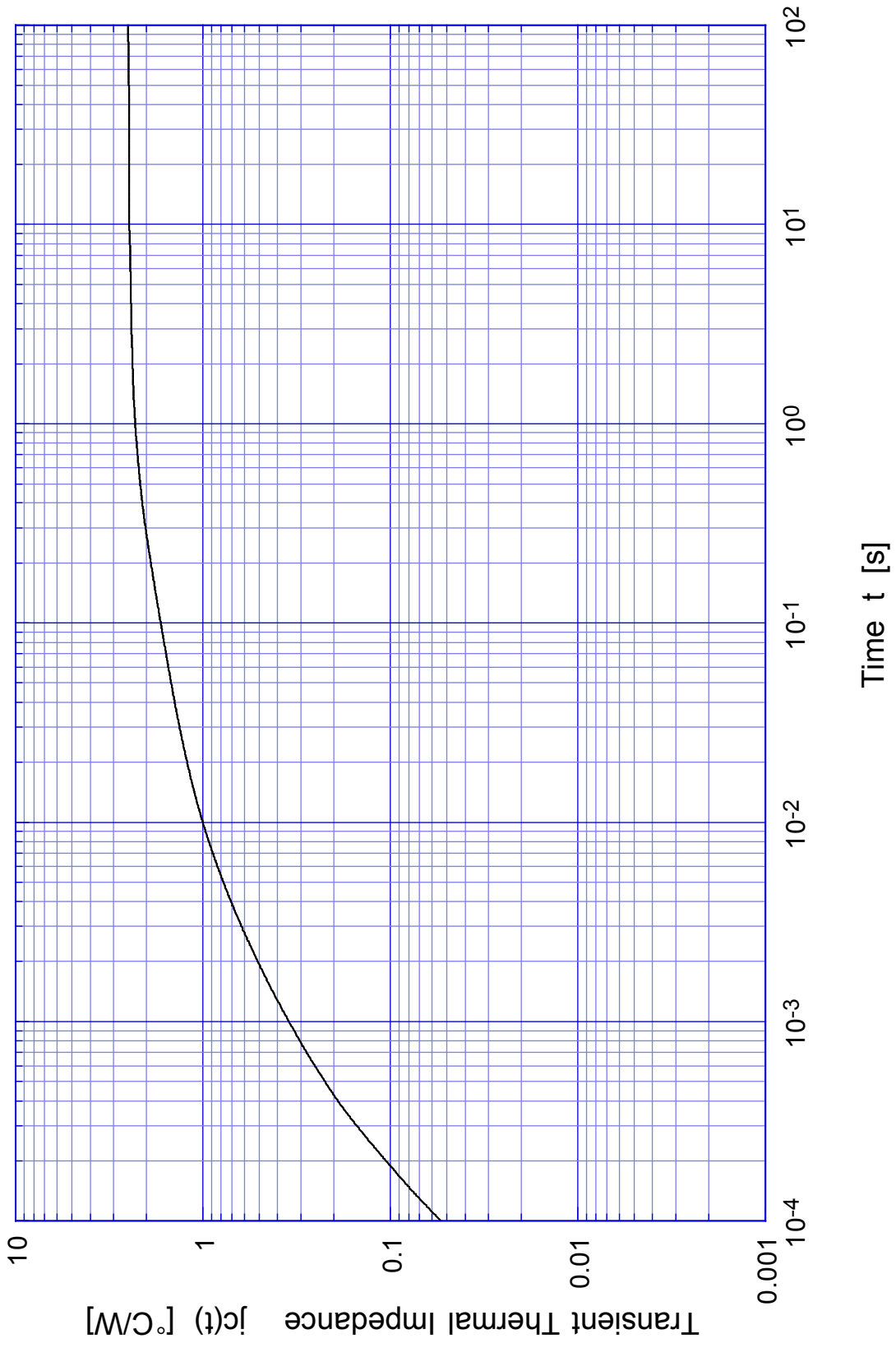
2SK2333 Gate Threshold Voltage



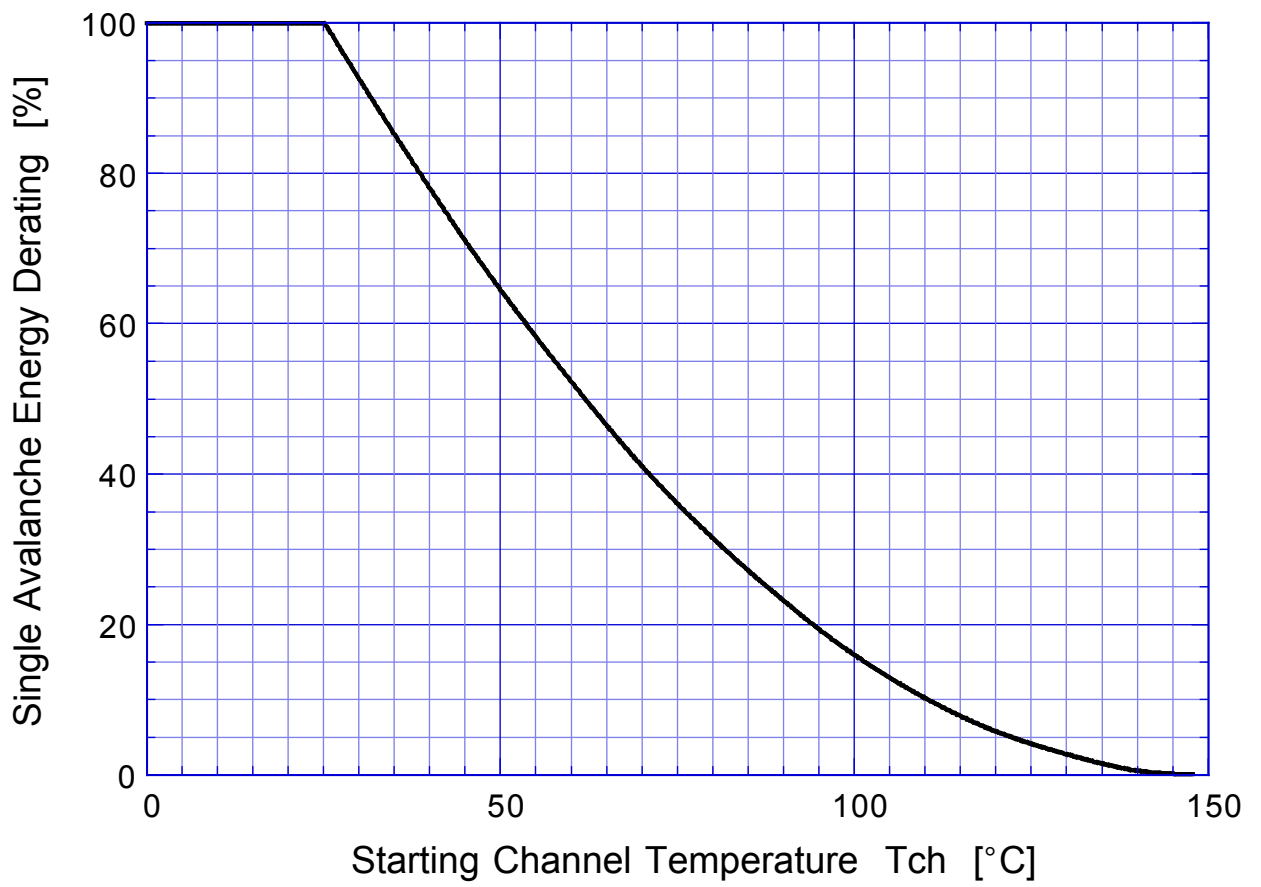
# 2SK2333 Safe Operating Area



# 2SK2333 Transient Thermal Impedance

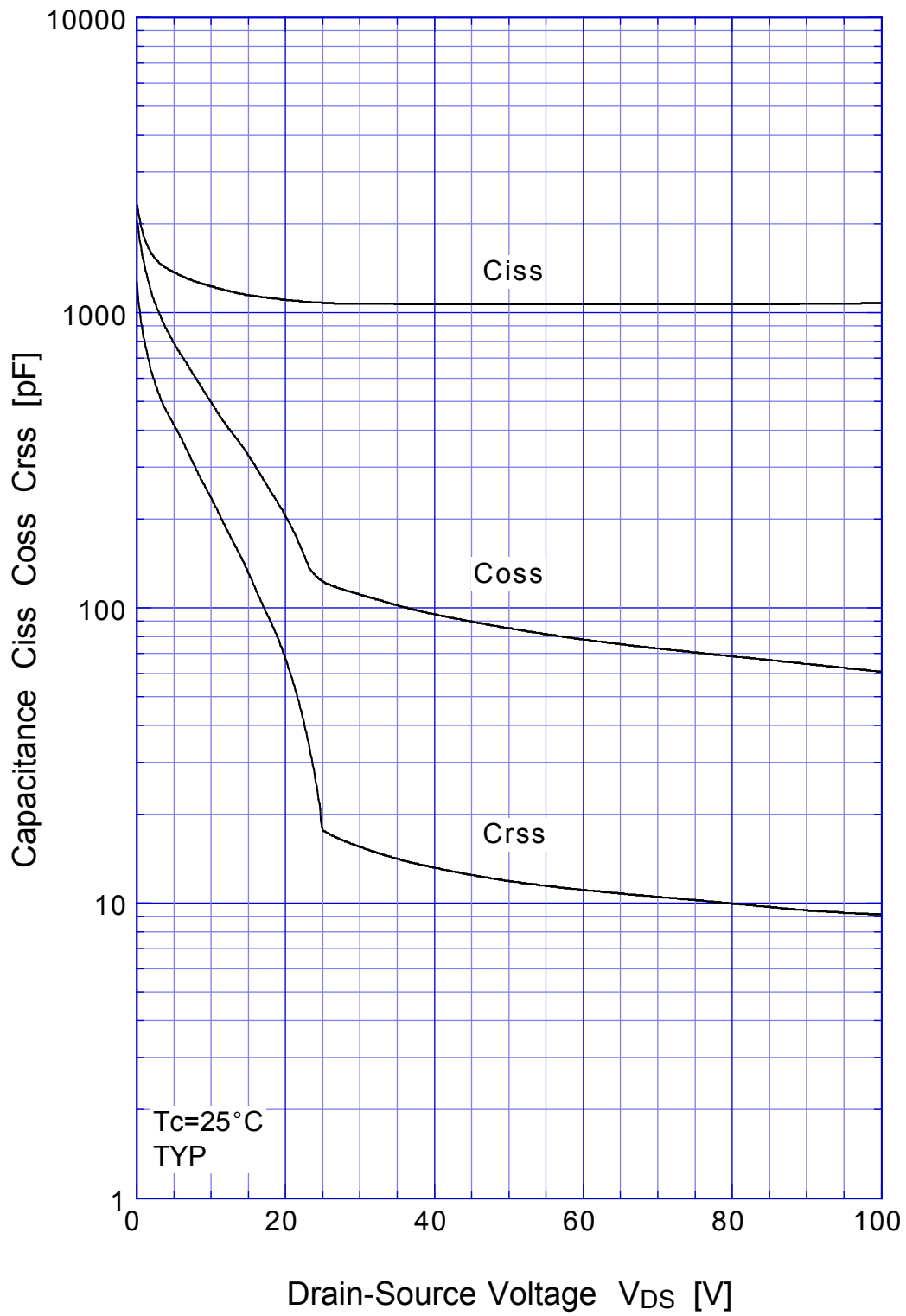


### 2SK2333 Single Avalanche Energy Derating

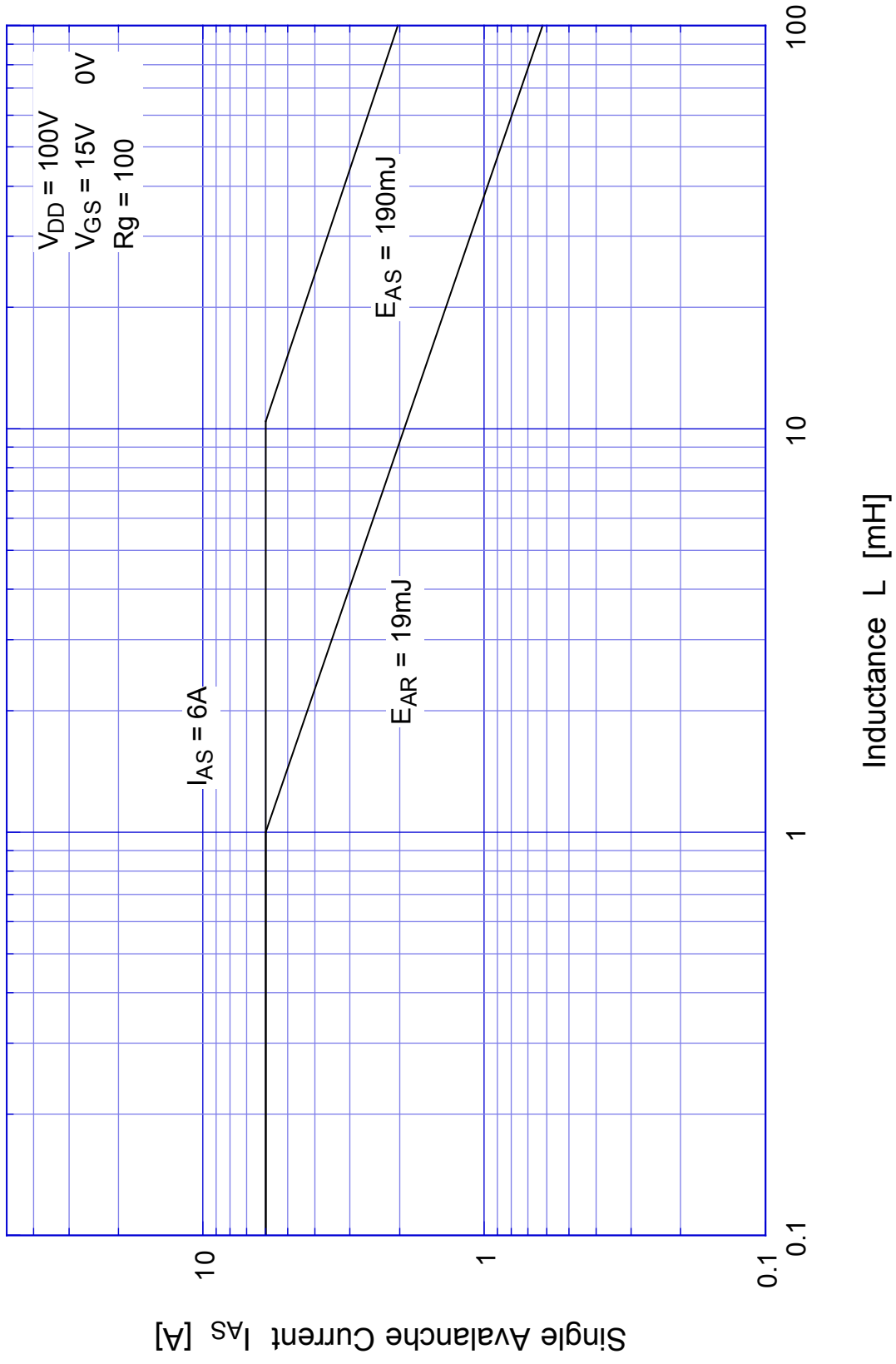




# 2SK2333 Capacitance

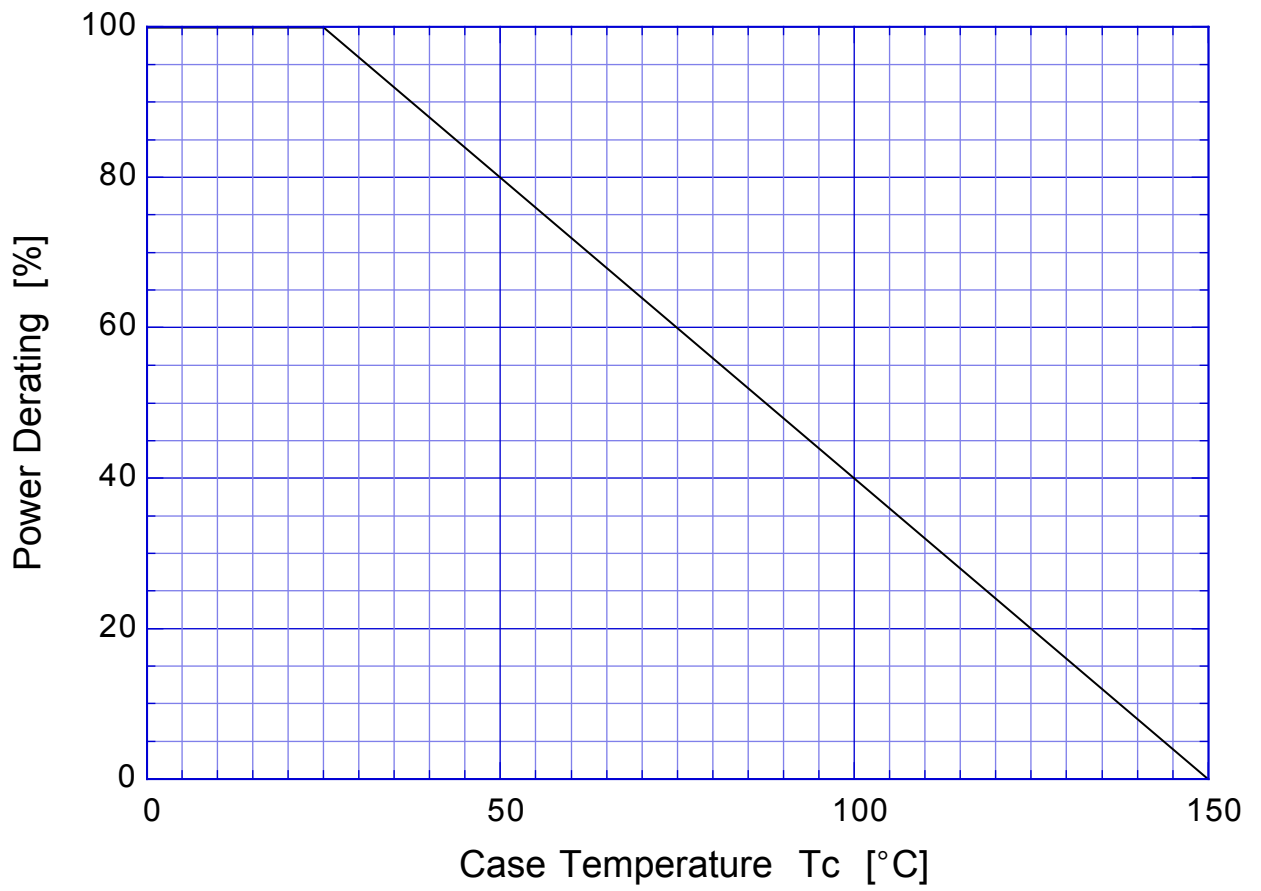


# 2SK2333 Single Avalanche Current - Inductive Load



2SK2333

Power Derating



## 2SK2333 Gate Charge Characteristics

